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Cooperative
**ECONOMIC INSECT
REPORT**

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UNITED STATES DEPARTMENT OF AGRICULTURE

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ECONOMIC INSECT SURVEY AND DETECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Plant Protection Division
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Hyattsville, Maryland 20782

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

SOUTHWESTERN CORN BORER overwintering larvae numerous in sorghum in Maricopa County, Arizona. (p. 3).

Additional CALIFORNIA RED SCALE infestation found on citrus at Tucson, Arizona. (p. 3).

Detection

New State records include two NOCTUID MOTHS from California (p. 5) and one from Arkansas (p. 3); a PYRALID MOTH from Missouri (p. 4).

For new county records see page 5.

Special Reports

State Survey Coordinators. (pp. 6-8).

Cooperative Survey Entomologists. (pp. 9-10).

Survey Methods. Selected References 1947. Part XXIII. (pp. 11-12).

Reports in this issue are for the week ending December 26 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance.....3

Insects Affecting

Corn, Sorghum, Sugarcane.....3	Other Trop. & Subtrop. Fruits.....3
Forage Legumes.....3	Ornamentals.....3
Miscellaneous Field Crops.....3	Forest and Shade Trees.....4
Citrus.....3	Man and Animals.....4

Federal and State Plant Protection Programs.....4

Hawaii Insect Report.....5

Detection.....5

Corrections.....5

State Survey Coordinators.....6

Cooperative Survey Entomologists.....9

Survey Methods. Selected References 1947. Part XXIII.....11

WEATHER OF THE WEEK ENDING DECEMBER 29

HIGHLIGHTS: A cooling trend dropped temperatures over the West. Cold continued over the East which experienced one of the stormiest weeks in weather history.

PRECIPITATION: Four storm systems dominated the weather last week. An intense Pacific storm caused high winds and heavy rain throughout the week along the Washington, Oregon, and northern California coast with snow in the Cascades and Sierras and across the northern Great Basin to the Rocky Mountains. Snow depths reached 50 to 80 inches in Washington's Cascades. Little precipitation occurred along the eastern slopes of the northern and central Rockies, but snow fell early in the week from the northern and central Great Plains to New York and New England, and rain drenched the Atlantic coast. Mixtures of snow and freezing rain fell between the snow belt and the rain along the coast. In the Lewiston, Waterville, and Bucksport area of Maine, ice accumulated on wires to 4 inches in diameter. Many trees and powerlines were down and thousands of homes were without power and heat. Snow steadily piled up in Minnesota and Iowa accumulating from 12 to 24 inches in portions of the former State. Thursday, Christmas Day, was stormy over much of the Nation. Cold rain continued along the Pacific coast. Killer tornadoes occurred in Louisiana. Violent thunderstorms occurred in the Southeastern States with tornadoes in Florida. Heavy snow with increasing winds fell in the central Appalachians and began in the Northeast. The storm in the Northeast continued over the weekend becoming one of the worst blizzards in the 20th Century. Snow fall totals ranged from 20-28 inches from the Finger Lakes to the Hudson and Champlain River Valleys. With 2 to 4 feet in Vermont, the strong winds which gusted to 50 miles per hour piled the snow in 30-foot drifts in parts of Vermont which was declared a disaster area. Heavy rain along the coastal portion of New England where 24-hour totals approached 6 inches caused serious flooding of highways and basements. Late in the week, a storm dumped heavy snow from eastern New Mexico to the Missouri Bootheel and rain eastward over the Ohio River Valley.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

GREENBUG (*Schizaphis graminum*) - ARIZONA - No buildup in winter wheat and barley this period. (Ariz. Coop. Sur.). KANSAS - Ranged up to 15 per linear foot of wheat in Hodgeman, Ford, Trego, Lane, and Scott Counties December 9 and 10; none found in wheat in Reno, Ness, Gove, Finney, Gray, Comanche, Butler, and Barber Counties. (Redding). Currently none found on wheat in Barton, Stafford, Pratt, Rice, McPherson, Marion, Dickinson, Rush, and Ellis Counties. (Martinez). ARKANSAS - Biotype C collected on sorghum in Washington County September 16, 1969, by W.P. Boyer. Determined by H.L. Chada. Although *S. graminum* has long been a pest in State, this is first record of biotype C. (Boyer).

CORN, SORGHUM, SUGARCANE

SOUTHWESTERN CORN BORER (*Diatraea grandiosella*) - ARIZONA - Many larvae overwintering in stalks and crowns of cut and uncut sorghum in Maricopa County. (Ariz. Coop. Sur.).

FORAGE LEGUMES

BEEF ARMYWORM (*Spodoptera exigua*) - ARIZONA - Ranged 0-30 per 100 sweeps of alfalfa at Yuma, Yuma County. (Ariz. Coop. Sur.).

A MEALYBUG (*Rhizoecus kondonis*) - CALIFORNIA - Heavy in alfalfa at Knights Landing, Yolo County. (Cal. Coop. Rpt.).

A LYGUS BUG (*Lygus* sp.) - ARIZONA - Averaged 30 per 100 sweeps of alfalfa on Yuma Mesa in Yuma County; one-third nymphs. (Ariz. Coop. Sur.).

PEA APHID (*Acyrtosiphon pisum*) - NEW MEXICO - Mostly nymphs, light and spotted in most alfalfa in Bernalillo County. (Heninger). Ranged 2-4 per square foot in Eddy County. (Mathews).

MISCELLANEOUS FIELD CROPS

A NOCTUID MOTH (*Stibadium spumosum*) - ARKANSAS - Larvae collected on sunflower in Crittenden County by W.P. Boyer, July 16, 1969. Determined by D.M. Weisman. This is a new State record. (Boyer, Rouse). Also occurs in Arizona, California, Illinois, Iowa, Kansas, Minnesota, Missouri, Nebraska, New Mexico, Pennsylvania, South Carolina, Texas, Utah. (PPD).

CITRUS

AN ARMORED SCALE (*Unaspis citri*) - FLORIDA - Scattered on 10 percent of 10,000 citrus trees in nursery at Apopka, Orange County, December 19 (Graddy); all instars light to moderate on about 10 percent of 12,000 citrus trees in nursery at Yalaha, Lake County (Henderson).

CALIFORNIA RED SCALE (*Aonidiella aurantii*) - ARIZONA - One additional infestation found at Tucson, Pima County. (Ariz. Coop. Sur.).

OTHER TROP. & SUBTROP. FRUITS

A BARK BEETLE (*Xylosandrus compactus*) - FLORIDA - Continues problem on many kinds of plants. Adults abundant on branches of avocado and mango at Homestead, Dade County, December 4-11. (Wolfenbarger).

ORNAMENTALS

AN APHID (*Neophyllaphis podocarpi*) - FLORIDA - Adults on 25 percent of 200 *Podocarpus macrophyllus* plants in nursery at Orlando, Orange County, December 12. (Ware). This recently introduced species becoming more widespread in peninsula area. (Fla. Coop. Sur.).

TEA SCALE (Fiorinia theae) - FLORIDA - All instars moderate on Camellia japonica in nursery at Ocala, Marion County, December 16 (Holder); moderate to severe on 200 C. japonica at Ormond Beach, Volusia County, December 18 (Holley, Pott).

FOREST AND SHADE TREES

A PYRALID MOTH (Herculia intermedialis) - MISSOURI - Larvae damaged foliage of juniper at Rolla, Phelps County, summer 1969; adults emerged indoors September 14 to November 6. Two adults collected at lights at Columbia, Boone County, June 27, 1966, and July 2, 1969, by W.S. Craig. These are new State and county records. (Munson). Reported from Connecticut, Delaware, Illinois, Indiana, Maryland, Massachusetts, New York, and Rhode Island. Also known from spruce. (PPD).

MAN AND ANIMALS

SCREW-WORM (Cochliomyia hominivorax) - No cases reported in U.S. December 21-27. Total of 36 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico December 14-20 as follows: Sonora 30, Chihuahua 2, Coahuila 1, Tamaulipas 3. Total of 8 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 568,000; Mexico 86,440,000. (Anim. Health Div.).

HOG LOUSE (Haematopinus suis) - MISSISSIPPI - Averaged less than 1 behind each ear on 50 hogs at State College, Oktibbeha County. (Sartor).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

CARIBBEAN FRUIT FLY (Anastrepha suspensa) - FLORIDA - Trapped 2,984 during November 1969; counts show increase in 8 counties, decrease in 13; total decrease 30 percent statewide from previous years. (PPD).

CITRUS BLACKFLY (Aleurocanthus woglumi) - MEXICO - Biological Control Zone - Inspected 56,029 trees in municipios Hidalgo, Guemez, Padilla, and Llera in Tamaulipas; total of 787 trees infested. Chemical Control Zone - Inspected 47,881 trees in 6 municipios of Nuevo Leon and 1,794 trees in 4 municipios of Tamaulipas. Total of 1,442 trees infested in municipios Cadereyta, Hualahuises, and Montemorelos, Nuevo Leon. Total of 35 trees infested in Reynosa, Tamaulipas. This is a new city record. Inspected 2,333 trees in 3 municipios in Sonora and 3 municipios in Baja California, all negative. (PPD Mex. Reg., Nov.).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - ALABAMA - Winged males emerged from mounds throughout south and central areas. No females observed in flight. (Barwood et al.).

PINK BOLLWORM (Pectinophora gossypiella) - MEXICO - Survey in western area completed during November. At Caborca, 699 bushels of gin trash revealed 9,636 larvae, while 1,398 moths trapped at Mexicali and 1,191 at San Luis. (PPD Mex. Reg.)

SOYBEAN CYST NEMATODE (Heterodera glycines) - INDIANA - Specimens collected in Posey County by R.L. Cummings, August 13, 1969. Determined by V.H. Owens and confirmed by A.M. Golden. This is a new county record. (PPD).

HAWAII INSECT REPORT

General Vegetables - Larval damage of BEET ARMYWORM (*Spodoptera exigua*) heavy to severe in 1.5 acres of green onions at Lihue, Kauai; infestation 90 percent. At Waianae, Oahu, 20 percent of all leaves in 0.25 acre of green onions infested; as much as 50 percent of leaves of some plants affected in both areas. (Sugawa, Kawamura, Dec. 19). All instars of BEAN FLY (*Melanagromyza phaseoli*) heavy in 600 square feet of snap beans at Haiku, Maui; severe on 95 percent of seedlings. (Ah Sam, Miyahira, Dec. 19).

Fruits and Nuts - COCONUT SCALE (*Aspidiotus destructor*) light to moderate on *Syngonium auritum* at Kaneohe, Oahu. Numerous adult scales parasitized by 2 species of EULOPHID WASPS, *Aphytis chrysomphali* and *Aphytis* sp. (Funasaki, Dec. 19).

Forest and Shade Trees - A SOFT SCALE (*Coccus elongatus*) heavy on twigs of several *Acacia koa* trees at 2,300 feet elevation at Kokee, Kauai. (Sugawa, Dec. 19).

Man and Animals - MOSQUITOES collected from 52 traps during November on Oahu: *Aedes vexans nocturnus* 98, *Culex pipiens quinquefasciatus* (southern house mosquito) 1,835. *Aedes* catches per trap ranged 0-22 at Laie. *Culex* catches ranged 0-240 at Kailua. (Mosq. Contr. Br., Dept. of Health, Dec. 19).

DETECTION

New State Records - NOCTUID MOTHS - CALIFORNIA - Single male specimens of *Apamea indocilis* and *Sideridis rosea* trapped in July and May 1969, respectively, at Fieldbrooks, Humboldt County, by B. Brothers. Determined by W.R. Bauer. (Cal. Coop. Rpt.). *A. indocilis* occurs in Oregon and Washington; *S. rosea* occurs in eastern U.S. and as far west as Colorado and Alberta. (PPD).

A NOCTUID MOTH (*Stibadium spumosum*) - ARKANSAS - Crittenden County (p. 3).
A PYRALID MOTH (*Herculia intermedialis*) - MISSOURI - Boone County (p. 4).

New County Records - A PYRALID MOTH (*Herculia intermedialis*) - MISSOURI - Phelps (p. 4). SOYBEAN CYST NEMATODE (*Heterodera glycines*) - INDIANA - Posey (p. 4).

CORRECTIONS

CEIR 19(52):906 - CONVERGENT LADY BEETLE (*Hippidamia convergens*) should read CONVERGENT LADY BEETLE (*Hippodamia convergens*).

Weather continued from page 2.

TEMPERATURE: Temperatures averaged above normal from the Pacific Ocean to the western Great Plains. The first part of the week was very warm over much of this area, but a cooling trend dropped minimums to below freezing as far south as the upper Rio Grande and to below zero in the Colorado Rockies. Maximums in the 20's and 30's were common from the Canadian border to the central portions of Arizona and New Mexico on Sunday. Cold weather persisted over the Central and East throughout the week. The West became progressively colder until Christmas Day which at some locations was the coldest Christmas on record. Albany, New York, set a new record minimum for December when on Christmas Day the temperature dropped to 22° below zero. Friday brought subzero temperatures to eastern Iowa and northern Illinois. New Orleans, Louisiana, registered 32° Friday morning. Much of the lower Missouri, middle Mississippi, and Ohio River Valleys averaged 7° to more than 12° below normal. (Summary supplied by Environmental Data Service, ESSA).

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Part XXIII

Additional copies of Parts I through XXIV of this bibliography are available from Economic Insect Survey and Detection.

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ECONOMIC INSECT SURVEY AND DETECTION

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COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

COMMON CATTLE GRUB moderate in backs of cattle in Oklahoma. (p. 16).

Prediction

CHINCH BUG not expected to be a problem during 1970 in Illinois. (p. 15).

Detection

A PLANARIAN FLATWORM reported for first time in Arizona. (p. 16).

For new county and island records see page 18.

Special Reports

The 1970 outlook for GRASSHOPPERS based on the 1969 adult survey. See centerfold map.

Insect Detection in the United States in 1969. Six new Western Hemisphere records reported. (pp. 19-26).

Reports in this issue are for week ending January 2 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance.....15

Insects Affecting

Corn, Sorghum, Sugarcane.....15	Forest and Shade Trees.....15
Small Grains.....15	Man and Animals.....16
Forage Legumes.....15	Households and Structures.....16
Citrus.....15	

Beneficial Insects.....16

Federal and State Plant Protection Programs.....17

Hawaii Insect Report.....17

Detection.....18

Light Trap Collections.....18

Insect Detection in the United States in 1969.....19

Grasshopper Adult Survey - Fall 1969 (map) centerfold.

WEATHER BUREAU'S 30-DAY OUTLOOK

JANUARY 1970

The Weather Bureau's 30-day outlook for January is for temperatures to average below seasonal normals over most of the Nation except for near normal in northern border States from the west coast to the Great Lakes and also along the central and north Pacific coast and the south Atlantic coast. Precipitation is expected to exceed normal over the eastern half of the Nation as well as the southern Plains and the southern Plateau. Subnormal amounts are indicated for the North-west and western portions of the northern Plains. Elsewhere near normal precipitation is in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price \$5.00 a year.

WEATHER OF THE WEEK ENDING JANUARY 5

HIGHLIGHTS: The New Year has brought the coldest temperatures of the season to much of the Nation. Deep snow, glazed roads, and heavy rain hampered travel and outdoor work.

PRECIPITATION: A massive storm struck the Southwest early in the week bringing a mixture of snow, sleet, and freezing rain to the southern Rockies and spreading eastward over a 10-State area. Snow accumulated to a foot or so in the mountains of northern New Mexico and to 6 inches in the lower Plains. Severe glazing in central Texas and Oklahoma broke powerlines and tree limbs. Heavy thunderstorms occurred from southeast Texas to the middle Atlantic coast. The heavy rain in West Virginia, central and eastern Kentucky, and southwestern Virginia melted the snow cover causing widespread flooding along the small rivers. Two persons were drowned and hundreds of families were left homeless before the rivers receded in the later part of the week. Tornadoes struck in Louisiana and Mississippi. Freezing rain iced highways in Ohio, Pennsylvania, southeast New York, and southeast New England. New Year's day brought wet cloudy weather to almost the entire Nation with heavy snow and rain hampering travel in many parts. Snow accumulated to 78 inches at Paradise Ranger Station, Washington, 40 inches in Lead, South Dakota, and to near 40 inches in the upper Hudson River Valley.

Weather of the week continued on page 18.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

BEEF LEAFHOPPER (*Circulifer tenellus*) - CALIFORNIA - Precipitation in San Joaquin Valley improved vegetation. Many westside beef leafhopper reproductive areas now favorable for first time. Winter spray operations delayed due to weather. Mapping completed on 118,400 acres of Plantago and Verbena in Imperial Valley, an unusually large acreage of host plants. (Cal. Coop. Rpt.).

CORN LEAF APHID (*Rhopalosiphum maidis*) - NEW MEXICO - Medium on barley in Deming area, Luna County. (N.M. Coop. Rpt.).

GREENBUG (*Schizaphis graminum*) - OKLAHOMA - Ranged 1-25 per linear foot on Payne County wheat week ending December 27. Currently decreasing on Tillman County wheat; ranged 20-70 per linear foot in several fields. Averaged 20-25 per linear foot on Cotton County wheat. Light to moderate in Kingfisher County. (Okla. Coop. Sur.).

SPOTTED ALFALFA APHID (*Therioaphis maculata*) - ARIZONA - Averaged 2,000+ per 100 sweeps of alfalfa in one field in Yuma County; showing purple and yellowed leaves. (Ariz. Coop. Sur.).

CORN, SORGHUM, SUGARCANE

SOUTHWESTERN CORN BORER (*Diatraea grandiosella*) - MISSOURI - Overwintering survey conducted in 8 southeastern counties. Averaged 21.5 percent of plants infested and 10.3 percent girdled. (Munson).

SMALL GRAINS

CHINCH BUG (*Blissus leucopterus*) - ILLINOIS - Surveys conducted in 23 counties; all populations uniformly low and considered noneconomic. Not expected to be problem in 1970. (Ill. Ins. Rpt.).

WINTER GRAIN MITE (*Penthaleus major*) - OKLAHOMA - Ranged 150-200 per linear foot in wheat in Tillman County and 50-75 in Cotton County. (Okla. Coop. Sur.).

FORAGE LEGUMES

PEA APHID (*Acyrtosiphon pisum*) - ARIZONA - Averaged 400 per 100 sweeps of alfalfa in one field on Yuma Mesa in Yuma County. (Ariz. Coop. Sur.).

CITRUS

BROWN SOFT SCALE (*Coccus hesperidum*) - ARIZONA - Treatment required in citrus greenhouses at Yuma in Yuma County. (Ariz. Coop. Sur.).

FOREST AND SHADE TREES

FOREST TENT CATERPILLAR (*Malacosoma disstria*) - MINNESOTA - Egg masses in northern area checked in November and December 1969: Egg parasitism 3.93 percent, dead prelarvae 0.77 percent, and dead eggs 5.63 percent. (Minn. Pest Rpt.).

AN APHID (*Lachnus salignus*) - CALIFORNIA - Heavy on weeping willows locally at Nevada City, Nevada County. (Cal. Coop. Rpt.).

AN APHID (*Essigella pini*) - OKLAHOMA - Continues active on pines at Stillwater, Payne County. Up to 10 per terminal. (Okla. Coop. Sur., Dec. 27).

MAN AND ANIMALS

SCREW-WORM (*Cochliomyia hominivorax*) - No cases reported in U.S. December 28, 1969, to January 3, 1970. Total of 57 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico December 21-27 as follows: Territorio sur de Baja California 2, Sonora 26, Chihuahua 28, Tamaulipas 1. Total of 17 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 168,000; Mexico 81,880,000. (Anim. Health Div.).

COMMON CATTLE GRUB (*Hypoderma lineatum*) - OKLAHOMA - Grubs ranged 0-16 (averaged 5) per head of dairy cattle in Mayes County; light in beef cattle. Ranged 0-31 (averaged 8) in yearling steers and 0-22 (averaged 5) in mature cows in Payne County. Ranged 0-27 (averaged 7) grubs per head in yearling heifers and steers in Osage County. (Okla. Coop. Sur.).

FACE FLY (*Musca autumnalis*) - CALIFORNIA - Collected in house at Point Reyes Station, Marin County, for new county record. Collected and identified by D. Linsdale December 17. This is most southern known occurrence in State. Continues household nuisance in other areas. Activity has not followed pattern of residential heating. Nuisance occurrence much later than in other States. (Cal. Coop. Rpt.).

BROWN RECLUSE SPIDER (*Loxosceles reclusa*) - IOWA - The following are new county records. Ames, Story County, September 16. Muscatine, Muscatine County, by E. Mathew and R. Bosch October 5; determined by J. Laffoon; Carroll, Carroll County, by P. Fasbender in October; determined by H.J. Stockdale and S.O. Ryan. Davenport, Scott County, on November 6; determined by S.O. Ryan. Creston, Union County, on November 10; determined by S.O. Ryan. (Iowa Ins. Inf.). OKLAHOMA - Infested residence in Payne County. (Okla. Coop. Sur.).

SHORT-NOSED CATTLE LOUSE (*Haematopinus eurysternus*) - OKLAHOMA - Lice, mostly this species, light on cattle in Mayes County. (Okla. Coop. Sur.).

HOUSEHOLDS AND STRUCTURES

CASEMAKING CLOTHES MOTH (*Tinea pellionella*) - MICHIGAN - Moderate colony (about 50 cases) in Livingston County farmhouse. Largest discovery of species in many years. (Janes, Dec. 29).

RING-LEGGED EARWIG (*Euborellia annulipes*) - OKLAHOMA - Annoying in motels and restaurants in Bryan and Carter Counties. (Okla. Coop. Sur.).

BENEFICIAL INSECTS

A PLANARIAN FLATWORM (*Bipalium kewense*) - ARIZONA - Specimen collected by I.J. Shields, December 20, 1969, in Maricopa County. Determined by A.R. Mead. This is a new State record. Predaceous on mites, slugs, and small vermin. (Ariz. Coop. Sur.). Also recorded from New Jersey, Ohio, Illinois, District of Columbia, Georgia, Florida, Louisiana, California, and Puerto Rico. (PPD).

CONVERGENT LADY BEETLE (*Hippodamia convergens*) - OKLAHOMA - Light in Tillman County wheatfields. (Okla. Coop. Sur.).

AN ACARID MITE (*Thyreophagus entomophagus*) - OKLAHOMA - Common under dead euonymus scales on euonymus at Stillwater, Payne County. (Okla. Coop. Sur., Dec. 27).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

PINK BOLLWORM (Pectinophora gossypiella) - CALIFORNIA - Single cotton plant grown in yard produced 2 fourth instars in Casa de Oro, Spring Valley, San Diego County. Area at least 50 miles from nearest commercial or experimental cotton with a mountain range between. Plant fumigated. (Cal. Coop. Rpt.).

WHITE GARDEN SNAIL (Theba pisana) - CALIFORNIA - First winter application of poison bait completed at Manhattan Beach, Los Angeles County. Results in this area excellent. Estivation cycle began to break with first fall rains. (Cal. Coop. Rpt.).

HAWAII INSECT REPORT

Turf and Pastures - COTTONY-CUSHION SCALE (Icerya purchasi) heavy and scattered on greenleaf desmodium (Desmodium intortum) in 100 acres of pastureland at Honomalino, Hawaii; severe in 32 acres. (Yoshioka, Dec. 26). Adults of a GRASS WEBWORM (Herpetogramma licarsisalis) heavy on turf in park at Mililani, Oahu; larvae and/or pupae 10-12 per square foot. (Kawamura, Dec. 26).

General Vegetables - All stages of BEAN FLY (Melanagromyza phaseoli) still trace on commercial snap beans at Waimanalo and Waianae, Oahu; heavy on unsprayed backyard plantings at Lanai City, Lanai. (Fujimoto, Kawamura, Dec. 26). All stages of SOUTHERN GREEN STINK BUG (Nezara viridula) medium in 5 acres of scattered plantings of pigeonpea, cowpea, and okra at Kaumakani, Kauai. (Sugawa, Dec. 26). BEE T ARMYWORM (Spodoptera exigua) larvae moderate to heavy on 5,000 square feet of green onions at Koko Head, Oahu; infested half of leaves. DIAMONDBACK MOTH (Plutella xylostella) larvae and adults generally trace to light on daikon and white stem cabbage at Koko Head. (Kawamura).

Nuts - Medium to heavy colonies of COCONUT SCALE (Aspidiotus destructor) scattered on older leaves of 22 coconut trees at Hawaii-kai, Oahu. Nymphs and adults of Telsimia nitida (a lady beetle) abundant. (Kawamura).

Ornamentals and Shade Trees - HAU LEAF MINER (Parectopa haucicola) larval mines 2-8 per leaf on hau (Hibiscus tiliaceus) in upper Nuuanu, Oahu. HIBISCUS LEAF MINER (P. hibiscella) larvae and/or pupae 2-5 per leaf on hibiscus at Waiahole, Oahu. (Funasaki, Dec. 26). All stages of GREEN SCALE (Coccus viridis) heavy on many gardenias in residential areas at Hawaii-kai, Kaneohe, and Waimanalo on Oahu. Many leaves covered with sooty mold. (Funasaki). WESTERN FLOWER THRIPS (Frankliniella occidentalis) light to medium on commercial chrysanthemums at Koko Head, Oahu. Injured about 25 percent of blossoms and buds. (Kawamura).

Man and Animals - STABLE FLY (Stomoxys calcitrans) adults heavy on pastured cattle and horses at Makawao, Maui. (Miyahira, Dec. 26). A MILLIPED (Trigoniulus lumbricinus) moderate. Migrating from weeds into residential premises; general nuisance in Hawaii-kai area of Honolulu, Oahu. (Nakao). CLUSTER FLY (Pollenia rudis) adults heavy, continue to plague residents at Volcano, Waimea, Kona, Kohala, and Paauilo. Heavy on outskirts of Hilo, Hawaii. (Kobayashi).

Beneficial Insects - Adults of a SCIOMYZID FLY (Sepedon sauteri) numerous in November on vegetation in marshy crater near Kulani Puu, Hawaii (elevation 4,600 feet), for a new island record. Previously recorded only from Kauai, Maui, and Oahu. (Hardy, Dec. 26).

DETECTION

New State Record - A PLANARIAN FLATWORM (Bipalium kewense) - ARIZONA - Maricopa County (p. 16).

New County and Island Records - BROWN RECLUSE SPIDER (Loxosceles reclusa) IOWA - Story, Muscatine, Carroll, Scott, and Union (p. 16). FACE FLY (Musca autumnalis) CALIFORNIA - Marin (p. 16). A SCIOMYZID FLY (Sepedon sauteri) HAWAII-Hawaii (p.17).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville, 12/24-30 - Armyworm (Pseudaletia unipuncta) 3, black cutworm (Agrotis ipsilon) 1, granulate cutworm (Feltia subterranea) 5.

Weather of the week continued from page 14.

TEMPERATURE: Temperatures dropped sharply over the western half of the United States ending the warm spell which prevailed over much of the area since early December. Much of the Great Basin averaged 6° to 10° below normal and the central and southern Great Plains averaged 10° to 20° colder than normal. Many western areas were 10° to 20° colder than in previous weeks. The cold in the East intensified as the coldest weather of the season spread southward. Brief warming occurred in the Southeast on Wednesday with afternoon temperatures climbing into the 70's from Mobile, Alabama, to Norfolk, Virginia, but by Sunday morning the freezing line had pushed into southern Florida and freezing temperatures occurred in the 48 States. Bitter cold hit the Northern States with the mercury falling far below zero in the northern and central Rocky Mountains and eastward to New England. Yellowstone, Montana, registered 40° below zero on Monday morning, January 5. Temperatures of -20° to -40° were common in the Colorado Rockies. Temperatures colder than -20° also occurred in New York and New England. The upper Hudson River Valley averaged more than 12° colder than normal. (Summary supplied by Environmental Data Service, ESSA.)

INSECT DETECTION IN THE UNITED STATES - 1969

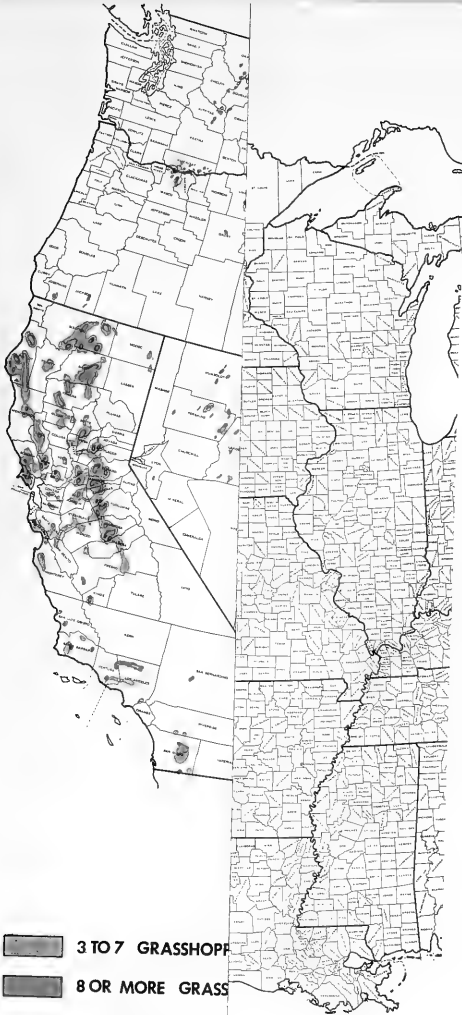
Ten new United States records were reported in the Cooperative Economic Insect Report during the year. These included 6 species new to the Western Hemisphere - 4 in Hawaii and 2 in California. In addition, there were 130 new State records and one District of Columbia record. Those States having 5 or more were Hawaii 10, Maryland 10, Arkansas 10, California 6, Missouri 6, Nevada 5, and Oregon 5. Records included gastropods and related arthropods as well as insects.

NEW UNITED STATES RECORDS

<u>Species</u>	<u>State</u>	<u>County</u>	<u>Probable Origin</u>	<u>Collected on</u>	<u>CEIR page</u>	<u>Economic Importance</u>
<u>Achatina fulica</u> Bowdich 1/ <u>giant African Snail</u>	Florida	Dade	-	In yard of residence	757	Serious
<u>Anthrenus coloratus</u> Reitter 2/ <u>a dermestid beetle</u>	Virginia	City of Richmond	Asia, Africa, or Europe	Tobacco warehouse	61	Minor
<u>Bestiola mira</u> Nikol'skaya 3/ <u>a eulophid wasp</u>	Hawaii	Oahu Island	Japan, USSR	Reared from an armored scale	152	Beneficial
<u>Bulimulus guadalupensis</u> (Bruguïère) <u>a snail</u>	Florida	Manatee	West Indies	In nursery	856	Unimportant
<u>Delphacodes nigrifacies</u> Muir <u>a delphacid planthopper</u>	Florida	Palm Beach	Costa Rica, Guyana, or Martinique	Bahia grass	395	Little known
<u>Homotoma ficus</u> (Linnaeus) 4/ <u>fig psyllid</u>	California	Contra Costa	Mediterranean region	<u>Ficus carica</u>	603	Potentially serious
<u>Lispe leucospila</u> (Wiedemann) 3/ <u>a muscid fly</u>	Hawaii	Oahu Island	Taiwan, Sumatra, Java	On lawn	283	Noneconomic
<u>Mirificarma formosella</u> (Hübner) 4/ <u>European clover leaf tier</u>	California	Placer	Europe	Ladino clover	322	Potentially economic
<u>Oncocephalus pacificus</u> KirkaIdy 3/ <u>an assassin bug</u>	Hawaii	Oahu Island	Pacific Islands	-	368	Unknown
<u>Pison punctifrons</u> Shuckard 3/ <u>a sphecid wasp</u>	Hawaii	Oahu Island	Southeast Asia, Philippines, Micronesia	-	241	Preys on small spiders

ADDITIONAL NEW STATE AND DISTRICT OF COLUMBIA RECORDS

<u>Species</u>	<u>State</u>	<u>County</u>	<u>Collected on</u>	<u>CEIR page</u>
<u>Aciurina thoracica</u> a tephritid fly	Oregon	Klamath	-	242
<u>Acrobasis betulella</u> birch tube maker	Delaware	New Castle	gray birch	499
<u>Acrobasis juglandis</u> pecan leaf casebearer	Pennsylvania	Lycoming	English walnut	497
<u>Aculus schlechtendali</u> apple rust mite	Vermont	Addison	apple	201
<u>Adelges tsugae</u> an adelgid	Pennsylvania	Montgomery	eastern hemlock	875
<u>Agromyza spiraeae</u> a leaf miner fly	Massachusetts	Hampshire	alfalfa	543
<u>Aleuroplatus quercusaquaticae</u> a whitefly	Texas	Harris	post oak	242
<u>Alphina glauca</u> a fulgorid planthopper	South Carolina	Colleton	blacklight trap	829
<u>Alphitobius diaperinus</u> lesser mealworm	Wisconsin	Barron	in turkey litter	242
<u>Amphimallon majalis</u> European chafer	Rhode Island	Providence	blacklight trap	554
<u>Ampulex ferruginea</u> an ampulicid wasp	Florida	Flagler	Steiner trap in tangerine tree	765
<u>Anomoea laticlavata</u> a leaf beetle	West Virginia	Pendleton	Virginia pine	827
<u>Anthrenus coloratus</u> a dermestid beetle	Arizona	Yuma	in mud dauber nest and old grain sacks	806
	California	-	in alfalfa	61
	District of Columbia	-	in home and in dried insects	61
	Illinois	Cook	cacao bean hulls	61
	Indiana	Tippecanoe	-	404
	Maryland	Montgomery	in lamp globe	61
	New Mexico	Dona Ana	in tack room of racetrack	649



3 TO 7 GRASSHOPPERS PER ACRE
 8 OR MORE GRASSHOPPERS PER ACRE

NECESSITY FOR CONTROL ON CROPS
 WILL DEPEND UPON TYPE OF PLANT
 AND CONDITION OF VEGETATION.
 DETAILED INFORMATION CONCERNING
 INFESTATION AREAS CAN BE OBTAINED
 FROM COUNTY OFFICIALS, COUNTY AGENTS,
 OR PERSONNEL.
 PREPARED IN PPD, ARS, USDA
 DECEMBER 15, 1969

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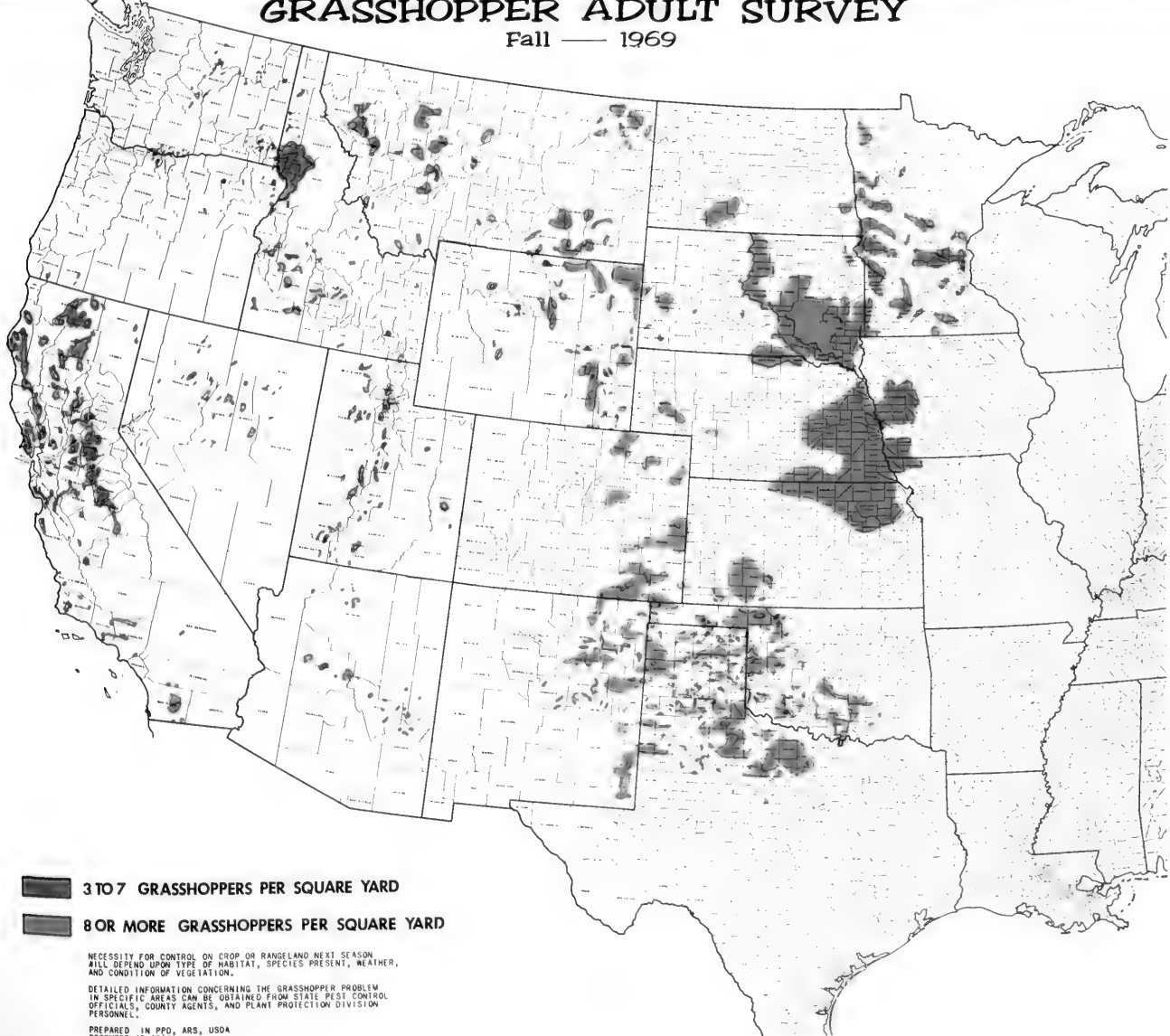
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GRASSHOPPER ADULT SURVEY

Fall — 1969



3 TO 7 GRASSHOPPERS PER SQUARE YARD

8 OR MORE GRASSHOPPERS PER SQUARE YARD

NECESSITY FOR CONTROL ON CROP OR RANGELAND NEXT SEASON
WILL DEPEND UPON TYPE OF HABITAT, SPECIES PRESENT, WEATHER,
AND CONDITION OF VEGETATION.

DETAILED INFORMATION CONCERNING THE GRASSHOPPER PROBLEM
IN SPECIFIC AREAS CAN BE OBTAINED FROM STATE PEST CONTROL
OFFICIALS, COUNTY AGENTS, AND PLANT PROTECTION DIVISION
PERSONNEL.

PREPARED IN PPD, ARS, USDA
DECEMBER 15, 1969

DEPARTMENT OF AGRICULTURE
 RESEARCH SERVICE
 EXTENSION DIVISION

per adult surveys made during the late summer and fall of 1969. The
 and indicates the potential severity of infestations for 1970.
 s, and indicate those areas where control may be necessary in 1970.
 y the farmers with technical assistance from Division and State personnel.
 and Midwestern States. Areas on the map are diagrammatic. Within

LOPPER INFESTATIONS
 EGIONS, FALL 1969

(shown in red)

REGION AND STATE	LANDOWNERSHIP - ACRES		TOTAL ACRES
	PRIVATE & STATE	PUBLIC DOMAIN	
New Mexico	897,000	26,000	923,000
Oregon	14,200	19,500	33,700
Utah	96,500	282,360	378,860
Washington	85,000	75,000	160,000
Wyoming	180,380	76,760	257,140
SOUTHERN			
Oklahoma	690,000	—	690,000
Texas	1,856,618	—	1,856,618

Research Service, in cooperation with various State Agencies concerned.

<u>Species</u>	<u>State</u>	<u>County</u>	<u>Collected on</u>	<u>CEIR page</u>
<u>Aphaenogaster tennesseensis</u> an ant	Arkansas	Crawford	-	195
<u>Aphaenogaster texana texana</u> an ant	Arkansas	Crittenden	-	195
<u>Aphaenogaster treatae</u> <u>pluteicornis</u> an ant	Arkansas	Washington	-	195
<u>Aphycus portoricensis</u> an encyrtid wasp	Hawaii	Oahu 5/	reared from <u>Asterolecanium</u> <u>pustulans</u>	72
<u>Apion roseae</u> a weevil	Arkansas	Crawford	<u>Desmodium</u> sp.	524
<u>Apion rostrum</u> a weevil	Arkansas	Crawford	<u>Desmodium</u> sp.	524
<u>Asiphum rosettei</u> an aphid	Utah	Cache	aspen	551
<u>Banasa euchlora</u> a stink bug	Missouri	Camden	residence	23
<u>Brachyrhinus meridionalis</u> a weevil	Idaho	Nez Perce	privet	328
<u>Bucculatrix thurberiella</u> cotton leaf perforator	Florida	Indian River	cotton	379
<u>Calomycterus setarius</u> a Japanese weevil	West Virginia	Raleigh	-	218
<u>Capitophorus patonkus</u> an aphid	Utah	Kane	-	41
<u>Ceuthophilus seclusus</u> P camel cricket	Illinois	Cook	house	553
<u>Chaetocnema confinis</u> sweetpotato flea beetle	Arizona	Maricopa	dichondra lawns	571
<u>Chaetocnema opacula</u> a flea beetle	Oregon	Josephine	Merion blue- grass	813
<u>Chaetopsylla lotoris</u> a flea	Virginia	Amherst	gray fox	21
<u>Choristoneura parallela</u> a tortricid moth	Indiana	Tippecanoe	alfalfa	425
<u>Chrysoclista linneella</u> a cosmopterygid moth	Michigan	Macomb	-	550
<u>Cicadula intermedia</u> a leafhopper	Washington	Benton	-	332

UNITED STATES DEPARTMENT OF AGRICULTURE
 AGRICULTURAL RESEARCH SERVICE
 PLANT PROTECTION DIVISION

TO COOPERATORS:

This map is based upon the results of cooperative grasshopper adult surveys made during the late summer and fall of 1969. The survey reveals where and how many grasshoppers infest an area, and indicates the potential severity of infestations for 1970. Nymphal surveys, made in the spring, determine population densities, and indicate those areas where control may be necessary in 1970.

Control on grasshopper infested croplands will be handled by the farmers with technical assistance from Division and State personnel. The infested rangeland areas total 6,937,918 acres in 15 Western and Midwestern States. Areas on the map are diagrammatic. Within these areas, infestations may be solid or spotted.

RANGELAND GRASSHOPPER INFESTATIONS
 ACREAGE BY REGIONS, FALL 1969

(Areas shown in red)

REGION AND STATE	LANDOWNERSHIP - ACRES		TOTAL ACRES	REGION AND STATE	LANDOWNERSHIP - ACRES		TOTAL ACRES
	PRIVATE & STATE	PUBLIC DOMAIN			PRIVATE & STATE	PUBLIC DOMAIN	
CENTRAL							
Kansas	40,000	—	40,000	New Mexico	897,000	26,000	923,000
Nebraska	20,000	—	20,000	Oregon	14,200	19,500	33,700
				Utah	96,500	282,360	378,860
WESTERN				Washington	85,000	75,000	160,000
Arizona	—	28,000	28,000	Wyoming	180,380	76,760	257,140
California	351,090	5,000	356,090				
Colorado	18,000	—	18,000	SOUTHERN			
Idaho	906,000	864,000	1,770,000	Oklahoma	690,000	—	690,000
Montana	225,500	143,500	369,000	Texas	1,856,618	—	1,856,618
Nevada	19,510	18,000	37,510				

The survey was planned and performed by the Plant Protection Division, Agricultural Research Service, in cooperation with various State Agencies concerned.

<u>Species</u>	<u>State</u>	<u>County</u>	<u>Collected on</u>	<u>CEIR page</u>
<u>Cinara pilicornis</u> an aphid	Maryland	Anne Arundel	hemlock	149
<u>Clastoptera juniperina</u> a spittlebug	Idaho	Oneida	<u>Juniperus scopulorum</u>	722
<u>Copris anaglypticus</u> a scarab	Ohio	Trumbull	Japanese beetle trap	408
<u>Cryptotermes brevis</u> a powder-post termite	Alabama	Houston	home	313
<u>Culiseta silvestris</u> <u>minnesotae</u> a mosquito	Maryland	Queen Annes	light trap	766
<u>Cyclocephala borealis</u> northern masked chafer	Tennessee	Hamilton	Japanese beetle trap	408
<u>Cyclocephala immaculata</u> southern masked chafer	Tennessee	Rutherford	Japanese beetle trap	408
<u>Dactynotus pseudambrosiae</u> an aphid	Vermont	Addison	<u>Cichorium intybus</u>	806
<u>Dasypyga alternosquamella</u> a phycitid moth	Utah	Wayne	mistletoe on ponderosa pine	767
<u>Dermatophagoides pteronyssina</u> an epidermoptid mite	Connecticut	New Haven	rug and upholstered furniture	253
<u>Dermestes frischi</u> a dermestid beetle	Ohio	Franklin	bird feathers	767
<u>Dissosteira pictipennis</u> a grasshopper	Nevada	Washoe	-	873
<u>Dyscinetus morator</u> a scarab	Missouri	-	Japanese beetle trap	408
<u>Elasmucha lateralis</u> a stink bug	California	Shasta	birch	688
<u>Empoasca stevensi</u> a leafhopper	Hawaii	Oahu 5/	plumeria	301
<u>Eriophyes gardeniella</u> an eriophyid mite	Hawaii	Oahu 5/	gardenia flowers	745
<u>Euborellia cincticollis</u> a carcinophorid earwig	New Mexico	Dona Ana	debris in vegetable garden	846
<u>Euphoria herbacea</u> a scarab	Tennessee	Rutherford	Japanese beetle trap	408
<u>Gillettea taraxaci</u> a cynipid wasp	Hawaii	Hawaii 5/	-	726
<u>Goeldichironomus holoprasinus</u> a midge	Hawaii	Oahu 5/	light trap	368

<u>Species</u>	<u>State</u>	<u>County</u>	<u>Collected on</u>	<u>CEIR page</u>
<u>Grapholitha molesta</u> oriental fruit moth	Utah	Utah	peach	765
<u>Gymnaetron netum</u> a weevil	Maryland	Howard	weeds	45
<u>Haematosiphon inodorus</u> poultry bug	Idaho	Owyhee	nest of golden eagle	862
<u>Heliothis paradoxa</u> a noctuid moth	Nevada	Clark	Bermuda grass	19
<u>Helix pomatia</u> a snail	Florida	Dade	outside wall of residence	854
<u>Herculia intermedialis</u> a pyralid moth	Indiana	Tippecanoe	spruce	898
<u>Heterococcus pulverarius</u> a mealybug	Nevada	Lyon	timothy	19
<u>Heterodera rostochiensis</u> golden nematode	Delaware	New Castle	potato farm	85
<u>Homoeosoma electellum</u> sunflower moth	Arkansas	Jackson	sunflower	178
<u>Ixodes texanus</u> a hard-backed tick	Pennsylvania	Westmoreland	raccoon	744
<u>Labidura riparia</u> an earwig	Nevada	Clark	soil	874
<u>Largus succinctus</u> a largid bug	Tennessee	Hardeman	cotton	873
<u>Lopidea chelifera</u> a plant bug	Utah	Washington	<u>Bassia</u> spp.	571
<u>Loxosceles laeta</u> a scytodid spider	California	Los Angeles	buildings	456
<u>Loxosceles reclusa</u> brown recluse spider	Iowa	Decatur	home	781
	New Mexico	Lea	home	690
	Ohio	Huron	home	387
<u>Loxosceles rufescens</u> a scytodid spider	Ohio	Franklin	building	281
<u>Loxosceles unicolor</u> a scytodid spider	New Mexico	Lea	house	744
<u>Megachile concinna</u> a leafcutting bee	Washington	Yakima Valley	<u>Megachile rotundata</u> nest	193
<u>Melipotis indomita</u> a noctuid moth	Hawaii	Oahu 5/	-	768
<u>Miccotrogus picirostris</u> clover seed weevil	Wyoming	Lincoln	-	284

<u>Species</u>	<u>State</u>	<u>County</u>	<u>Collected on</u>	<u>CEIR page</u>
<u>Microsania imperfecta</u> a platypezid fly	South Carolina	Oconee	smoke from sawmill	33
<u>Musca autumnalis</u> face fly	Arkansas	Benton	cattle	580
	Mississippi	Monroe	cattle	689
	Oklahoma	Cherokee	-	500
<u>Nasonovia ribisnigri</u> an aphid	Vermont	Addison	<u>Cichorium intybus</u>	806
<u>Nemobius fasciatus</u> a cricket	California	Fresno	on alfalfa	791
<u>Neodiprion taedae linearis</u> a conifer sawfly	Alabama	Limestone	loblolly pine	687
<u>Onychobaris depressa</u> a weevil	Arizona	Yuma	on airplane wing	651
<u>Ornithodoros concanensis</u> a soft-backed tick	Arkansas	Stone	nest of <u>Phoebe seyornis</u>	70
<u>Oulema melanopus</u> cereal leaf beetle	Maryland	Allegany	oats	437
	New York	Allegany	wheat	405
	Virginia	Highland	oats	501
<u>Paraleyrodes perseae</u> a whitefly	Hawaii	Oahu 5/	plumeria	72
<u>Parandra brunnea</u> a cerambycid beetle	Idaho	Ada	<u>Acer saccharinum</u>	723
<u>Periphyllus californiensis</u> <u>shinji</u> an aphid	New Jersey	Mercer	<u>Acer palmatum v. dissectum</u>	476
<u>Petrobia latens</u> brown wheat mite	North Dakota	Golden Valley	wheat	620
<u>Piesma ceramicum</u> a plesmid	California	Inyo	<u>Atriplex sp.</u>	863
<u>Plagiognathus delicatus</u> a plant bug	Delaware	New Castle	honeylocust	173
<u>Pogonomyrmex salinus</u> a harvester ant	Utah	Box Elder	-	571
<u>Porthetria dispar</u> gypsy moth	Delaware	Sussex	sex lure trap	670
	Maryland	Cecil	trap	708
	Virginia	Albemarle	trap	817

<u>Species</u>	<u>State</u>	<u>County</u>	<u>Collected on</u>	<u>CEIR page</u>
<u>Procecidochares atra</u> a tephritid fly	Wisconsin	Door	ammonia bait trap	242
<u>Psylla pyricola</u> pear psylla	Utah	Weber	pear orchard	804
<u>Psylla uncatoides</u> a psyllid	Arizona	Maricopa	acacia	755
<u>Rhizococcus cacticans</u> a mealybug	Washington	Whatcom	African-violet	192
<u>Rhyacionia buoliana</u> European pine shoot moth	Missouri	Jackson	Scotch pine	627
<u>Rhyacionia sonia</u> an olethreutid moth	South Carolina	Florence	pine	755
<u>Rhytidoporus indentatus</u> a cydnid bug	Hawaii	Hawaii 5/	light trap	848
<u>Sayomyia maculipes</u> a phantom midge	Texas	Brown	-	529
<u>Schizaphis graminum</u> greenbug	Nevada	Nye	corn	19
<u>Scutigera nodicercus</u> a symphytan	Missouri	Clark	soil near corn	716
<u>Sipha flava</u> yellow sugarcane aphid	Arkansas	Hempstead	sorghum	518
<u>Sminthurus dorsalis</u> a springtail	North Dakota	Oliver	irrigated alfalfa	897
<u>Smithistruma rostrata</u> an ant	Arkansas	Washington	-	195
<u>Solenobia walshella</u> a psychid moth	Missouri	Boone	hickory	328
<u>Sphenophorus minimus</u> a billbug	Rhode Island	Providence	orchard grass	3
<u>Sphenophorus sayi</u> a billbug	Maryland	Montgomery	Merion blue-grass sod	853
<u>Spodoptera exigua</u> beet armyworm	Maryland	Talbot	spinach	826
<u>Stegophylla quercina</u> an aphid	Maryland	Anne Arundel	<u>Quercus falcata</u>	580
<u>Stephanitis takeyai</u> a lace bug	Maryland	Montgomery	azalea	401
<u>Sternostoma tracheacolum</u> a rhinonyssid mite	Illinois	Cook	respiratory tract of parrot	690

<u>Species</u>	<u>State</u>	<u>County</u>	<u>Collected on</u>	<u>CEIR page</u>
<u>Tephritis opacipennis</u> a tephritid fly	Oregon	Deschutes	-	242
<u>Tetrastichus chrysopae</u> a eulophid wasp	Hawaii	Oahu 5/	cocoon of <u>Chrysopa</u> <u>lanata</u>	368
<u>Tribolium brevicornis</u> a tenebrionid beetle	Washington	Yakima	leafcutter bee nest material	175
<u>Trimerotropis helferi</u> a grasshopper	Oregon	Douglas	sand dunes	7
<u>Trisetacus pseudotsugae</u> an eriophyid mite	California	San Mateo	Douglas-fir	311
<u>Trogoderma inclusum</u> a dermestid beetle	Hawaii	Oahu 5/	feedstore	381
<u>Trupanea femoralis</u> a tephritid fly	Oregon	Jackson	-	242
<u>Tychius stephensi</u> red-clover seed weevil	Missouri	St. Charles	red clover	31

1/ New continental United States record; occurs in Hawaii.

2/ New North American record.

3/ New Western Hemisphere record but not known to occur in continental United States.

4/ New Western Hemisphere record.

5/ Island records.

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Cooperative
**ECONOMIC INSECT
REPORT**



Issued by

PLANT PROTECTION DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PROTECTION DIVISION

ECONOMIC INSECT SURVEY AND DETECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Economic Insect Survey and Detection
Plant Protection Division
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United States Department of Agriculture
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Hyattsville, Maryland 20782

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

No SCREW-WORM cases reported in the United States past 3 weeks. (p. 29).

COMMON CATTLE GRUB remains moderate in cattle in Oklahoma. (p. 29).

Special Reports

BOLL WEEVIL hibernation survey for fall of 1969 shows higher numbers than the fall of 1968 in all areas of the Carolinas, southern Tennessee, north delta and hill sections of Mississippi, and northeastern Louisiana. Counts were lower in south and central delta areas of Mississippi and in central Texas. (pp. 31-33).

Survey Methods. Selected References 1948. Part XXIV. (pp. 34-36).

Reports in this issue are for week ending January 9 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance.....29

Insects Affecting

 Deciduous Fruits and Nuts.....29 Man and Animals.....29

 Ornamentals.....29

Beneficial Insects.....29

Hawaii Insect Report.....30

Light Trap Collections.....30

Corrections.....30

Boll Weevil Hibernation Survey - Fall 1969.....31

Survey Methods. Selected References 1948. Part XXIV.....34

WEATHER OF THE WEEK ENDING JANUARY 12

HIGHLIGHTS: Bitter cold weather persisted over most of the eastern half of the Nation and, combined with strong winds, snow, sleet, and freezing rain halted travel and forced the closing of schools, factories, and industries at many locations. Some warming occurred late in the week.

PRECIPITATION: Generous rains fell along the Pacific coast from Washington to northern California with snow in the nearby mountains. The snow depth now exceeds 100 inches at a few locations in the Cascades. Light snow fell in the Rocky Mountains and Great Plains. Heavy snow fell in the lee of the Great Lakes with some falls in western New York exceeding 24 inches. Light snow fell as far south as northern and central Louisiana and flurries occurred in Tennessee. Sleet, freezing rain, and freezing drizzle fell in many areas from the Ohio River Valley to the northern edge of the Gulf States. Strong winds drifted the snow badly and the deep drifts and glazed roads hindered transportation. Many schools, factories, and businesses in the eastern half of the Nation closed for 1 or more days because of the adverse weather.

TEMPERATURE: Temperatures averaged slightly above normal over California and Nevada and much below normal over the rest of the Nation. Most of Montana and a large area from the central and southern Great Plains averaged 12° to 24° colder than normal. The temperature at Waterloo, Iowa, dropped below 0° about 10 p.m. Sunday evening, January 4, and did not climb to 0° again until Saturday afternoon, January 10. On Thursday afternoon the highest temperatures at Indianapolis, Indiana, and Columbus, Ohio, reached -3° and -2°, respectively. Only twice in 99 years have colder maximums occurred at Indianapolis and -2°, at Columbus was the coldest maximum in the 20th century. In many localities in Ohio, the temperature remained below zero for up to 40 hours. In about 1 year in 10, can temperatures in Ohio be expected to remain below zero for 15 hours. Several deaths from exposure were attributed to the subzero weather in Indiana which continued for 4 consecutive days. In many eastern areas, 20 to 40 m.p.h. winds added to the bite of the frigid temperatures. Temperatures over the West climbed to above normal late in the week and moderated slightly in the East over the weekend. (Summary supplied by Environmental Data Service, ESSA.)

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

GREENBUG (Schizaphis graminum) - ARIZONA - Light on early planted grains at Yuma, Yuma County. (Ariz. Coop. Sur.). KANSAS - None found on wheat December 30 and 31 in Saline, Ellsworth, and Lincoln Counties. Current survey negative in Shawnee, Osage, Wabaunsee, Geary, Jefferson, Douglas, Anderson, Neosho, and Labette Counties. (Martinez et al.).

DECIDUOUS FRUITS AND NUTS

PEACH TREE BORER (Sanninoidea exitiosa) - TENNESSEE - Light in treated nursery-grown peach trees in Warren County. (Warren).

SAN JOSE SCALE (Aspidiotus perniciosus) - FLORIDA - All instars on 10 percent of 1,200 pear plants in nursery at Glen St. Mary, Baker County, December 31, 1969. (Collins).

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) - CALIFORNIA - Adults heavy on bark and trunks of peach nursery stock at Lincoln, Placer County. (Cal. Coop. Rpt.).

ORNAMENTALS

A MEALYBUG (Pseudococcus microcirculus) - CALIFORNIA - Gravid adults heavy on orchid roots and planting media in orchid house at Soquel, Santa Cruz County. This species particularly damaging. (Cal. Coop. Rpt.).

AN ARMORED SCALE (Phenacaspis cockerelli) - FLORIDA - Adults heavy on all 30 areca palms in nursery at New Port Richey, Pasco County, December 30, 1969. (Williams).

A NOCTUID MOTH (Argyrogramma basigera) - PENNSYLVANIA - Heavy in small greenhouse in Union County. Variety of hosts damaged. (Gesell).

MAN AND ANIMALS

SCREW-WORM (Cochliomyia hominivorax) - No cases reported in U.S. January 4-10. Total of 55 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico December 28, 1969, to January 3, 1970, as follows: Baja California 1, Territorio sur de Baja California 1, Sonora 42, Chihuahua 10, Coahuila 1. Total of 6 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 468,000; Mexico 89,018,000. (Anim. Health Div.).

COMMON CATTLE GRUB (Hypoderma lineatum) - OKLAHOMA - Ranged 0-15 (average 8) per head in steers and 0-14 (average 5) in cows in Payne County. Moderate in Cotton County. (Okla. Coop. Sur.).

HOG LOUSE (Haematopinus suis) - OKLAHOMA - Moderate on hogs in Cotton County. (Okla. Coop. Sur.).

BENEFICIAL INSECTS

HONEY BEE (Apis mellifera) - ARIZONA - Of 89 apiaries (6,055 colonies) inspected during December 1969 in irrigated areas of Maricopa and Pinal Counties, 35 colonies burned and 4,347 found dead. (Ariz. Coop. Sur.).

AN ENCYRTID WASP (Comperia merceti) - OKLAHOMA - Light in home infested with Supella supellectilium (brown-banded cockroach) in Stillwater, Payne County. (Okla. Coop. Sur.).

HAWAII INSECT REPORT

Corn - Nymphs and adults of CORN PLANTHOPPER (Peregrinus maidis) heavy, up to 60 in whorls of young corn and under leaf sheaths of older plants in 10 acres of sweet corn at Halawa, Oahu. Predators absent. (Funasaki).

Pastures - Larvae of a GRASS WEBWORM (Herpetogramma licarsisalis) trace to light in pastures on Maui and Hawaii; trace in pastures on Oahu and Kauai. (Miyahira et al.).

General Vegetables - LEAF MINER FLIES (Liriomyza spp.) generally light in snap beans at Waianae, Oahu; moderate to heavy in 0.5 acre of young cucumber plants in same area. HEMISPHERICAL SCALE (Saissetia coffeae) heavy in 0.25 acre of bittermelon at Ewa, Oahu. (Sawa).

Beneficial Insects - LANTANA DEFOLIATOR CATERPILLAR (Hypena strigata) moderate to heavy on lantana along roadsides and in wastelands at Nawiliwili and Lihue, Kauai, at 3,000 feet elevation. (Sugawa). Probably a BRACONID (Opius melanagromyzae) recovered from field material at Waikapu, Maui, and Kaunakani, Kauai. Adults initially released on both islands in August 1969. (Sugawa, Miyahira).

Miscellaneous Pests - Total of 713 GIANT AFRICAN SNAILS (Achatina fulica) destroyed during December on Kauai; 710 at Poipu, 3 at Wahiawa and none at Nawiliwili. Poisoned bait applications continued at Poipu. No live snails recovered at Kona, Hawaii, during December. (Sugawa, Yoshioka).

Man and Animals - Total of 110 Aedes vexans nocturnus and 2,118 Culex pipiens quinquefasciatus collected in 52 light traps operated on Oahu during December. Aedes catches per trap ranged 0-40 (average 2.1) at Punaluu, and Culex catches ranged 0-524 (average 40.7) of Ewa. (Mosq. Contr. Br., Dept. of Health).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville, 12/31-1/8 - Black cutworm (Agrotis ipsilon) 3, granulate cutworm (Feltia subterranea) 5, variegated cutworm (Peridroma saucia) 1.

CORRECTIONS

CEIR 19(50):882 - Wheat: North Dakota, WSM should read WSS.

CEIR 19(50):893 - Legend: Add WSS, wheat stem sawfly.

Boll Weevil Hibernation Survey - Fall 1969

The fall collections of surface ground (woods) trash samples (two square yards per sample) have been completed in six Southern States by State and Federal agencies to determine the number of boll weevil (*Anthonomus grandis*) adults that went into hibernation. A total of 3 samples was collected at each location in the Carolinas, Mississippi, Louisiana, and Texas; 12 samples were taken in Tennessee. Thirty locations were sampled in each area in North and South Carolina; the number of counties per area from which samples were taken varied from 3 to 6. In Mississippi, a total of 45 samples was taken from 15 locations in each of 4 areas; each area was composed of 2 counties. A total of 45 locations was sampled in northeastern Louisiana: 20 locations in Madison Parish, 10 in Tensas Parish, and 5 each in East Carroll, West Carroll, and Richland Parishes. This is the second year trash samples have been collected in Richland Parish. In Texas, 75 samples were taken from 25 locations in 4 counties, with either 6 or 7 locations sampled in each county.

Average counts (live weevils per acre) were higher than those of 1968 in all areas of the Carolinas, the southern tier of counties in Tennessee, the north delta and hill sections of Mississippi, and in northeastern Louisiana. Counts were lower in the south and central delta areas of Mississippi and in central Texas. The number of weevils per acre entering hibernation in the central delta decreased from 2,052 in 1968 to 540 in 1969.

In Florence County, South Carolina, where fall examinations have been made since 1942 (except for the fall of 1946), the number of weevils per acre (5,918) is higher than in 1968 and about the same (5,972) as in the fall of 1966.

The survey in Tennessee was conducted in McNairy, Hardin, Fayette, and Hardeman Counties where infestations were heaviest during the growing season. Live weevils per acre averaged 1,815 in those counties. This compares with 1,210 in 1968, 7,580 in 1967, 7,120 in 1966, 1,211 in 1965, 807 in 1964, 1,089 in 1963, 3,633 in 1962, and 3,025 in 1961. The figures for 1965 through 1961 are for McNairy County only.

The State average for Mississippi was 3,105 live boll weevils per acre of ground trash. This compares with 2,768 in 1968, 6,304 in 1967, 2,956 in 1966, 7,325 in 1965, 4,545 in 1964, 3,010 in 1963, 6,213 in 1962, and 8,403 in 1961.

In the 5-parish area surveyed in northeast Louisiana, live boll weevils averaged 3,557 per acre. The average per parish was 4,518 in Madison, 2,091 in East Carroll, 4,596 in Tensas, 1,128 in Richland, and 1,451 in West Carroll. During the past 33 years that these records have been made in Madison Parish, there were only 10 years when the number of weevils per acre was higher than in 1969. In East Carroll Parish the number of weevils per acre was the largest since 1966 and compares with an average of 7,014 per acre for the prior 13 years. In Tensas Parish where these records have been made for the past 14 years, the number of weevils per acre (4,596) compares with the 14-year average of 5,554. In Richland Parish, where collections were begun in 1968, the average number of weevils per acre was 1,128 in 1969 compared with 2,581 for that year. Collections were begun in West Carroll Parish in 1967 and the 1969 average (1,451) compares with 2,420 in 1968 and 14,681 in 1967. Collection of woods trash was started November 17 and completed November 24. The average minimum temperature for this period was 37°, with a low of 26° recorded November 20. The average maximum temperature for the period was 66°. The total rainfall recorded during this period was 2.34 inches, and was recorded on November 19.

In central Texas, boll weevils averaged 1,647 per acre in the fall of 1969 compared with 4,070 in 1968, 4,942 in 1967, 4,877 in 1966, 4,425 in 1965, 4,406 in 1964, 517 in 1963, 1,781 in 1962, and 4,114 in 1961. Fewer weevils entered hibernation in the fall of 1969 in McLennan County than in any year except 1962 and 1963, both drought years. In Limestone and Falls Counties, counts were lower

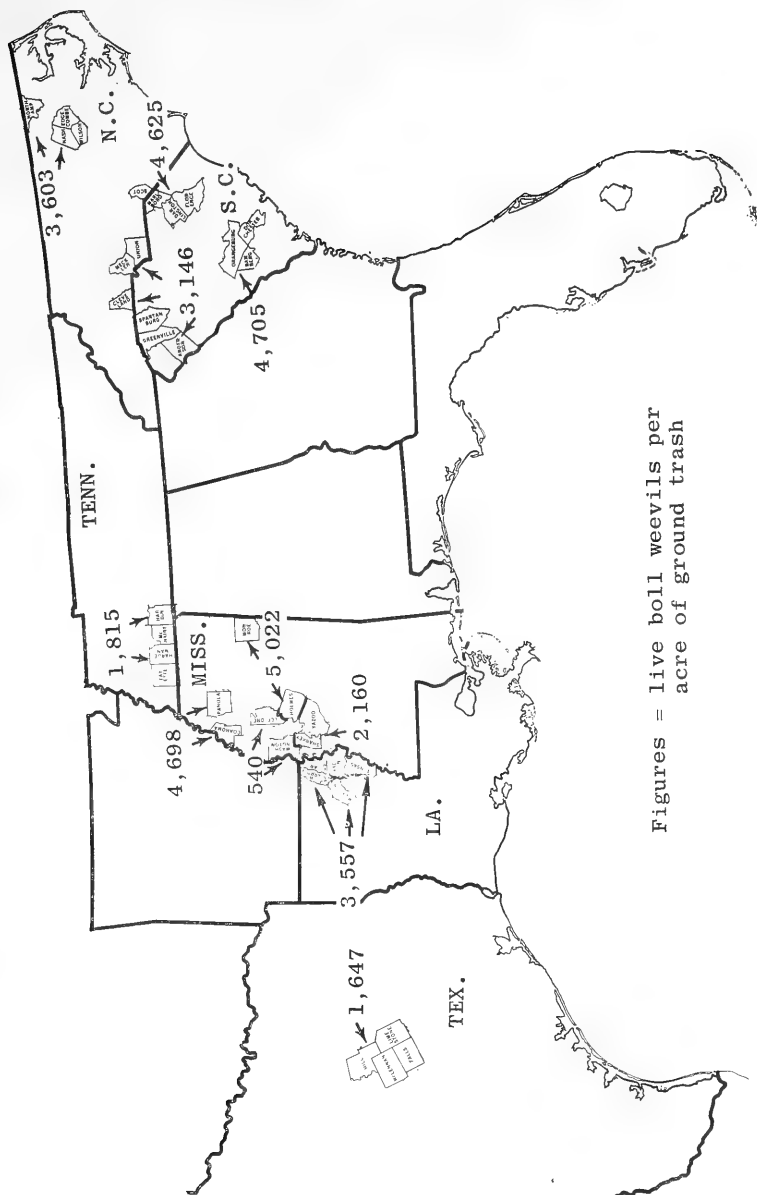
than any year except 1963. In Hill County, counts were lower than this year only in 1962, 1963, and 1968. The area average (1,647) was lower in 1969 than any year except 1963. Very hot, dry weather during 1969 prevented a weevil buildup during the growing season. Most cotton was harvested early and stalks destroyed. This early harvest and stalk destruction prevented a late-season buildup and low numbers of weevils entered hibernation. A freeze occurred on November 15 (normal for the area) and cotton that had not previously been destroyed was killed. (H.M. Taft, A.R. Hopkins, J.H. Locke, T.R. Pfrimmer, T.C. Cleveland et al., and C.B. Cowan).

BOLL WEEVIL HIBERNATION SURVEYS - FALL 1969

Area (State and County)	Number of Weevils Per Acre	
	1968	1969
<u>NORTH AND SOUTH CAROLINA</u>		
South Central South Carolina (Orangeburg, Bamberg, and Dorchester Counties).	1,640	4,705
Coastal Plain of South and North Carolina (Florence, Darlington, and Marlboro Counties, S.C.; Scotland County, N.C.).	3,403	4,625
Piedmont of South and North Carolina (Anderson, Greenville, and Spartanburg Counties, S.C.; Mecklenburg, Cleveland, and Union Counties, N.C.).	2,205	3,146
North Central North Carolina (Nash, Northampton, Wilson, and Edgecombe Counties).	914	3,603
<u>TENNESSEE</u>		
Southern Tier of Counties (McNairy, Fayette, Hardin, and Hardeman).	1,210	1,815
<u>MISSISSIPPI</u>		
South Delta (Sharkey and Yazoo Counties (area 1)).	4,104	2,160
Central Delta (Washington and Leflore Counties (area 2)).	2,052	540
North Delta (Coahoma and Panola Counties (area 3)).	2,916	4,698
Hill Section (Holmes and Monroe Counties (area 4)).	1,998	5,022
<u>LOUISIANA</u>		
Northeastern (Madison, East Carroll, Tensas, West Carroll, and Richland Parishes).	3,137	3,557
<u>TEXAS</u>		
Central (Falls, Hill, Limestone, and McLennan Counties).	4,070	1,647

See map on following page.

BOLL WEEVIL HIBERNATION SURVEYS - FALL 1969



Figures = live boll weevils per acre of ground trash

SURVEY METHODS

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Part XXIV

Additional copies of Parts I through XXIV of this bibliography are available from Economic Insect Survey and Detection.

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Cooperative
**ECONOMIC INSECT
REPORT**



Issued by

PLANT PROTECTION DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PROTECTION DIVISION

ECONOMIC INSECT SURVEY AND DETECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

CORN LEAF APHID appearing on barley in New Mexico. (p. 39).

GREENBUG increasing in Imperial Valley of California. (p. 39).

Detection

For new county and island records see page 41.

Special Reports

Distribution of Southwestern Corn Borer. Map. (p. 42).

Survey Methods. Selected References 1946. Part XXV. (pp. 43-44).

Reports in this issue are for week ending January 16 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance.....39

Insects Affecting

Corn, Sorghum, Sugarcane.....39	Citrus.....39
Turf, Pastures, Rangeland.....39	Forest and Shade Trees.....40
Forage Legumes.....39	Man and Animals.....40
Deciduous Fruits and Nuts.....39	

Federal and State Plant Protection Programs.....40

Hawaii Insect Report.....41

Detection.....41

Distribution of Southwestern Corn Borer. Map.....42

Survey Methods. Selected References 1946. Part XXV.....43

WEATHER BUREAU'S 30-DAY OUTLOOK

MID-JANUARY TO MID-FEBRUARY

The Weather Bureau's 30-day outlook for mid-January to mid-February is for temperatures to average below seasonal normals in the eastern half of the Nation and above normal west of the Divide. Elsewhere near normal temperatures are in prospect. Precipitation is expected to exceed normal over the Gulf and South Atlantic Coast States as well as over the Pacific Northwest. Subnormal totals are indicated for the southern Plateau Region, the upper Mississippi Valley, and the upper Great Lakes. In unspecified areas near normal precipitation is expected.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price \$5.00 a year.

WEATHER OF THE WEEK ENDING JANUARY 19

HIGHLIGHTS: Warming over the West brought average temperatures to 6° to 15° above normal over most of area. The East continued colder than normal in spite of brief warming at midweek.

PRECIPITATION: Widespread cloudiness prevailed over most of the Nation early in the week. Precipitation was not widespread, however. Rainy weather continued along the Pacific coast from Washington to central California with snow in the Cascades and northern Sierras and eastward to the northern and central Rocky Mountains. Light snow flurries occurred in the northern Great Plains and heavier snow fell from the Great Lakes to New England. Several inches of new snow accumulated in parts of western New York and northern New England. The wet-weather pattern spread over more of the Nation about midweek. Rain or snow fell over most of the western States from Montana to Arizona and New Mexico, rain fell in southern Texas and thunderstorms developed in the Florida Peninsula with the heaviest showers in the south. On the morning of January 19 snow covered most of the northern half of the Nation being deepest, as usual, in the Cascades where up to 100 inches existed at some locations. Heavy rains along the Pacific coast produced 4 to 5-inch totals along the Oregon and northern California coast and up to 8 inches in the Sierras. A severe windstorm accompanied by up to 2 inches of rain caused heavy damage to fruit and vegetable crops in Hawaii on Tuesday.

TEMPERATURE: At the beginning of the week, a High continued to pour subzero weather into New York and New England. Watertown, New York, registered -30° on Monday morning January 12. Another outbreak of arctic air surged into the northern Great Plains and held midday temperatures to zero or lower from eastern Montana to northern Minnesota. Temperatures warmed slightly in the Southeast in the first half of the week reaching the 50's as far north as western Tennessee by midweek. Weather of the week continued on page 41.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

CORN LEAF APHID (Rhopalosiphum maidis) - NEW MEXICO - Light on barley in Dona Ana County. (N.M. Coop. Rpt.).

GREENBUG (Schizaphis graminum) - CALIFORNIA - Increasing rapidly in Imperial Valley, Imperial County. Considerable concern about infestations on small grains. (Cal. Coop. Rpt.). ARIZONA - Averaged 35 per 100 sweeps of sorghum in 2 fields at Yuma, Yuma County. (Ariz. Coop. Sur.). TEXAS - Light to heavy numbers in Rolling Plains during period of December 15-26. Light to heavy in Childress. Light to medium in Knox, Foard, Hardeman, Archer, and Jones Counties. Heavy in Motley County; some controls applied. Populations in panhandle for week ending January 9 suppressed by cold weather. (Boring, Daniels). Current activity throughout State negligible except in isolated areas. Populations in northwest and panhandle areas suppressed by cold weather. (Green). OKLAHOMA - Counts reduced about 90 percent in Payne County due to cold weather. Averaged about 15 per linear foot. (Okla. Coop. Sur.). KANSAS - None in wheat in following counties: Franklin, Johnson, Rooks, Graham, Trego, Chase, Morris, and Marshall. Ranged 1-5 per linear foot in Pottawatomie, Jackson, Nemaha, and Brown Counties. (Redding et al.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - ARIZONA - Light in frost damaged fields of alfalfa in Maricopa and Yuma Counties. (Ariz. Coop. Sur.).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - ALABAMA - Larvae ranged 3-7 per cornstalk in one field in Chilton County on January 6. Very light in several fields in Autauga County. (Sparks et al.).

TURF, PASTURES, RANGELAND

FIRE ANT (Solenopsis geminata) - TEXAS - Heavy along highway roadside near Clay in Burleson County and south of Navasota in Grimes County, also near College Station in Brazos County. (Barham, Green).

A HARVESTER ANT (Pogonomyrmex californicus) - UTAH - Collected at St. George, Washington County, June 12, 1969, by G.F. Knowlton. Determined by G.C. Wheeler. This is a new county record. (Knowlton).

FORAGE LEGUMES

PEA APHID (Acyrtosiphon pisum) - NEW MEXICO - Generally light on alfalfa in Dona Ana County. (N.M. Coop. Rpt.). ARKANSAS - Limited survey negative in few northwest areas. (Boyer).

DECIDUOUS FRUITS AND NUTS

HICKORY SHUCKWORM (Laspeyresia caryana) - ALABAMA - Numerous overwintering larvae in old shucks underneath 75 pecan trees in Lee and Elmore Counties. (McQueen).

CITRUS

Citrus Insect Situation in Florida - End of December 1969 - CITRUS RUST MITE (Phyllocoptura oleivora) infested 82 (norm 62) percent of groves; economic in 55 (norm 43) percent. Population again on increase and still above normal and in high range. Slight increase expected on both leaves and fruit. All districts high. CITRUS RED MITE (Panonychus citri) infested 41 (norm 35) percent of groves; economic in 11 (norm 12) percent. Population at low level and normal for year end. Slight increase expected. Highest districts west and east. TEXAS CITRUS MITE (Eutetranychus banksi) infested 32 (norm 38) percent of groves; economic in 11 (norm 14) percent. Population in low range and below normal for December. Little

change expected. Highest district central. GLOVER SCALE (Lepidosaphes gloverii) infested 79 (norm 68) percent of groves; economic in 9 (norm 11) percent. Population near the normal moderate level. Little change expected. Highest districts west and east. PURPLE SCALE (L. beckii) infested 68 (norm 69) percent of groves; economic in 6 (norm 6) percent. Population normal and moderate in all districts. Little change expected. CHAFF SCALE (Parlatoria pergandii) infested 45 (norm 51) percent of groves; economic in 2 (norm 6) percent. Recently decreased and now below normal abundance. Population will remain low in all districts. BLACK SCALE (Saissetia oleae) infested 45 (norm 40) percent of groves; economic in 15 (norm 16) percent. Population recently dropped to normal low level for year end. Continued decrease expected. Highest districts east and central. YELLOW SCALE (Aonidiella citrina) infested 64 (norm 62) percent of groves; economic in 11 (norm 11) percent. This scale is at normal moderate level and not expected to change. Highest districts north and east. An ARMORED SCALE (Unaspis citri) infested 25 percent of groves; moderate to heavy in 5 percent. Infestations became lighter and are not expected to intensify. WHITEFLY infested 66 (norm 67) percent of groves; economic in 19 (norm 14) percent. Population decreased to normal moderate level and will diminish further. (W.A. Simanton (Citrus Expt. Sta., Lake Alfred)).

AN ARMORED SCALE (Unaspis citri) - FLORIDA - All instars severe on 500 citrus trees in nursery at Apopka, Orange County. (Speaker, Jan. 8).

CITRUS RED MITE (Panonychus citri) - FLORIDA - Eggs ranged 15-30 per leaf in one lemon grove which had mite survival throughout 1969. (Ariz. Coop. Sur.).

FOREST AND SHADE TREES

PINE NEEDLE SCALE (Phenacaspis pinifoliae) - CALIFORNIA - Eggs and adults heavy on Monterey pine at Yuba City, Sutter County. (Cal. Coop. Rpt.).

OYSTERSHELL SCALE (Lepidosaphes ulmi) - CALIFORNIA - Heavy on maple tree nursery stock at San Jose, Santa Clara County. (Cal. Coop. Rpt.).

TWIG GIRDLER (Oncideres sp.) - TEXAS - Heavy damage on oaks 3 to 8 feet tall in Sam Houston National Forest in Montgomery County. (Barham).

MAN AND ANIMALS

SCREW-WORM (Cochliomyia hominivorax) - No cases reported in U.S. January 11-17. Total of 48 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico January 4-10 as follows: Sonora 30, Chihuahua 16, Tamaulipas 2. Total of 6 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 168,000; Mexico 77,000,000. (Anim. Health Div.).

CATTLE LICE - OKLAHOMA - Mainly Haematopinus eurytERNUS (short-nosed cattle louse) heavy on cattle in Cotton County. (Okla. Coop. Sur.).

BROWN RECLUSE SPIDER (Loxosceles reclusa) - NEBRASKA - Specimen collected from home at David City, Butler County on January 5, 1970. Identified by R.E. Roselle. This is a new county record. (Keith).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - TEXAS - Heavy near Interstate Highway 45 in Montgomery County. (Barham). GEORGIA - Adults collected on roadside by B.F. Goolsby on January 6 in Clinch County. Determined by V.H. Owens, confirmed by D.R. Smith. This is a new county record. (PPD).

PINK BOLLWORM (Pectinophora gossypiella) - NEW MEXICO - One adult in hexalure trap at Carlsbad, Eddy County. All larvae dead inside cotton bolls, except for one larva. (Mathews).

HAWAII INSECT REPORT

General Vegetables - All instars of BEAN FLY (Melanagromyza phaseoli) moderate to heavy on backyard snap beans at Kohala, Hawaii; still negligible in commercial plantings throughout Oahu. (Yoshioka, Kawamura).

Fruits and Nuts - COCONUT SCALE (Aspidiotus destructor) colonies light to medium on foliage of 3 plumeria trees at Kaneohe, Oahu; first report on plumeria in Hawaii. (Funasaki). An ARMORED SCALE (Phenacaspis cockerelli) medium on 20 coconut trees, as many as 80 per leaflet, at Lahaina, Maui; and on foliage of about 200 commercially grown bird-of-paradise plants at Waimanalo, Oahu. (Ah Sam et al.). GREEN SCALE (Coccus viridis) medium, up to 24 (average 5 per leaf), on some leaves on 12 orange trees at Kahului and on grapefruit and gardenia at Makawao, Maui. Adults and larvae of Cryptolaemus montrouzieri (a lady beetle) medium in both areas. Heavy on Pittosporum sp. at Waikiki, Oahu. (Miyahira, Au). Adults of SOUTHERN GREEN STINK BUG (Nezara viridula) light on legume and orange trees at Pukalani and on legumes at Waikapu, Maui. Thirty percent of adults bore eggs of Trichopoda pennipes (a tachina fly). N. viridula nymphs light to medium on Dendrobium plants at Hawaii-kai, Oahu. (Ah Sam et al.).

Man and Animals - Adults of CLUSTER FLY (Pollenia rudis) heavy at Hookena, South Kona, Hawaii, at sea level for first time. All previous annoying activities from areas of over 700 feet elevation. (Yoshioka).

Miscellaneous Insects - A RHOPALID BUG (Jadera haematoloma) heavy on fruits and seeds of goldenrain-tree (Koelreuteria formosana) at Kona, Hawaii, for a new host and island record. Previously reported only on balloonvine on islands of Oahu and Kauai. (Yoshioka).

DETECTION

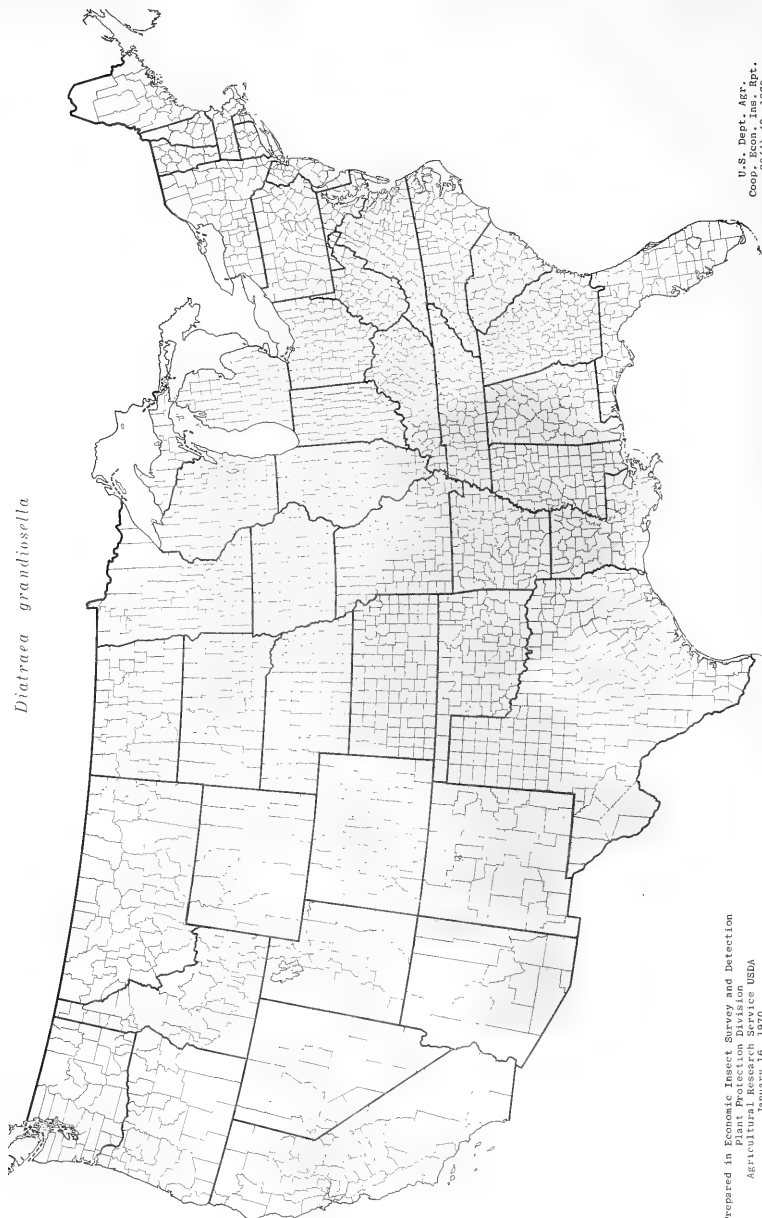
New County and Island Records - BROWN RECLUSE SPIDER (Loxosceles reclusa) NEBRASKA - Butler (p. 40). A HARVESTER ANT (Pogonomyrmex californicus) UTAH - Washington (p. 39). IMPORTED FIRE ANT (Solenopsis saevissima richteri) GEORGIA - Clinch (p. 40). A RHOPALID BUG (Jadera haematoloma) HAWAII - Hawaii (p. 41).

Weather of the week continued from page 38.

As the warming progressed farther north, maximums reached the 40's as far north as Ohio and western New York on Friday afternoon. The "January thaw" was short lived, however, as another surge dropped the temperature sharply Sunday night. Strong winds, racing down the eastern slopes of the Rockies warmed the western edge of the Great Plains. On Wednesday afternoon, North Platte, Nebraska, registered 59° but at Burwell, 90 miles northeast of North Platte, registered 59° but at Burwell, 90 miles northeast of North Platte, registered only 23°. Warming occurred in the Far West also with temperatures reaching the 60's in California and the 50's farther north. Most of the area west of the Rocky Mountains averaged from 6° to 15° warmer than normal. Most of the area from the northern Great Plains averaged 6° to 15° colder than normal. The greatest temperature gradient occurred along the Continental Divide in Montana where temperatures averaged up to 10° above normal west of the ridge and up to 27° below normal on the eastern side of the Divide. The mildest weather occurred in Florida where afternoon maximums reached the 70's on Sunday afternoon. The bitterest cold occurred in the northern Great Plains where minimums dropped to -30° or colder on Sunday morning. (Summary supplied by Environmental Data Service, ESSA).

Distribution of Southwestern Corn Borer

Diatraea grandiosella



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January 16, 1970

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COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

PEAR PSYLLA active in Jackson County, Oregon. (p. 47).

A POWDER-POST BEETLE heavy in dead pecan limbs in Lee County, Alabama. Buildup could threaten healthy trees. (p. 47).

COMMON CATTLE GRUB heavy in cattle in Lee County, Alabama. (p. 48).

Detection

Two LONCHAEID FLIES reported for first time in Hawaii. (p. 50).

For new county and island records see page 49.

Special Reports

EUROPEAN CORN BORER increased in 7 of 11 North Central States reporting in 1969. Decreases occurred in Illinois, Indiana, Iowa, and Ohio. Although lower than in 1968, populations in Illinois were the second highest since 1955. The 1969 populations in Indiana and Maryland were about half those of 1968. Overwintering populations in southwestern and west-central Missouri were again the highest on record for these districts. Counts were extremely high in southwestern Iowa, and increased in the Dakotas. (p. 51).

Distribution of Pea Leaf Weevil. Map. (p. 58).

Reports in this issue are for week ending January 23 unless otherwise indicated.

CONTENTS

Insects Affecting

Small Grains.....	47	Forest and Shade Trees.....	48
Deciduous Fruits and Nuts.....	47	Man and Animals.....	48
Citrus.....	47	Households and Structures.....	48
Ornamentals.....	47	Stored Products.....	49
Federal and State Plant Protection Programs.....	49		
Detection.....	49		
Light Trap Collections.....	49		
Hawaii Insect Report.....	50		
Status of the European Corn Borer in 1969.....	51		
Distribution of Pea Leaf Weevil. Map.....	58		

WEATHER OF THE WEEK ENDING JANUARY 26

HIGHLIGHTS: Temperatures were above normal in the West and much colder than normal in the East. Heavy rains fell along and near the northern Pacific coast but precipitation was mostly light elsewhere.

PRECIPITATION: Moderate to heavy rain fell along the northern Pacific coast with snow in the nearby hills and mountains. Freezing rain near the Columbia River Gorge damaged powerlines and orchards. The northern Rocky Mountains received frequent moderate to heavy snow. Light to moderate rain fell intermittently in the Great Basin. No rain or only light sprinkles fell from central Utah and southern Colorado and southward to Mexico. Mostly light precipitation occurred over the Great Plains. This included frequent light flurries in the North and sprinkles in the South. Intermittent flurries occurred in the Great Lakes region and the Northeast, also in the central and southern Appalachians. Light sprinkles fell elsewhere in the Southeast. Weekly precipitation totals over the central and eastern part of the country were mostly less than 0.25 inch, in many areas less than 0.1 inch. The warm temperatures late in the week melted the snow in the western Great Plains. Local blowing dust occurred in western Nebraska on Sunday afternoon.

TEMPERATURE: Warm weather continued over the western half of the United States. Temperatures averaged above normal from the Pacific Ocean to the western edge of the Great Plains. A large area from southwestern Montana to northern Arizona and from Oregon to Colorado averaged 10° to 20° warmer than normal. In sharp contrast, bitter cold continued over the eastern half of the Nation. In general, it was the fifth consecutive cold week over the northern Great Plains, the fourth cold week in Louisiana, and the sixth week with below normal temperatures in the Northeast. The cold in the Central and East intensified early in the week. By Wednesday morning, Minnesota, Iowa, and nearby parts of adjoining States registered 20° to 40° below zero. Ottumwa, Iowa, registered 20° below zero Wednesday morning and by noon had warmed only to 10° below zero. At midnight Wednesday, Fargo, North Dakota, had warmed to 0° after 145 consecutive hours with below-zero temperatures. Minneapolis and St. Paul, Minnesota, suffered through 140 consecutive hours of subzero weather. On Thursday evening the temperature at Rockford, Illinois, climbed to 0° after remaining below zero for more than 120 hours. Fast warming occurred over the central and southern Great Plains in the latter half of the week. By Saturday afternoon, temperatures in eastern Colorado and western Kansas had climbed into the 70's. Last week was the coldest week of the winter in the Northeast in spite of the weekend warming. A large area from southern Wisconsin and Illinois to the northern and middle Atlantic coast averaged 15° to 20° colder than normal. (Summary supplied by Environmental Data Service, ESSA.)

SMALL GRAINS

WINTER GRAIN MITE (Penthaleus major) - OKLAHOMA - Heavy on some early planted wheat fields needing moisture in Grady County. (Okla. Coop. Sur.).

DECIDUOUS FRUITS AND NUTS

PEAR PSYLLA (Psylla pyricola) - OREGON - Active in blacklight trap January 7 at Medford, Jackson County. (Gentner).

A FALSE POWDER-POST BEETLE (Xylobiops basilaris) - ALABAMA - Adults and larvae heavy in 75 percent or more of dead pecan limbs under all pecan trees examined in Lee County. Very large acreage of trees in southwestern area damaged in late 1969 by Hurricane Camille needs close watch. Population explosion in dead trees and limbs could threaten weak or damaged trees expected to recover. A properly timed buildup could infest healthy trees. (McQueen).

CITRUS

Quarterly Citrus Insect and Mite Outlook in Florida - January through March - This outlook is based on the assumption that weather beyond the period of the current U.S. Weather Bureau 30-day Outlook will be normal. Therefore, the forecasts given below cannot be viewed with the same degree of confidence as those in the "Insect and Disease Summary" usually released twice each month by this station.

CITRUS RUST MITE (Phyllocoptruta oleivora) expected to continue at moderate to high level through February, then decrease briefly in March. Will be heavy in about 25 percent of groves. TEXAS CITRUS MITE (Eutetranychus banksi) expected to increase slightly but will remain low. Will be heavy in about 5 percent of groves. CITRUS RED MITE (Panonychus citri) expected to gradually increase but not beyond normal low level for period. Will be heavy in about 8 percent of groves. SIX-SPOTTED MITE (Eotetranychus sexmaculatus) will be light on inside leaves in about 3 percent of groves in February. Heavy infestations causing leaf drop may be expected in 1 percent of groves. GLOVER SCALE (Lepidosaphes gloverii) will be light to moderate in nearly all groves. Little change in population expected. PURPLE SCALE (L. beckii) and CHAFF SCALE (Parlatoria pergandii) will be light in majority of groves. Slight increase likely, but neither scale expected to become important through March. YELLOW SCALE (Aonidiella citrina) will remain at moderate level. May become important in scattered groves, especially young trees in March. An ARMORED SCALE (Unaspis citri) expected to be heavier than year ago. Will expand and intensify in March. APHIDS expected to appear on new growth in late February and increase rapidly through March to peak about mid-April. (W.A. Simanton).

CALIFORNIA RED SCALE (Aonidiella aurantii) - CALIFORNIA - Medium in commercial groves of Valencia oranges at Santa Paula, Ventura County. (Cal. Coop. Rpt.).

BEAN THRIPS (Caliothrips fasciatus) - CALIFORNIA - Adults medium on navel orange fruit at Rialton, San Bernardino County. (Cal. Coop. Rpt.).

ORNAMENTALS

A PTEROPHORID MOTH (Platyptilia pica crataea) - CALIFORNIA - Medium; damaged geranium nursery stock at Santa Cruz, Santa Cruz County. (Cal. Coop. Rpt.).

A SOFT SCALE (Ceroplastes ceriferus) - FLORIDA - Adults infested stems of 10 percent of 11,300 plants of Podocarpus sp. in nursery at Lake Monroe, Seminole County. (Van Pelt, Jan. 14).

FOREST AND SHADE TREES

A CLEARWING MOTH (Paranthrene robiniae) - CALIFORNIA - Larvae medium on cottonwoods at Solvang, Santa Barbara County. (Cal. Coop. Rpt.).

OBSURE SCALE (Melanaspis obscura) - ALABAMA - Medium to heavy on many oaks along streets and walks at Auburn, Lee County. Many small to larger lower limbs dead; others weakened. (McQueen).

MAN AND ANIMALS

SCREW-WORM (Cochliomyia hominivorax) - No cases reported in U.S. January 18-24. Total of 30 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico January 11-17 as follows: Sonora 14, Chihuahua 5, Nuevo Leon 1, Tamaulipas 10. Total of 18 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 6,168,000; Mexico 79,712,000. (Anim. Health Div.).

COMMON CATTLE GRUB (Hypoderma lineatum) - ALABAMA - Grubs in backs of beef cattle in Lee County by December 15, 1969. First emergence December 29, 15-30 days early. Grubs, 1-25 per head, in 75+ percent of several hundred cattle in area. Probably higher than last 2 seasons. Will emerge for pupation until March and April. Preventive treatment for grub control ended; treatments to destroy emerging grubs underway. (Newman). OKLAHOMA - Moderate to heavy on Cherokee County cattle. Light in Mayes County. (Okla. Coop. Sur.).

CATTLE LICE - ALABAMA - Light on several thousand head in Lee and adjoining counties. Infestations lighter than usual. Anemic conditions expected to increase in February and March. (Newman). OKLAHOMA - Mainly Haematopinus eurysternus (short-nosed cattle louse) moderate to heavy on Cherokee County cattle. (Okla. Coop. Sur.).

BROWN RECLUSE SPIDER (Loxosceles reclusa) - TENNESSEE - Collected from Carroll County January 10 for a new county record. (Mullett).

HOUSEHOLDS AND STRUCTURES

ORIENTAL COCKROACH (Blatta orientalis) - UTAH - Infested fourplex apartments at Salt Lake City, Salt Lake County. (Knowlton, Jan. 21).

EASTERN SUBTERRANEAN TERMITE (Reticulitermes flavipes) - FLORIDA - Flights of reproductives in heated buildings on university campus at Gainesville, Alachua County. (Hetrick).

OLD-HOUSE BORER (Hylotrupes bajulus) - VIRGINIA - Larvae damaged house in Appomattox County. (Allen, Jan. 15). This is a new county record. (PPD).

A WEEVIL (Sciophilus asperatus) - WISCONSIN - Entered houses at Hayward, Sawyer County. Collected November 20, 1969. Determined by R.E. Warner. This is a new county record. (Wis. Ins. Sur.).

EUROPEAN EARWIG (Forficula auricularia) - WISCONSIN - Adults medium in house at Oshkosh, Winnebago County, for a new county record. Collected by V. Peroutky July 22, 1969. Confirmed by A.B. Gurney. (Wis. Ins. Sur.).

STORED PRODUCTS

CONFUSED FLOUR BEETLE (Tribolium confusum) - CALIFORNIA - Heavy in wheat in warehouse at Willows, Glenn County. (Cal. Coop. Rpt.).

INDIAN-MEAL MOTH (Plodia interpunctella) - ALABAMA - Larvae and adults medium in shipment of small packets of sweet corn seed at Mobile, Mobile County. (Deakle).

POTATO TUBERWORM (Phthorimaea operculella) - MARYLAND - Heavy in several bushels of seed potatoes near Arnold, Anne Arundel County. (U. Md., Ent. Dept.).

MICHIGAN - Light in potatoes in Monroe County. (Jones, Jan. 26).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

CITRUS BLACKFLY (Aleurocanthus woglumi) - TEXAS - Survey in Hidalgo, Dimmit, Maverick and Zavala Counties negative. (PPD South. Reg., Dec.).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - NORTH CAROLINA - Mounds found outside of treated areas in Columbus County. SOUTH CAROLINA - Small extensions in Colleton and Georgetown Counties. GEORGIA - Extensions in Camden and McIntosh Counties. FLORIDA - Extensions for several miles along roadways in Flagler and Madison Counties. Second infested area found in Marion County. (PPD South. Reg., Dec.). Inspection on 100 of 12,000 acres of pasture at Geneva, Seminole County. Adults abundant but not heavy over area. (Van Pelt). LOUISIANA - One mound each found at 2 locations in appraisal survey of treated area in Caddo Parish, (PPD South. Reg., Dec.).

ORIENTAL FRUIT FLY (Dacus dorsalis) - FLORIDA - Male caught in Steiner trap December 3 at Golden Beach, Dade County. Total of 1,557 Steiner traps set in 5-mile radius of find by December 17. (PPD South. Reg.). No additional specimens reported as of January 23. (PPD).

PINK BOLLWORM (Pectinophora gossypiella) - FLORIDA - Find of 1 larva in wild cotton boll in Dade County. (PPD South. Reg., Dec.).

SWEETPOTATO WEEVIL (Cylas formicarius elegantulus) - GEORGIA - Infested new property in Decatur County. ALABAMA - Infested 4-acre property in Mobile County. MISSISSIPPI - Two new finds in Lawrence County. LOUISIANA - Most significant finds: 2 in Avoyelles Parish and 1 in Natchitoches Parish. (PPD South. Reg., Dec.).

WHITE-FRINGED BEETLES (Graphognathus spp.) - LOUISIANA - Find of 5 adults at Minden, Webster County. NORTH CAROLINA - Small extensions in Bladen, Robeson, and Wake Counties. (PPD South. Reg., Dec.).

DETECTION

New State Records - LONCHAEID FLIES (Lonchaea spp.) HAWAII - L. polita on Hawaii and Oahu Islands; L. striatifrons on Lanai Island (p. 50).

New County and Island Records - BROWN RECLUSE SPIDER (Loxosceles reclusa) TENNESSEE - Carroll (p. 48). EUROPEAN EARWIG (Forficula auricularia) WISCONSIN - Winnebago (p. 48). LONCHAEID FLIES (Lonchaea spp.) HAWAII - L. polita on Maui; L. striatifrons on Maui, Molokai, Hawaii (p. 50). OLD-HOUSE BORER (Hylotrupes bajulus) VIRGINIA - Appomattox (p. 48). VAGRANT GRASSHOPPER (Schistocerca vaga) HAWAII - Maui (p. 50). A WEEVIL (Sciaphilus asperatus) WISCONSIN - Sawyer (p. 48).

LIGHT TRAP COLLECTIONS

FLORIDA - 1/16-22, BL - Armyworm (Pseudaletia unipuncta) 4, black cutworm (Agrotis ipsilon) 2, granulate cutworm (Feltia subterranea) 4.

HAWAII INSECT REPORT

New State Records - Specimens of a LONCHAEID FLY (Lonchaea polita) were collected on Hawaii and Oahu by D.E. Hardy February 1953. Also collected on Maui. L. striatifrons was collected on Lanai by D.E. Hardy January 1953. Also collected on Maui, Molokai, and Hawaii. Both determined by D.E. Hardy; confirmed by G. Morge. Unknown whether they breed as predators or scavengers. (Hardy).

Corn - All stages of CORN PLANTHOPPER (Peregrinus maidis) heavy in whorls of young sweet corn and under leaf sheaths of mature corn in community garden at Mana, Kauai; light in 4 acres of seed corn seedlings in same area. (Sugawa).

General Vegetables - LEEK MOTH (Acrolepia assectella) damage heavy in small planting of green onions at Lihue, Kauai. (Sugawa). DIAMONDBACK MOTH (Plutella xylostella) larvae and adults heavy in 2 acres of cabbage at Kaaawa, Oahu. Damage light to heavy in about 75 percent of heads. Up to 16 larvae on some leaves. (Kawamura).

Fruits - COCONUT SCALE (Aspidiotus destructor) generally light in 21 stools of banana plants; moderate on older leaves of some plants at Pearl City, Oahu. Nymphs and adults of Lindorus lophanthae and Telsimia nitida (lady beetles) preying on scales. (Kawamura).

Beneficial Insects - SOUTH AFRICAN EMEX WEEVIL (Apion antiquum) adults moderate on foliage of emex seedlings in pasture at Pukalani, Maui. (Ah Sam, Miyahira).

Miscellaneous Insects and Pests - VAGRANT GRASSHOPPER (Schistocerca vaga) female caught in pasture at Makena, Maui, for a new island record. Previously found on Oahu, Kauai, Molokai, and Lanai. (Ah Sam, Miyahira). An ASSASSIN BUG (Oncocephalus pacificus) adult in light trap at Waipahu, Oahu, week of January 9. Few specimens found since discovery in September 1968. (Au). Adults of BLOW FLIES (Chrysomya megacephala and Phaenicia cuprina) numerous on flowers of 2 large gular trees (Sterculia urens) on hospital grounds at Honolulu, Oahu. Flying into hospital proper. (Masaki). GIANT AFRICAN SNAIL (Achatina fulica) adults medium in 5 acres of wild vegetation at Pukalani, Maui, elevation 1,200 feet, highest area of establishment on Maui. Activity still moderate at Wailuku and Kahului, Maui. (Ah Sam, Miyahira).

Status of the European Corn Borer in 1969^{1/}

Introduction: Surveys to determine the abundance of European corn borer (*Ostrinia nubilalis* (Hübner)) in the fall of 1969 were conducted by cooperating agencies in 15 States. All survey data, summaries, or records of field observations were processed by the Economic Insect Survey and Detection Staff in Hyattsville, Maryland. Personnel of Entomology Research Division, Agricultural Research Service, kindly reviewed the material after completion.

The 1969 European corn borer survey was conducted during late summer and early fall. The survey is designed to measure the fall populations of European corn borer larvae and is conducted during a favorable time to include a high percentage of late instars, wherever possible. Except for some minor differences in compiling data, the accepted survey methods were followed in all cases. The survey was continued on a district basis whenever possible in 1969. A district is usually a group of counties within a State, in most cases based on Crop Reporting Districts.

New Distribution: European corn borer was reported for the first time from two counties during 1969; however, these counties were in States already known to be infested. This was 8 fewer counties than reported the previous year. In 1968 one county each was reported from Alabama and Georgia, and 8 counties from South Carolina; 2 counties were reported in 1967 from North Dakota; 18 in 1966 from North Dakota and South Carolina; 11 in 1965 from South Carolina; 5 from 3 States in 1964; and 25 new counties in 1963 from 4 States.

The new distribution in 1969 was Dale County, Alabama, and Grundy County, Tennessee. In South Carolina, Beaufort County remains the only county not known to be infested.

Abundance: European corn borer fall populations increased in 7 of the 11 North Central States included in the survey. Decreases were recorded in Illinois, Indiana, Iowa, and Ohio. Although populations in Illinois were lower than in 1968, they were the second highest since 1955. The 1969 populations in Indiana were approximately half those of 1968. The 3 southernmost districts of that State had the largest number of borers per 100 plants each year, and showed the smallest decrease in population. The lowest number of larvae occurred in the 3 districts immediately to the north both years, and decreased in 1969 to one-fifth the 1968 level. The 1969 fall survey in Iowa showed the same trend as in 1968. Weather was unfavorable for the first brood, but conditions favored survival of the second brood. Populations were highest in western and southern portions of the State. Counts were extremely high, 607 per 100 plants, in southwest (District VII) Iowa. Overwintering populations in southwest (District VII) and west-central (District IV) Missouri were again the highest on record for these districts. The State average of 245 borers per 100 stalks was the highest since 1966. Overwintering populations increased over those of last year in North Dakota, and were double those of 1968 in South Dakota.

Although the State average for 1969 in Delaware decreased from a record high of 444 borers per 100 plants in 1968, it does reflect the very high borer density that occurred in several crops this season. The 1969 overwintering population in Maryland was approximately half that of 1968. European corn borer infestations in Arkansas increased over those of the previous year again in 1969, and were heavier in the northeast area of the State than in other areas surveyed in 1968 and 1969.

^{1/} Survey data provided by State agricultural agencies. Data compiled and summarized by Economic Insect Survey and Detection Staff, Plant Protection Division, Agricultural Research Service, United States Department of Agriculture.

Table 1. Summary by States of European Corn Borer Abundance in Corn, Fall of 1969, Compared with Data for 1968

States	1969				Comparable Districts or Counties Surveyed Both Years				
	:Average No. of Borer :Districts : Per :Surveyed :100 Plants	:No. of :Counties : :Surveyed	:No. of :Districts : :Surveyed	:Average No. of Borer :Per : :100 Plants	:No. of :Counties : :Surveyed	:No. of :Districts : :Surveyed	:Borer :Per : :100 Plants	:Number :Surveyed : :1968	:Number :Surveyed : :1969
<u>Eastern</u>									
Delaware	1	3	1	357	3	1	444	357	
Maryland	<u>3</u>	<u>13</u>	<u>3</u>	<u>154</u>	<u>16</u>	<u>3</u>	<u>296</u>	<u>154</u>	
Total	4	16	4		19		370	252	
Average <u>1/</u>									
<u>North Central</u>									
Illinois	7	39	7	142	39	7	199	142	
Indiana	12	92	12	38	92	12	82	38	
Iowa	12	99	12	163	99	12	171	163	
Kansas	3	28	3	265	26	3	98	265	
Minnesota	7	34	7	69	42	7	69	69	
Missouri	7	39	7	245	38	7	154	245	
Nebraska	5	26	5	147	26	5	76	147	
North Dakota	1	5	1	177	5	1	112	177	
Ohio <u>2/</u>	5	33	5	111	33	5	153	111	
South Dakota	6	35	6	137	35	6	71	137	
Wisconsin	<u>9</u>	<u>52</u>	<u>9</u>	<u>46</u>	<u>52</u>	<u>9</u>	<u>40</u>	<u>46</u>	
Total	74	482	74		473		108	141	
Average <u>1/</u>									
<u>Southern</u>									
Arkansas	3	11	3	48	11	3	26	48	
<u>Other</u>									
Michigan	1	40	1	62	41	1	50	62	

1/ Weighted average based on districts surveyed.
2/ Based on districts surveyed.

Table 2 - European Corn Borer Abundance in Corn,
Fall of 1969, Compared with Data for 1968

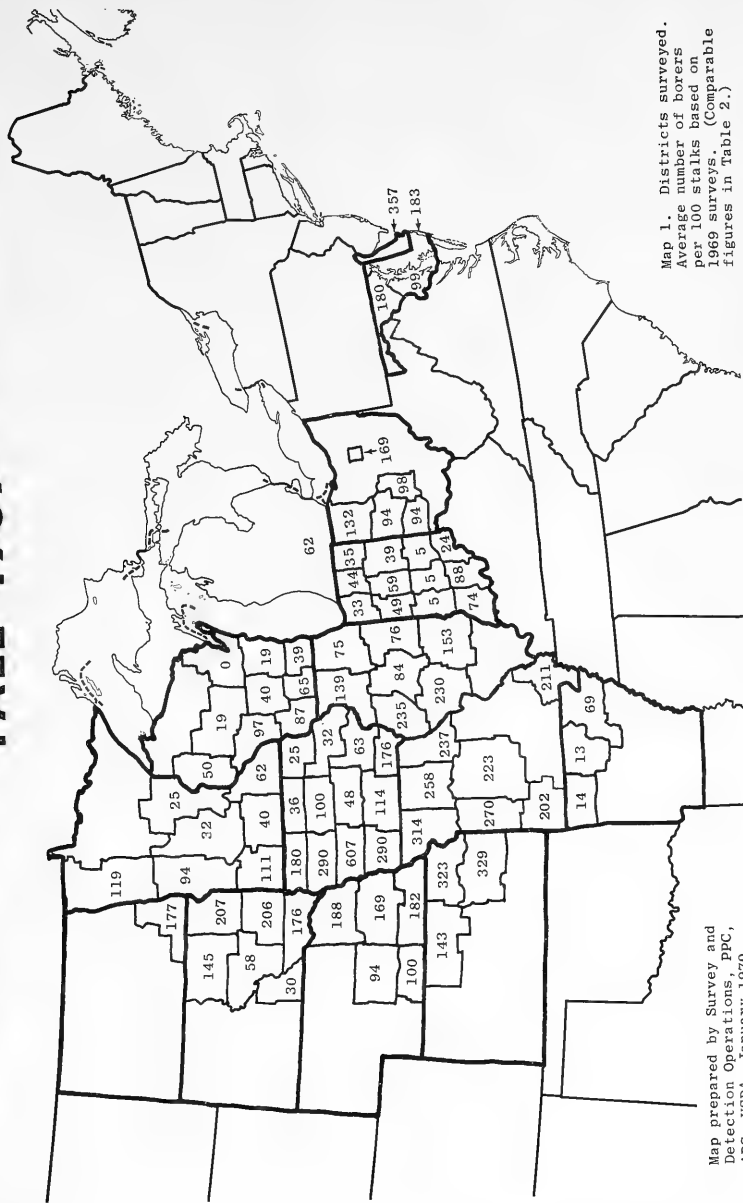
State (Districts or Counties)	Average Number: of Borers Per 100 Plants		State (Districts or Counties)	Average Number of Borers Per 100 Plants	
	1968	1969		1968	1969
<u>Arkansas</u> (Ark. Ins. Sur.)			<u>Iowa</u> (State Dept. Agr.; Ext. Ser.; Ent. Dept., Iowa State Univ; ENT, ARS, USDA)		
Northwest	15	14	District I	59	180
North Central	6	13	District II	63	36
Northeast	<u>37</u>	<u>69</u>	District III	83	25
Average	26 <u>1/</u>	48 <u>1/</u>	District IV	163	290
<u>Delaware</u> (Agr. Expt. Sta.)			District V	100	100
New Castle	292	276	District VI	144	32
Kent	512	329	District VII	249	607
Sussex	<u>528</u>	<u>467</u>	District VIII	236	48
Average	444	357	District IX	241	63
<u>Illinois</u> (Natural History Survey, Ext. Ser.)			District X	335	290
Northwest	192	139	District XI	232	114
Northeast	148	75	District XII	<u>148</u>	<u>176</u>
West	233	235	Average	171	163
Central	187	84	<u>Kansas</u> (Ins. Sur.)		
East	246	76	Northeast	152	323
West-southwest	216	230	North Central	43	143
East-southeast	<u>170</u>	<u>153</u>	East Central	<u>101</u>	<u>329</u>
Average	199	142	Average	98	265
(198) <u>2/</u>	(143) <u>2/</u>		<u>Maryland</u> (Agr. Ext. Ser.; Ins. Sur.)		
<u>Indiana</u> (Ext. Ser., Expt. Sta.)			Eastern Shore	339	183
North-northwest	121	33	Southern area	205	99
North-northcentral	92	44	Western and Central areas	<u>344</u>	<u>180</u>
North-northeast	84	35	Average	296	154
Northwest	82	49			(166) <u>3/</u>
North Central	71	59	<u>Michigan</u> (Ins. Sur.)		
Northeast	127	39	Surveyed counties	50	62
Southwest	24	5			
South Central	26	5			
Southeast	59	5			
South-southwest	93	74			
South-southcentral	176	88			
South-southeast	<u>31</u>	<u>24</u>			
Average	82	38			
		(40) <u>1/</u>			
<u>1/</u> Average based on field averages rather than district averages. Indiana field averages not available for 1968.			<u>2/</u> Average based on 39 comparable counties surveyed in 1968 and 1969, rather than districts.		
			<u>3/</u> Average based on averages for 16 counties surveyed in 1969, rather than district averages.		

Table 2 - (Continued)

State (Districts or Counties)	Average Number: of Borers Per :		State (Districts or Counties)	Average Number of Borers Per	
	100 Plants :			100 Plants	
	1968	1969:		1968	1969
<u>Minnesota</u> (State Dept. Agr.)			<u>South Dakota</u> (Agr. Expt. Sta., Ext. Ser.)		
Southwest	35	111	North Central	64	145
South Central	38	40	Northeast	134	207
Southeast	32	62	Central	28	58
West Central	58	94	East Central	134	206
Central	22	32	Southeast	62	176
East Central	11	25	South Central	<u>1</u>	<u>30</u>
Northwest	<u>99</u>	<u>119</u>	Average	71	137
Average	42	69			
<u>Missouri</u> (Ext. Ser., Ins. Sur.)			<u>Wisconsin</u> (State Dept. Agr.)		
District I	180	314	Northwest	17	50
District II	131	258	North Central	19	19
District III	107	237	West Central	18	97
District IV	237	270	Central	61	40
District V	118	223	Southwest	47	87
District VII	113	202	South Central	73	65
District IX	<u>192</u>	<u>211</u>	Southeast	49	39
Average	154	245	East Central	25	19
			Northeast	<u>48</u>	<u>0</u>
			Average	40	46
<u>Nebraska</u> (Agr. Expt. Sta.; Ext. Ser., Ins. Sur.)					
Northeast	65	188			
East	59	169			
Southeast	148	182			
Central	46	94			
South	<u>64</u>	<u>100</u>			
Average	76	147			
<u>North Dakota</u> (State Dept. Agr.)					
Southeast	112	177			
<u>Ohio</u> (Ext. Ser.; ARS, USDA)					
Northwest	201	132			
West Central	142	94			
Central	82	98			
Southwest	137	94			
Northeast	<u>124</u>	<u>169</u>			
Average	137	117			
	(153)4/	(111)4/			

4/ Averages calculated from county averages, not district averages.

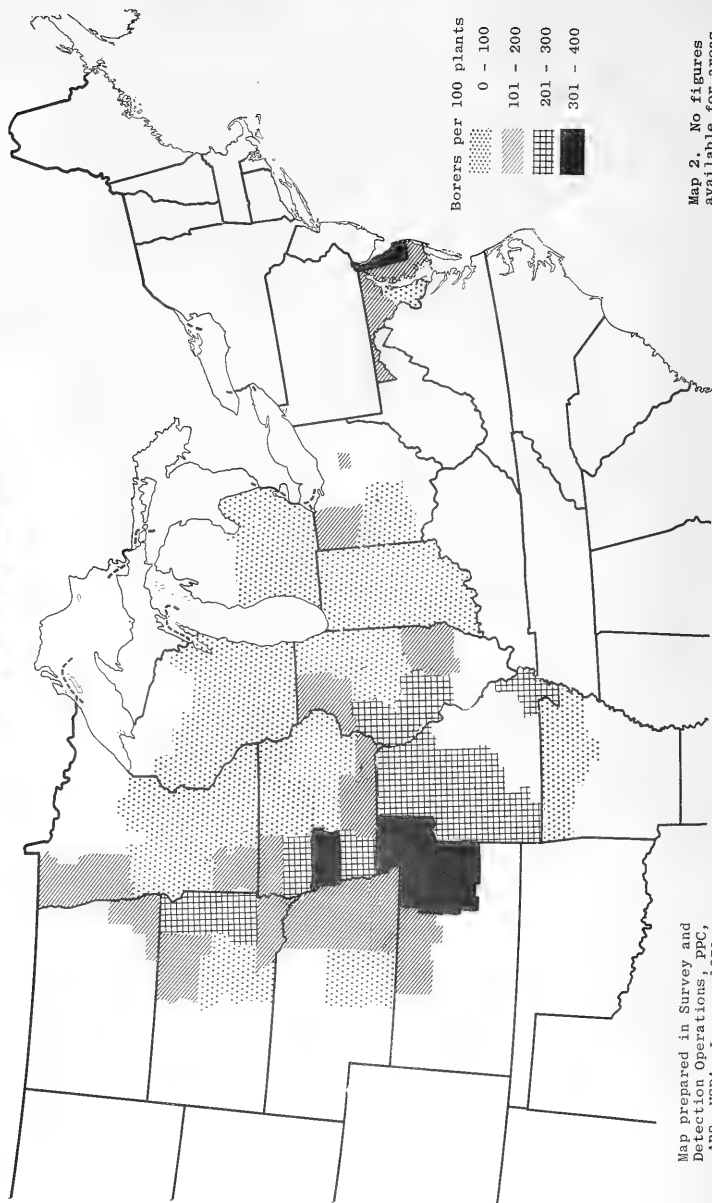
EUROPEAN CORN BORER ABUNDANCE FALL 1969



Map 1. Districts surveyed.
Average number of borers
per 100 stalks based on
1969 surveys. (Comparable
figures in Table 2.)

Map prepared by Survey and
Detection Operations, PPC,
ARS, USDA, January 1970

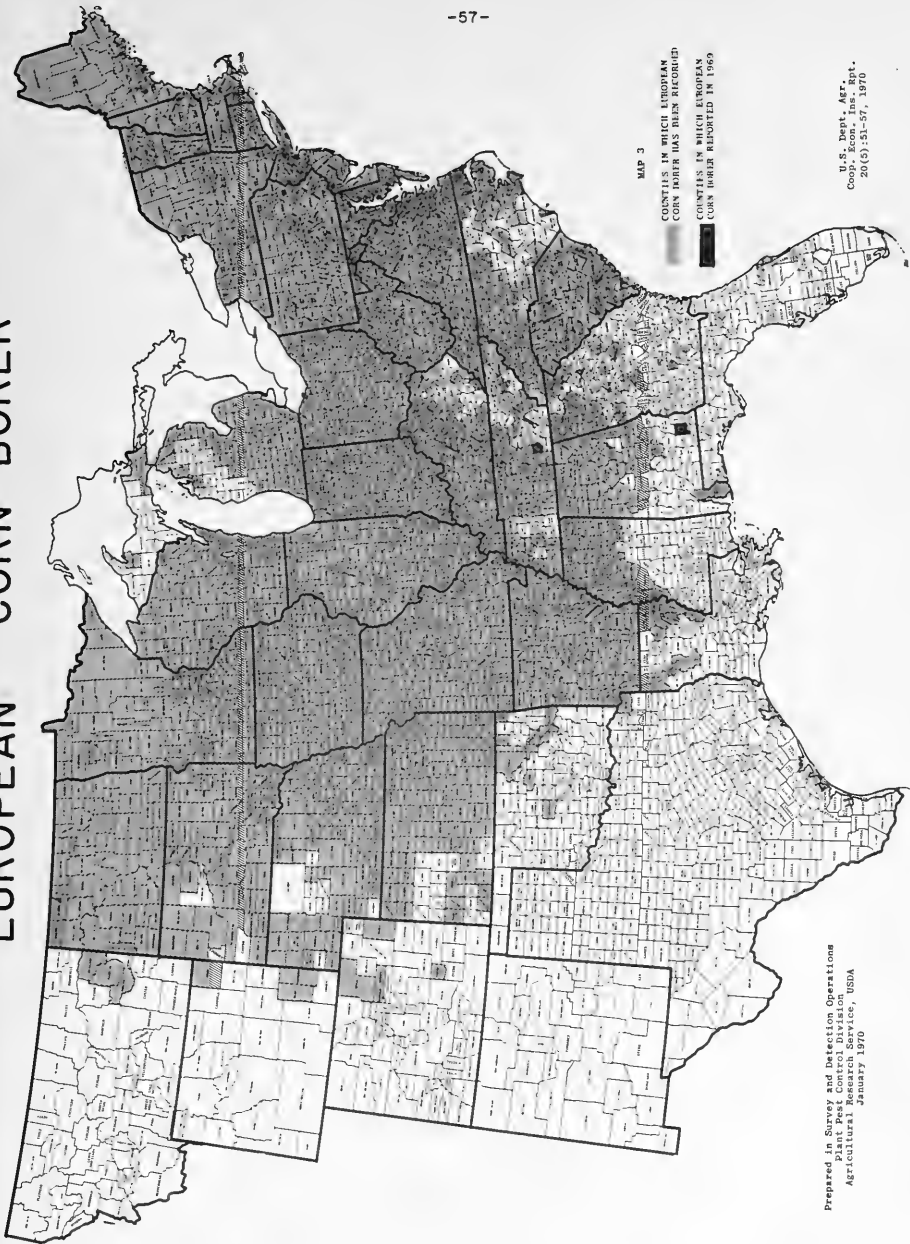
EUROPEAN CORN BORER ABUNDANCE FALL 1969



Map prepared in Survey and
Detection Operations, ppc,
ARS, USDA, January 1970

Map 2. No figures
available for areas
not shaded.

EUROPEAN CORN BORER



MAP 3

COUNTIES IN WHICH EUROPEAN CORN BORER HAS BEEN RECORDED

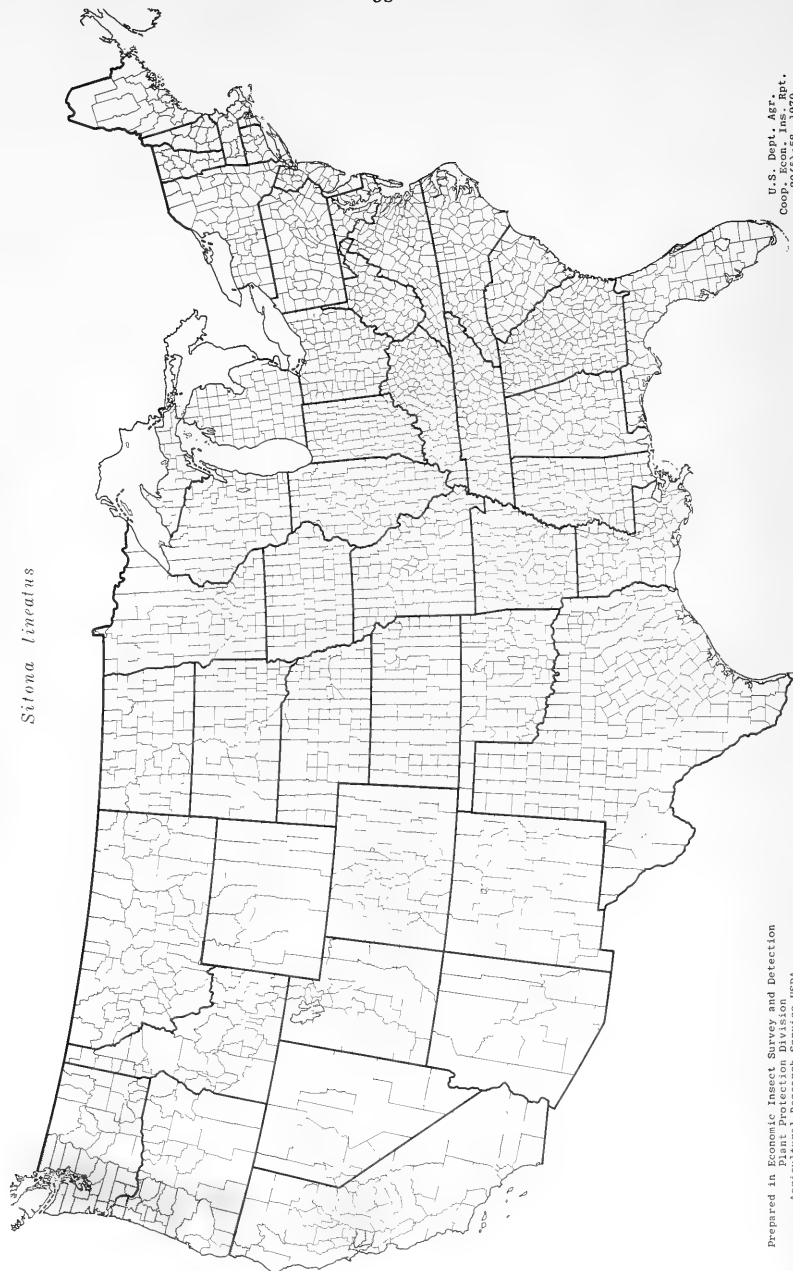
COUNTIES IN WHICH EUROPEAN CORN BORER REPORTED IN 1969

Prepared in Survey and Detection Operations
Section, Division of Plant Industry
Agricultural Research Service, USDA
January 1970

Coop. St. Dept., Agr. Res.
20 (5) 51-57, 1970

Distribution of Pea Leaf Weevil

Sitona lineatus



Prepared in Economic Insect Survey and Detection
Project, Agricultural Research Service, USDA
January 23, 1970

U.S. Dept. Agr. Entomology
Circular 20(3):58, 1970

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Cooperative
**ECONOMIC INSECT
REPORT**



Issued by

PLANT PROTECTION DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PROTECTION DIVISION

ECONOMIC INSECT SURVEY AND DETECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearinghouse and does not assume responsibility for accuracy of the material.

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Economic Insect Survey and Detection
Plant Protection Division
Agricultural Research Service
United States Department of Agriculture
Federal Center Building
Hyattsville, Maryland 20782

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG light to heavy with some damage to small grains in Texas. (p. 61).

HONEY BEE colonies damaged by low temperatures in Tennessee. (p. 62).

Prediction

SPRUCE BUDWORM populations expected to double in areas of Maine most seriously infested in 1969. Heavy damage to balsam fir and spruce expected. (p. 62).

Detection

A WIREWORM reported for the first time in Washington. (p. 61).

For new county records see page 63.

Special Reports

Distribution of Meadow Spittlebug. Map. (p. 64).

Insects Not Known to Occur in the United States
Black-Streaked Green Rice Leafhopper (Nephotettix apicalis Motschulsky).
(pp. 65-66).

Reports in this issue are for week ending January 30 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance.....	61
Insects Affecting	
Small Grains.....	61
Forest and Shade Trees.....	62
Forage Legumes.....	61
Man and Animals.....	62
Ornamentals.....	61
Beneficial Insects.....	62
Federal and State Plant Protection Programs.....	62
Detection.....	63
Light Trap Collections.....	63
Corrections.....	63
Distribution of Meadow Spittlebug. Map.....	64
Insects Not Known to Occur in the United States	
Black-Streaked Green Rice Leafhopper (<i>Nephotettix apicalis</i> Motschulsky)....	65

WEATHER BUREAU'S 30-DAY OUTLOOK

FEBRUARY 1970

The Weather Bureau's 30-day outlook for February is for temperatures to average above seasonal normals west of the Divide and over the Great Plains. Near normal temperatures are indicated elsewhere except for below normal in the Great Lakes region. Precipitation is expected to exceed normal in the Pacific Northwest and also from the northern Plains through the Great Lakes. Subnormal totals are indicated for the Southwest as well as much of the middle and south Atlantic Coast States. Elsewhere near normal precipitation is in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price \$5.00 a year.

WEATHER OF THE WEEK ENDING FEBRUARY 2

HIGHLIGHTS: Most areas enjoyed the mildest weather in several weeks. Most of the Nation received only light precipitation.

PRECIPITATION: A Pacific storm lashed the coast from Washington to northern California early in the week. Winds at Cape Blanco, Oregon, gusted to 72 m.p.h. Monday forenoon. Heavy rains fell along the coast, in the inland valleys, and in the intermountain region with snow in the higher mountains. The rains the past week have helped produce record-breaking January totals at numerous locations. At some stations, January 1970 was the rainiest month in more than half a century. About midweek, a storm developed over the central Rocky Mountains. Snow and high winds made travel difficult through the mountain passes. Scattered snow fell over the upper Mississippi River Valley and from the eastern Great Lakes to the northern and central Appalachians. In Wisconsin, a mixture of snow and freezing rain made highway travel difficult. The warm southerly winds melted some of the snow cover. Some light blowing dust occurred in western Great Plains on Wednesday. The "January thaw" in southeastern Wisconsin resulted in some runoff in the extreme southeastern part of the State. Weekly totals ranged from 4 to 7 inches along the Oregon coast, an inch or 2 in the western inland valleys, from 1 to 1.5 inches over much of the Deep South, and less than an inch over the rest of the Nation. Much of the area from the Far Southwest to southern Minnesota and Iowa received no precipitation or only light sprinkles or snow flurries. Weather of the week continued on page 63.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ASTER LEAFHOPPER (Macrostoteles fascifrons) - FLORIDA - Collected 2 adults in 100 sweeps of alfalfa at Gainesville, Alachua County. (Mead).

GREENBUG (Schizaphis graminum) - ARIZONA - Light; no buildup on grain on west side of Salt River Valley in Maricopa County. (Ariz. Coop. Sur.). NEW MEXICO - Mostly 2-10 per linear foot, ranged 20-30 per linear foot, in occasional wheat-field in Curry and Roosevelt Counties week ending January 23. Current counts 1-15 per linear foot on barley in Chaves County. (Mathews). TEXAS - Light to heavy on small grains in Rolling Plains. In many fields in Motley County during early January; controls required for spotted infestations. Light to heavy in Childress County. Some damage in Hall, Hardeman, Jones, and Young Counties. Light in Archer, Foard, and Haskell Counties. (Boring, Jan. 23). OKLAHOMA - Slight increase in wheat, averaged 22 per linear foot in one field in Stillwater area, Payne County. (Okla. Coop. Sur.). KANSAS - Ranged 1-5 per linear foot of wheat in Allén, Lyon, and Osage Counties. Negative in Cherokee, Crawford, Bourbon, Linn, Coffey, and Jefferson Counties. (Redding). ARKANSAS - Survey negative in small grain in northwest areas. (Boyer).

SPOTTED ALFALFA APHID (Therioaphis maculata) - FLORIDA - Nymphs and adults ranged 250-300 in 100 sweeps of alfalfa at Gainesville, Alachua County. (Mead).

SMALL GRAINS

A WIREWORM (Aeolus livens) - WASHINGTON - Adult trapped at Toppenish, Yakima County, by B.J. Landis September 11, 1969. Determined by T.J. Spilman. This is a new State record. (Landis).

WINTER GRAIN MITE (Penthaleus major) - TEXAS - Damage light on wheat in Jones County. (Boring, Jan. 23). OKLAHOMA - Very light, averaged about 1 per linear foot, in wheat in Payne County. (Okla. Coop. Sur.).

FORAGE LEGUMES

SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) - FLORIDA - Collected 7 adults in 100 sweeps of alfalfa at Gainesville, Alachua County. (Mead).

TARNISHED PLANT BUG (Lygus lineolaris) - FLORIDA - Recovered 10 adults in 100 sweeps of alfalfa at Gainesville, Alachua County. (Mead).

COWPEA APHID (Aphis craccivora) - FLORIDA - Collected 57 nymphs in 100 sweeps of alfalfa at Gainesville, Alachua County. (Mead).

PEA APHID (Acyrtosiphon pisum) - NEW MEXICO - Generally light, up to 10 per square foot on alfalfa in Eddy and Chaves Counties. (Mathews). FLORIDA - Collected 50 nymphs and adults in 100 sweeps of alfalfa at Gainesville, Alachua County. (Mead).

ORNAMENTALS

BEET ARMYWORM (Spodoptera exigua) - CALIFORNIA - Larvae medium and damaged chrysanthemums at Redwood City, San Mateo County. (Cal. Coop. Rpt.).

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) - FLORIDA - Adults severe on 98 percent of 2,000 rose plants at Miami, Dade County. (McHenry).

A LACE BUG (Stephanitis takeyai) - MARYLAND - Specimens collected on andromeda at Towson, Baltimore County, by C.W. McComb October 27, 1969. Determined by R.C. Froeschner. This is a new county record. (U. Md., Ent. Dept.).

FOREST AND SHADE TREES

SPRUCE BUDWORM (*Choristoneura fumiferana*) - MAINE - Egg mass survey begun in August 1969 indicates additional heavy damage to balsam fir and red spruce in 1970. Populations within areas most seriously infested in 1969 expected to double this year. (Maine For. Pest Notes, Nov.).

A SPIDER MITE (*Oligonychus subnudus*) - CALIFORNIA - Increasing on Monterey pine in 2-acre nursery planting at Oxnard, Ventura County. (Cal. Coop. Rpt.).

JUNIPER WEBWORM (*Dichomeris marginella*) - CALIFORNIA - Damage heavy on juniper in nursery at Hayward, Alameda County. Collected by P. Sweigart January 23. Determined by D.M. Weisman. Pest eradicated in 1944 and 1945. (Cal. Coop. Rpt.).

MAN AND ANIMALS

SCREW-WORM (*Cochliomyia hominivorax*) - No cases reported in U.S. January 25-31. Total of 58 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico January 18-24 as follows: Sonora 48, Chihuahua 9, Tamaulipas 1. Total of 10 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 168,000; Mexico 89,880,000. (Anim. Health Div.).

CATTLE LICE - OKLAHOMA - Mainly *Haematopinus eurysternus* (short-nosed cattle louse) increased to moderate on cattle in Noble County. Light in Mayes County. (Okla. Coop. Sur.). MISSOURI - *H. eurysternus* light on untreated and treated calves in St. Charles County. (Ronald). FLORIDA - Adults of *H. quadripertusus* (cattle tail louse) light on beef cattle at Ona, Hardee County. (Butler).

COMMON CATTLE GRUB (*Hypoderma lineatum*) - MISSOURI - Ranged up to 18 (averaged 2) per animal in untreated herd of 49 calves in St. Charles County. None observed in treated herd of 71 calves. (Ronald).

HORN FLY (*Haematobia irritans*) - FLORIDA - Adults ranged up to 100 (averaged 25) per animal at Ona, Hardee County. (Butler).

BROWN RECLUSE SPIDER (*Loxosceles reclusa*) - TENNESSEE - One specimen collected in metal telephone connector on outside of house on January 26, 1970, in Franklin County. This is a new county record. (Keener). OKLAHOMA - Heavy in garage at Stillwater, Payne County. (Okla. Coop. Sur.).

BENEFICIAL INSECTS

HONEY BEE (*Apis mellifera*) - ALABAMA - Honey production up 19 percent in 1969. Average colony produced 28 pounds, compared to 23 in 1968. Colonies declining, estimated at 89,000 in 1969. (Strong, Davis). TENNESSEE - Unusually low temperatures in January caused 3-5 percent loss of total colonies in State. (Little).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

CITRUS BLACKFLY (*Aleurocanthus woglumi*) - MEXICO - Chemical Control Zone - Inspections made of 31,627 citrus trees in 5 municipios of Nuevo Leon, 812 in 2 municipios of Tamaulipas. Found 1,087 trees infested in 3 municipios of Nuevo Leon and 2 trees at Reynosa in Tamaulipas. Inspections made of 234 citrus trees in 3 municipios of Baja California and 405 trees in 3 municipios of Sonora; all negative. Biological Control Zone - Inspected 12,285 citrus trees in municipios of Hidalgo, Guemez, and Padilla in Tamaulipas. Total of 24 trees in Guemez infested. (PPD Mex. Reg., Dec.).

IMPORTED FIRE ANT (*Solenopsis saevissima richteri*) - GEORGIA - Adults collected on rural roadside near Soperton, Treutlen County, December 16, 1969, by M.M. Glover. Determined by V.H. Owens, confirmed by D.R. Smith. This is a new county record. (PPD).

PINK BOLLWORM (*Pectinophora gossypiella*) - NEW MEXICO - Larval mortality shows 9 out of 10 dead in cotton fields in southern Eddy County. Two fields 100 percent infested. (Mathews).

TULIPTREE SCALE (*Toumeyella liriodendri*) - CALIFORNIA - Survey in San Jose, Santa Clara County, completed. Last scheduled year for eradication. (Cal. Coop. Rpt.).

WOOLLY WHITEFLY (*Aleurothrixus floccosus*) - CALIFORNIA - First treatment applied to about 78 percent of inner control zone at San Diego, San Diego County; no second treatment made. No treatment made in outer or delimiting zones; no new finds in these zones. (Cal. Coop. Rpt.).

DETECTION

New State Record - A WIREWORM (*Aeolus livens*) WASHINGTON - Yakima County (p. 61).

New County Records - BROWN RECLUSE SPIDER (*Loxosceles reclusa*) TENNESSEE - Franklin (p. 62). IMPORTED FIRE ANT (*Solenopsis saevissima richteri*) GEORGIA - Treutlen (p. 62). A LACE BUG (*Stephanitis takeyai*) MARYLAND - Baltimore (p. 61).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville, 1/23-29, BL - Armyworm (*Pseudaletia unipuncta*) 2, black cutworm (*Agrotis ipsilon*) 2, granulate cutworm (*Feltia subterranea*) 9.

CORRECTIONS

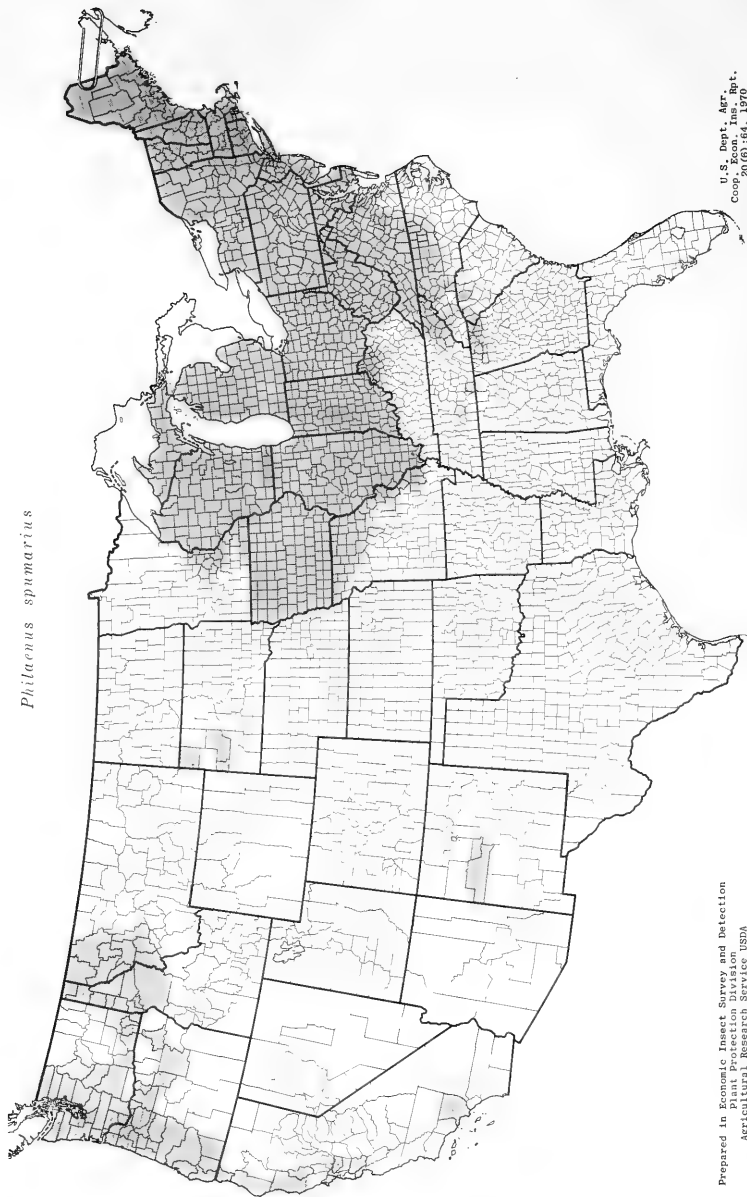
CEIR 19(39):755 - WALNUT HUSK FLY (*Rhagoletis completa*) for IDAHO should read AN OTITID FLY (*Euxesta anna*). (Gittins).

Weather of the week continued from page 60.

TEMPERATURE: Temperatures averaged above normal over most of the Nation. The exceptions were the northern and central portions of the California coast and the western portion of the Florida Peninsula. The West continued warm with temperatures much above normal until cooling late in the week dropped the temperatures to near normal. The East enjoyed the warmest weather since December. A storm system developed about midweek in the central Rocky Mountains. It moved northeastward through the Great Lakes region. Strong southerly winds ahead of the storm brought a quick warmup from the southern Great Plains to the middle Mississippi River Valley on Wednesday and the Eastern States on Thursday. A cold front dropped temperatures quickly as it moved eastward. St. Louis, Missouri, registered 76° on Wednesday but, on Thursday, the mercury climbed no higher than 37°. Richmond, Virginia, registered 75° on Wednesday but only 47° on Friday. By the weekend subfreezing weather had advanced almost to the gulf coast. Mobile, Alabama, registered 29° Saturday morning. In spite of the sharp cooling at the end of the period, much of the Missouri River Valley and upper Mississippi River Valley averaged 9° to 13° warmer than normal. (Summary supplied by Environmental Data Service, ESSA.)

Distribution of Meadow Spittlebug

Philaenus spumarius



U.S. Dept. Agr.
Coop. Econ. Ins. Rpt.
20 (6) :64, 1970

Prepared in Economic Insect Survey and Detection
Plant Protection Division
Agricultural Research Service, USDA
January 30, 1970

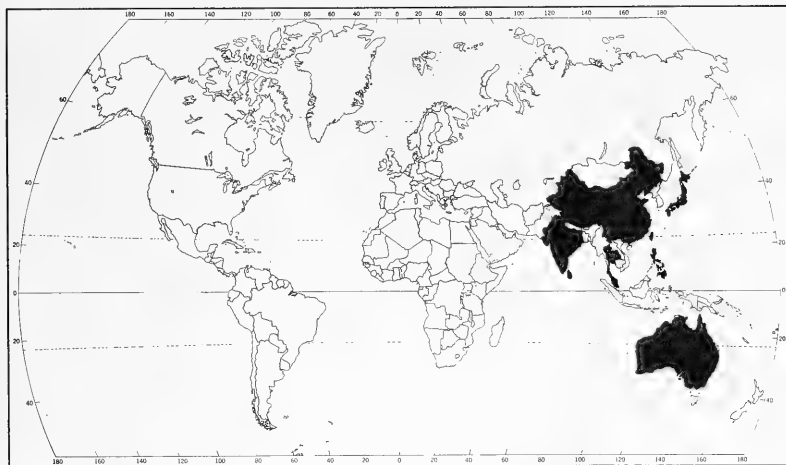
INSECTS NOT KNOWN TO OCCUR IN THE UNITED STATES

BLACK-STREAKED GREEN RICE LEAFHOPPER (Nephotettix apicalis Motschulsky)

Economic Importance: The cicadellid Nephotettix apicalis transmits rice stunt in Japan; transitory yellowing in Taiwan; yellow dwarf in Ceylon, Japan, Philippines, and Taiwan; and yellow orange leaf in Thailand. The other two Asian species in this genus, N. cincticeps (Uhler) and N. impecticeps Ishihara, also are vectors of several rice diseases. N. apicalis is the most important of these species partly because it has a wider Oriental and Australian distribution. Generally, rice plants infected by these viruses produce fewer grains or none at all. Adult and nymphal feeding, and oviposition cause death to plant tissue around the punctures. Heavy feeding will give the plant a salted appearance and may later cause leaf death, or loss of plant vigor. N. apicalis was intercepted 83 times since 1937; N. cincticeps 14 times since 1963; and N. impecticeps 51 times since 1964.

Distribution: Australia, Ceylon, China, India, Japan, Malaya, Micronesia, Philippines, Ryukyu Islands, Taiwan, and Thailand.

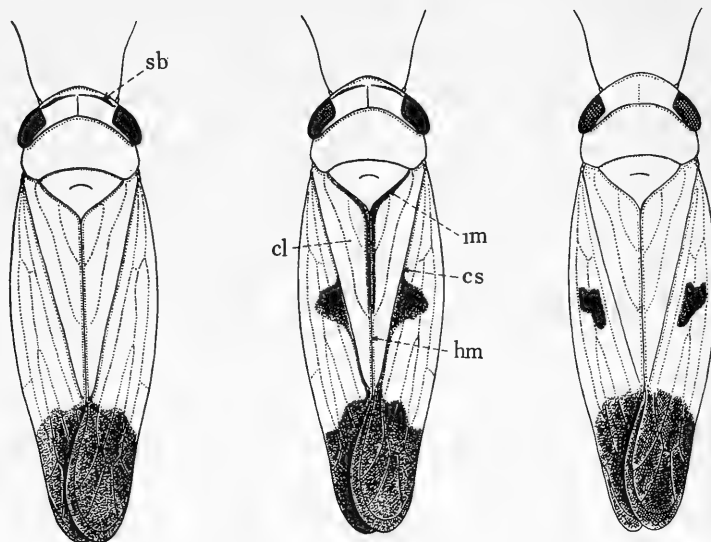
Hosts: Rice is the principle host, but also attacks wheat, sugarcane, foxtail millet, and wild grasses.



General Distribution of Nephotettix apicalis (Motschulsky)

Life History and Habits: In the Philippines N. apicalis feeds mainly on rice but also on wild grasses. Egg and nymphal stages vary from 5 to 7 days and from 14 to 19 days respectively. Females begin oviposition 2-3 days after emergence. In Japan there are about 4-5 generations per year. Eggs are deposited in groups of 1-10 in the leaf tissue along the midrib. The female deposits over 100 eggs.

Description: Adult male color pattern is as follows: N. apicalis tegminal black central spots visible, often meeting along claval suture to the apical black markings. Clavus also often smoky gray-brown, with a blackish tinge along inner and hind margins. N. cincticeps tegminal black central spots rarely present. N. impicticeps vertex without submarginal black band. Tegminal central black spots present or absent. Females of these species are difficult to identify from only one specimen.



Nephotettix cincticeps

Nephotettix apicalis

Nephotettix impicticeps

Illustrations of typical male forms

cl, clavus; cs, claval suture;
hm, hind margin of tegmen; im, inner
margin of tegmen; sb, submarginal
band.

Selected References: 1. Ishihara, T. 1965. 16 pp. Ent. Lib. Coll. Agr., Ehime Univ., Matsuyama. 2. Ishihara, T. 1964. Shikoku Ent. Soc. Trans. 8:39-44. 3. Nielson, M.W. 1968. U.S. Dept. Agr. Tech. Bul. No. 1382:269-278. 4. Reddy, D.B. 1967. Plant Protect. Comm. for South East Asia and Pacific Reg. Inf. Letr. No. 55:1-7. Illustrations courtesy of T. Ishihara.

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Cooperative
**ECONOMIC INSECT
REPORT**



Issued by

PLANT PROTECTION DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PROTECTION DIVISION

ECONOMIC INSECT SURVEY AND DETECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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United States Department of Agriculture
Federal Center Building
Hyattsville, Maryland 20782

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG apparently increasing on small grains in some central Texas counties; some damage in Rolling Plains area. (p. 69).

WINTER GRAIN MITE heavy on small grain in central and Rolling Plains areas of Texas. (p. 69).

COMMON CATTLE GRUB adults active in Oklahoma. (p. 70).

Special Reports

Summary of Insect Conditions in Hawaii - 1969. (pp. 73-77).

Distribution of European Apple Sawfly. Map. (p. 78).

Reports in this issue are for week ending February 6 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance.....69

Insects Affecting

Corn, Sorghum, Sugarcane.....69	Ornamentals.....70
Small Grains.....69	Forest and Shade Trees.....70
Turf, Pastures, Rangeland.....69	Man and Animals.....70
Forage Legumes.....69	Households and Structures.....71
Deciduous Fruits and Nuts.....70	

Federal and State Plant Protection Programs.....71

Corrections.....71

Hawaii Insect Report.....72

Summary of Insect Conditions in Hawaii - 1969.....73

Distribution of European Apple Sawfly. Map.....78

WEATHER OF THE WEEK ENDING FEBRUARY 9

HIGHLIGHTS: The West continued mild. A cooling trend over the East produced colder than normal average temperatures. A damaging wind and rain storm struck New England. Several tornadoes occurred in Florida.

PRECIPITATION: Moderate rain fell on several days early in the week along the northern Pacific coast and in the inland valleys with snow in the nearby Cascades and eastward to the Rocky Mountains. Isolated light showers fell in Utah but no important precipitation occurred farther south. The Great Plains received little or no precipitation except some locally moderate to heavy showers in eastern Texas on Thursday and Friday and in parts of south-central Texas on Saturday and Sunday. Light snow fell on several days early in the week in Kentucky and Tennessee with rain farther south. Rain covered much of the East on Sunday. A storm hit New England early in the week. Heavy rain accompanied by high winds caused erosion and local flooding. The wind damaged buildings, trees, and utility lines. Blue Hill Observatory, Milton, Massachusetts, measured gusts of 92 m.p.h. on Monday and 102 m.p.h. on Tuesday.

TEMPERATURE: Mild temperatures continued over the western half of the Nation. It was the fourth consecutive week with above-normal temperatures. A large area which included southern Idaho and nearby parts of neighboring State averaged 9° to 12° warmer than normal. Mid-America warmed gradually during the week. Maximum temperatures at Devils Lake, North Dakota, warmed from -8° on Monday to 33° on Friday. Valentine, Nebraska, warmed to 56° on Friday and temperatures over western Kansas reached the low 60's. The western Great Plains averaged a few degrees above normal. The lower Missouri and Mississippi River Valleys averaged near normal. Below-normal average temperatures occurred over the East. In general, mild temperatures prevailed over the East early and late in the week and bitter cold at midweek. On Wednesday morning, the zero line pushed southward into northern Georgia where Blairsville registered -3°. On that morning, subzero temperatures prevailed from the Red River of the North Valley to northern Vermont. Sault Ste. Marie, Michigan, registered -24°. Gradual warming brought above-normal temperatures to the East by Sunday afternoon. (Summary supplied by Environmental Data Service, ESSA.)

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

CORN LEAF APHID (Rhopalosiphum maidis) - TEXAS - Light, ranged 0-3 per linear foot, on small grains in Limestone, Bosque, Brazos, Burleson, Washington, and Grimes Counties. (Green, Jan. 30).

GREENBUG (Schizaphis graminum) - ARIZONA - Survey of grain shows no buildup on Yuma Mesa; averaged 20 per linear foot on 10-inch grain and 3 per linear foot on 3 to 5-inch grain in lower Gila Valley; one field in Parker Valley averaged 6 per linear foot on 5-inch grain in Yuma County. (Ariz. Coop. Sur.). TEXAS - Damaged some small grain January 17-23 in Dickens, Haskell, Jones, and Motley Counties; some control applied. Light to medium in Young County, heavy in Knox County. (Boring). Light on small grains in 10 central area counties; ranged 0-3 per linear foot. Ranged 5-20 per linear foot in Bosque, Hamilton, and Lampasas Counties. Appeared to be building up in these areas. (Green). Currently light in central area small grain. Light to medium and scattered in counties near Denton in north-central area. Damage moderate to severe in Foard County; some controls applied. Light to moderate in Jones, Haskell, Hardeman, and Motley Counties. (Boring et al.). Appeared to be building up in some central area counties. (Green). OKLAHOMA - Ranged up to 100 per linear foot in isolated wheatfields in some southwest and west-central counties; light in most fields. (Okla. Coop. Sur.). KANSAS - Surveys negative in 6 northwest counties, 6 southwest counties, and 1 west-central county. Ranged 0-2 per row foot of wheat in Greeley and Meade Counties week of January 24-30. Currently, survey negative in 2 northeast counties, 1 west-central county, 4 east-central counties, and 3 southwest counties. Ranged 1-5 per linear foot of wheat in Atchison and Ottawa Counties. (Martinez et al.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - OKLAHOMA - Light on alfalfa in Payne County. (Okla. Coop. Sur.).

CORN, SORGHUM, SUGARCANE

SOUTHWESTERN CORN BORER (Diatraea grandiosella) - KANSAS - No heavily infested fields found in fall survey of southeast and south-central districts. All fields checked infested. Sampled 5 cornfields per county for plants infested, girdled, or lodged. (Redding).

SMALL GRAINS

WINTER GRAIN MITE (Penthaleus major) - TEXAS - Light to medium in Young and Archer Counties; damage severe on oats in eastern Archer County. Spotted and heavy on small grains in McLennan County; ranged 30-150 per linear foot in northwest part of county. Spotted and light on barley in Limestone, Coryell, and Bosque Counties; ranged 5-30 per linear foot week ending January 30. Currently scattered and heavy on small grain in Archer and Jones Counties. Light and scattered in Limestone, McLennan, and Bosque Counties; somewhat heavier in northern part of McLennan County. (Boring, Green).

TURF, PASTURES, RANGELAND

FIRE ANT (Solenopsis geminata) - TEXAS - Heavy on pastures near Edna, Jackson County. (Green).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - MISSISSIPPI - Adults averaged 1.1 per square foot in alfalfa from 10 (1 square foot) samples. (Pitre).

DECIDUOUS FRUITS AND NUTS

WOOLLY APPLE APHID (Eriosoma lanigerum) - CALIFORNIA - Nymphs and adults heavy on apple trees in Vista, San Diego County. (Cal. Coop. Rpt.).

ORNAMENTALS

GELECHIID MOTHS - OREGON - Survey of 12 nurseries for Dichomeris marginella (juniper webworm) in Gresham and Troutdale area of eastern Multnomah County revealed 2 infestations. None found in landscape plantings around 10 homes. (Larson). CALIFORNIA - General infestation of Eucordylea huntella in Kruse Rhododendron Reserve near Fort Ross, Mendocino County. Larvae causing 50-75 percent bud kill. (Cal. Coop. Rpt.).

BAGWORM (Thyridopteryx ephemeraeformis) - ALABAMA - Examination of eggs on some juniper indicates high overwintering survival in Lee and Chambers Counties. (McQueen).

WALNUT SCALE (Aspidiotus juglansregiae) - CALIFORNIA - Medium on Prunus cerasifera trees in San Bernardino, San Bernardino County. (Cal. Coop. Rpt.).

CUBAN-LAUREL THRIPS (Gynaikothrips ficorum) - CALIFORNIA - Medium on Ficus nitida at Monrovia, Los Angeles County. (Cal. Coop. Rpt.).

FOREST AND SHADE TREES

A WEEVIL (Cylindrocopturus eatoni) - CALIFORNIA - Generally infested ponderosa pine in 20-acre stand in Quality Mills area of Tuolumne County. Infestation increasing. (Wood, USFS).

A CYNIPID WASP (Callirhytis perdens) - CALIFORNIA - Medium in live oak trees in Solvang, Santa Barbara County. (Cal. Coop. Rpt.).

MAN AND ANIMALS

SCREW-WORM (Cochliomyia hominivorax) - No cases reported in U.S. February 1-7. Total of 18 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico January 25-31 as follows: Sonora 14, Chihuahua 3, Tamaulipas 1. Total of 5 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 168,000; Mexico 89,250,000. (Anim. Health Div.).

COMMON CATTLE GRUB (Hypoderma lineatum) - OKLAHOMA - Counts per head in cattle ranged 1-7 in Garvin County, 0-3 (average 0.7) in Sequoyah County. Moderate in Mayes County. Numbers in backs of cattle slaughtered at packing plant in Oklahoma City, Oklahoma County, decreasing. Adults active January 27 in Rattan area, Pushmataha County. (Okla. Coop. Sur.).

HARD-BACKED TICKS - OKLAHOMA - Most Dermacentor albipictus (winter tick) dropped off cattle and horses in Pushmataha County. Amblyomma americanum (lone star tick) ranged 3-4 per head on cattle January 27. (Okla. Coop. Sur.).

EAR TICK (Otobius megnini) - OKLAHOMA - Ranged 1-6 per ear on 3 of 6 cows in Vian area of Sequoyah County. (Okla. Coop. Sur.).

CATTLE LICE - OKLAHOMA - Mainly Haematopinus eurysternus (short-nosed cattle louse) moderate on cattle in Garvin and Mayes Counties. Light on 4 of 6 cows in Sequoyah County. (Okla. Coop. Sur.).

HOUSEHOLDS AND STRUCTURES

SUBTERRANEAN TERMITES (Reticulitermes spp.) - OKLAHOMA - Swarming reported at Lawton, Comanche County, January 21. (Okla. Coop. Sur.). CALIFORNIA - Workers, probably R. hesperus (western subterranean termite), damaged shelves, records, and boxes in bank at Isleton, Sacramento County. (Cal. Coop. Rpt.).

AUSTRALIAN COCKROACH (Periplaneta australasiae) - CALIFORNIA - Nymphs light in residence in Sacramento, Sacramento County. (Cal. Coop. Rpt.).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

GIANT AFRICAN SNAIL (Achatina fulica) - FLORIDA - Two snails in estivation found in trash dump at Opa-locka, Dade County, January 30. This is about 2.5 miles northwest of original infestation. (PPD).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - TENNESSEE - Mound surveys negative in Bradley, Bedford, Davidson, Fayette, Giles, Hamilton, Lincoln, Marion, Maury, Polk, Tipton, and Wilson Counties. (Gordon). ARKANSAS - Mound surveys during January in Columbia, Lafayette, and Miller Counties negative. (Loftin).

CORRECTIONS

CEIR 19(44):813 and 20(2):21 - A FLEA BEETLE (Chaetocnema opacula) ... Josephine County ... should read ... Jackson County. (Horning).

HAWAII INSECT REPORT

Corn, Sorghum - CARMINE SPIDER MITE (*Tetranychus cinnabarinus*) light to heavy in seed corn and CORN LEAF APHID (*Rhopalosiphum maidis*) heavy in whorls of small planting of foot-high sorghum at Kaunakakai, Molokai. (Fujimoto, Funasaki, Jan. 30).

General Vegetables - All stages of GREENHOUSE WHITEFLY (*Trialeurodes vaporariorum*) medium in 1 acre of cucumber and trace in 1 acre of snap beans at Waimanalo, Oahu. BEAN FLY (*Melanagromyza phaseoli*) adults light in 0.25 acre of young snap beans at Waimanalo, Oahu; 1-2 per seedling. All stages moderate in backyard planting of yardlongbeans at Waikapu, Maui. (Miyahira, Funasaki). CARMINE SPIDER MITE adults trace in 5,000 square feet of eggplant at Waikapu; less than 1 per leaf. (Ah Sam, Miyahira).

Fruits and Nuts - COCONUT SCALE (*Aspidiotus destructor*) colonies generally light on leaves of avocado and mango, heavy on some, in residential area at Waipahu, Oahu. First report of infestation on mango in State. (Rokui, Funasaki, Jan. 30). PALM MEALYBUG (*Palmicultor palmarum*) heavy on young leaf shoots of 25 percent of 200+ coconut trees surveyed at Kahului, Maui; light or none on remaining trees. (Miyahira). FLORIDA RED SCALE (*Chrysomphalus aonidum*) light to heavy on 200 coconut trees at Kahului airport and 100 trees in Kaanapali area, Maui. Up to 45 scales per square inch on 5 percent of trees; 75 percent with 6 per leaflet. (Ah Sam, Miyahira). COCONUT LEAF MINER (*Agonoxena argaula*) larvae heavy, up to 18 per leaflet, on young coconut trees at Mahukona, Hawaii. (Yoshioka).

Ornamentals - ORCHID WEEVIL (*Orchidophilus aterrimus*) adults and larvae heavy on backyard dendrobium orchid plants at Lahaina, Maui. Sporadic chemical spray program employed. (Miyahira).

Forest and Shade Trees - Populations of a NOCTUID MOTH (*Melipotis indomita*) increasing in several areas on Oahu. Larvae abundant under bark of old kiawe (*Prosopis pallida*) trees. Adults numerous in tall grass and weed growths at Koko Head, Waianae, Ewa, and airport area of Honolulu, Oahu; numerous in light traps in Honolulu and Ewa. (Funasaki, Au, Jan. 30).

Beneficial Insects - Fifteen adults of a KLAMATH-WEED BEETLE (*Chrysolina quadrigemina*) noted on Klamath-weed (*Hypericum perforatum*) in vicinity of release site on Hualalai, Hawaii; no larvae or pupae. (Yoshioka). Normally in hibernation this time of year. (Kawamura).

Miscellaneous Insects - Adults of a GRASSHOPPER (*Trimerotropis pallidipennis*) heavy, up to 7 per square yard, in Bermuda grass along road shoulders and ditches in sugarcane fields at Ewa, Oahu. Adults of a LONGHORN GRASSHOPPER (*Euconocephalus nasutus*) reported "buzzing" at night on Oahu, mostly from windward areas. (Funasaki, Jan. 30). Collected and destroyed 1,002 individuals of GIANT AFRICAN SNAIL (*Achatina fulica*), mostly juveniles, on Kauai during January; 996 at Poipu, 6 at Wahiawa, none at Nawiliwili. Baiting continues at Poipu and Wahiawa. Destroyed 44 juveniles during January in North Kona, Hawaii. (Sugawa, Yoshioka).

SUMMARY OF INSECT CONDITIONS IN HAWAII - 1969

Highlights

NEW GUINEA SUGARCANE WEEVIL caused much damage on Kauai. A GRASS WEBWORM was less damaging than in 1968. DIAMONDBACK MOTH heavily damaged many cole crops. GREENHOUSE WHITEFLY and CARMINE SPIDER MITE damaged many vegetables. COCONUT SCALE spread on Oahu and infested papaya and banana for the first time.

Corn, Sugarcane

CORN EARWORM (Heliothis zea) ranged light to heavy on all seed, field, and sweet corn all year. CORN PLANTHOPPER (Peregrinus maidis) was light on Oahu, Kauai, and Molokai from January to July but was heavy by September and October. Cyrtorhinus lividipennis, a capsid bug predacious on P. maidis eggs, was numerous in August. TUMID SPIDER MITE (Tetranychus tumidus) was severe on sweet corn in the Waianae district on Oahu from August to October, and annoyed field workers during harvest.

NEW GUINEA SUGARCANE WEEVIL (Rhabdoscelus obscurus) caused much damage on windward Kauai, and was light to moderate in some fields on Oahu, Maui, and Hawaii.

Turf, Pasture, Rangeland

A MUSCID FLY (Lispe leucospila) collected from a lawn at Hickam Air Force Base, Honolulu, Oahu, in April 1968 was a new Western Hemisphere record. A CYNIPID WASP (Gillettea taraxaci) collected at 6,000 feet on Mauna Loa, Hawaii, in June 1966, was a new State record. Adults emerged from false-dandelion (Hypochoeris radicata) collected in May 1969 on Mt. Haleakala, Maui, at 10,000 feet, for a new island record.

A GRASS WEBWORM (Herpetogramma licarsisalis) was less damaging to pastures. Numbers were light all year on Oahu. Damage was heavy in some pastures on Kauai in June and August but trace to light in most. Damage was moderate to heavy on windward Maui in January and March and from August to October, and at high elevations at Pahoia and in the North and South Kona districts on Hawaii from August to October. Damage was light to moderate on central Molokai in August.

COTTONY-CUSHION SCALE (Icerya purchasi) was heavy to severe on greenleaf desmodium (Desmodium intortum) in 100 acres of pasture at Honomalino, Hawaii, in December. A BILLBUG (Sphenophorus venatus vestitus) caused moderate to heavy damage to Tifgreen lawns at Hilo in January and February. In other areas on Hawaii and on all other islands, populations were trace to light in lawns and pastures.

General Vegetables

GREEN PEACH APHID (Myzus persicae) was severe, 50-650 per leaf, on eggplant at Pearl City and Punaluu, Oahu, in August, and light to moderate in other fields on Oahu, Kauai, and Maui. TOBACCO FLEA BEETLE (Epitrix hirtipennis) was moderate, up to 30 per leaf, on eggplant at Kaunakani, Kauai, and at Koko Head and Halawa, Oahu, during summer, and light in other plantings.

BEAN FLY (Melanagromyza phaseoli) was trace to light on commercial beans and soybeans statewide due to scheduled sprays. Damage was medium to heavy in home and community gardens and abandoned fields, but counts were trace on wild beans.

CABBAGE WEBWORM (Hellula rogatalis) severely stunted daikon and destroyed the mustard cabbage crop at Koko Head in August and September and at Waimanalo, Oahu, in October and November. Controls were too late to be effective. Counts were light elsewhere on these 2 hosts statewide. DIAMONDBACK MOTH (Plutella xylostella) heavily damaged Chinese mustard, Chinese and head cabbages, watercress, radish, daikon, and broccoli on all major islands. Controls were needed all year. IMPORTED CABBAGEWORM (Pieris rapae) was light on head cabbage and other cole crops on Maui, Hawaii, and Oahu. Larvae and adults were heavy in some fields during spring.

MELON FLY (Dacus cucurbitae) egg laying injured 60 percent of the pumpkins and bittermelons at Pearl City in April. Nearby wild momordica was heavily infested. Egg laying injured 30 percent of the watermelons at Kahuku, Oahu, in August.

GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) was severe, especially on egg-plant, tomato, snap beans, cucumber, and bittermelon, statewide during spring and summer. Heavy numbers prevailed on tomatoes in Kona, Hawaii, during winter. Controls had to be intensive. CARMINE SPIDER MITE (Tetranychus cinnabarinus) increased on eggplant and snap beans from February and on other crops from April in lowland farms on Oahu, Kauai, and Maui. Several snap bean fields on Oahu were unmarketable due to feeding scars. Heavy to severe numbers stunted watermelon, cucumber, pumpkin, and squash during summer. Controls were needed until November.

LEAF MINER FLIES (Liriomyza spp.) were moderate to heavy during summer in commercial tomatoes, snap and long beans, mustard cabbage, cucumbers, watermelons, Chinese squash, dishcloth gourd, and green onions on Maui, Kauai, and especially Oahu. Intensive sprays were not effective.

SWEETPOTATO VINE BORER (Omphisa anastomosalis) was heavy after rains in January and February in all sweetpotatoes on windward Oahu where most of the State's sweetpotato is grown. Trace to light numbers prevailed for the rest of the year. TUMID SPIDER MITE (Tetranychus tumidus) was heavy to severe on sweetpotatoes at Waiahole, Oahu, in May and trace during other months.

GIANT AFRICAN SNAIL (Achatina fulica) surveillance and bait applications continued all year in locally infested areas on Kauai and Hawaii. On Kauai, over 6,800 were picked up in residential areas of Poipu, 300 in weeds at Wahiawa, and 81 in harbor grounds at Nawiliwili. Over 500 were picked up in weeds at North Kona, Hawaii. Controls were needed to protect crops after heavy winter rains on Oahu and Maui.

Fruits and Nuts

LARGE MANGO TIP BORER (Bombotelia jocosatrix) has not become a serious mango pest. Only trace numbers prevailed on mango foliage. It occurs only on Oahu and Kauai.

Moderate numbers of COCONUT LEAF ROLLER (Hedylepta blackburni) damaged up to half of the coconut fronds on leeward Oahu from Aiea to Makaha during summer. Infestations were generally light on all other islands. COCONUT SCALE (Aspidiotus destructor) became widespread on coconuts on Oahu. Light to heavy colonies infested many trees not infested before. Light to medium numbers infested papaya and banana for the first time on windward Oahu in September. Some papaya growers applied controls.

BARNACLE SCALE (Ceroplastes cirripediformis) was light in a 140-acre passionfruit farm at Kahului, Maui, but heavy in 15 of these acres at the end of the year.

An APHID (Pentalonia nigronervosa) was spotty and heavy in leaf axils of young banana in fields at Waimanalo, Waiahole, Kaneohe, and in yards at Laie, Oahu, in March. Heavy to severe numbers, 50-75 per square inch, infested fields at Waikane, Oahu, in November. It was generally light on Kauai, Maui, and Hawaii.

A STINK BUG (Plautia stali) which occurs only on Oahu, caused no significant damage to fruit. Light numbers were widespread on common guava on roadsides at Waimanalo and Kaneohe from April to August. Counts were heavy on some strawberry guava in residential areas at Koko Head in April, but damage was light. Numbers were trace to light on beans, ornamentals, pomegranate, and litchi during 1969.

ORIENTAL FRUIT FLY (Dacus dorsalis) was controlled by protein insecticide baits sprayed on borders of commercial fruits. Damage was light. However, numbers were moderate to heavy in wild guava, rose apple, mountain-apple, and other wild fruits. MEDITERRANEAN FRUIT FLY (Ceratitis capitata) was light in plums at Waimea, Hawaii, elevation 2,700 feet, and in peach and loquat at Kula, Maui, at 4,000 feet. C. capitata has become a minor pest of fruit production in Hawaii.

Ornamentals

Three new State records were reported in 1969. An ERIOPHYID MITE (Eriophyes gardeniella) was intercepted March 23, 1962, on gardenia flowers at Honolulu, Oahu, destined for outside of the State. A LEAFHOPPER (Empoasca stevensi) was moderate on plumeria foliage at Honolulu in January 1969. Light numbers later infested plumeria at Kaneohe, Waianae, Waimanalo, Pearl City, and several areas in Honolulu. A WHITEFLY (Paraleyrodes perseae) was light on plumeria in the lower Manoa area of Honolulu in January. OLEANDER APHID (Aphis nerii) was light on oleander at Poipu, Kauai, in October for a new island record.

KOA HAOLE LOOPER (Anacamptodes fragilaria) was moderate on Oahu and at Keauhou, Hawaii, during spring. Larvae fed on leaves of rose, hibiscus, and pear in residential areas and on koa haole, kiawe, tree tobacco, and slender mimosa in wasteland and wayside areas. Numbers were trace for the rest of the year.

Heavy numbers of WEEVILS (Orchidophilus spp.) prevailed in some greenhouses. Damage was sporadic to Vanda and Dendrobium orchids, especially on Oahu and Hawaii.

WESTERN FLOWER THRIPS (Frankliniella occidentalis) was generally light in commercial roses, chrysanthemums, and carnations throughout 1969 on Oahu and Maui. HAWAIIAN THRIPS (Taeniothrips hawaiiensis) was light to heavy on flowers of maunaloa, gardenia, and other ornamentals on all islands during spring and summer.

Forest and Shade Trees

A NOCTUID MOTH (Melipotis indomita) was reported from Honolulu, Oahu, and Lihue, Kauai, in June, Molokai in August, and Maui in September for new State and island records. Adults were common in wastelands with dense growths of kiawe (Prosopis pallida). Larvae were heavy under the bark of older trees. KIAWE FLOWER LOOPER (Cosymbia serrulata) adults per light trap ranged 0-66 in March, 2-293 in July, and 0-61 in October on Oahu.

BARNACLE SCALE (Ceroplastes cirripediformis) was light on fiddlewood trees at Koko Head, Oahu, in January and heavy in March. Pruning and chemical controls effectively reduced numbers. Counts on fiddlewoods were light to moderate and scattered in residential and business areas on Oahu throughout the year and severe at Wailuku, Maui, in November.

CUBAN-LAUREL THRIPS (Gynaikothrips ficorum) increased on Chinese banyan at Hilo, Hawaii, and at Honolulu, Oahu, in April but remained light for the rest of 1969. In April, there were as many as 87 nymphs and 40 adults per leaf at Hilo and 52 nymphs and 25 adults per leaf at Honolulu. Numbers were light on other islands. Montandoniola moraguesi (an anthocorid bug) preyed on the thrips in many areas.

General Pests

CHINESE ROSE BEETLE (Adoretus sinicus) adults continued to cause moderate to heavy foliar damage to ornamentals, crops, and fruit and shade trees. Controls were needed all year on commercial roses, sweet corn, edible ginger, and beans.

A PLATASPID BUG (Coptosoma xanthogramma) was heavy on jade vine in March and maunaloa vine at various times on Kauai, Oahu, Maui, Lanai, and Hawaii. On Oahu, this pest was heavy on sesban trees at Kaneohe during spring and damaged soybeans for the first time at Waimanalo in September. A heavy buildup on Mucuna sp. in December annoyed hotel guests in the bayfront area at Hilo, Hawaii. SOUTHERN GREEN STINK BUG (Nezara viridula) was light on ornamentals, fruits, and vegetables on all islands. Slight buildups lightly damaged Dendrobium orchids, citrus, mustard cabbage, and long beans.

Man and Animals

MOSQUITOES were taken in 51 light traps on Oahu from December 1968 to October 1969. VEXANS MOSQUITO (Aedes vexans nocturnus) averaged 9.4 per trap per month. The monthly average per trap was highest (39.1) in December and lowest (0.9) in October. Collections were higher in windward areas during winter and spring and low in all areas during summer and fall. SOUTHERN HOUSE MOSQUITO (Culex pipiens quinquefasciatus) averaged 102.6 per trap per month. The monthly average per trap was highest (364.1) in January and lowest (23.0) in October. Collections were higher in windward areas and the Waianae district during winter and spring and in the central area during summer and fall.

A BITING MIDGE (Forcipomyia indecora) was a nuisance in homes at Honolulu and Kaneohe, Oahu, in February and March. After heavy rains it was the most abundant and widespread midge. CLUSTER FLY (Pollenia rudis) annoyed residents at North and South Kohala, Hawaii, from December 1968 until May 1969. Another outbreak occurred in early November. Numbers remained heavy until the end of the year at Volcano, Paaui, Waimea, North Kohala, and South Kona.

HORN FLY (Haematobia irritans) adults were generally light to medium, 50-75 per head, on pastured cattle on Maui. Generally light numbers prevailed on cattle on Oahu, Kauai, and Hawaii. Heavy numbers of STABLE FLY (Stomoxys calcitrans) annoyed horses and cattle in pastures at Makawao, Maui, in December.

A SPHECID WASP (Pison punctifrons) was collected in March 1960 and in August 1961 at Ewa, Oahu, for a new Western Hemisphere record. A EULOPHID WASP (Tetrastichus chrysopae), reared from Chrysopa lanata (a green lacewing), was reported as a new State record. The parasitized cocoon was collected at Honolulu in April 1969.

Large numbers of a MILLIPED (Trigonilium lumbricinum) moving from weeds into residential areas were a nuisance in the North Kona area on Hawaii during January.

Stored Products

Larvae of a DERMESTID BEETLE (Trogoderma inclusum) taken from a trogotrap in a feedstore at Honolulu, Oahu, in February was reported as a new State record.

Beneficial Insects

All stages of a LADY BEETLE (Coccinella septempunctata brucki), introduced in 1958 to control aphids, were recovered from cucumbers infested with Aphis gossypii (melon aphid) at Halawa, Oahu, in October. Larvae of a LADY BEETLE (Cryptolaemus montrouzieri) built up on Planococcus citri (citrus mealybug) infesting monkeypod trees at Honolulu in May. Thousands crawled along sidewalks and on buildings. A HISTERID BEETLE (Hister nomas), a predator of Haematobia irritans (horn fly), was found for the first time on Kauai in pastures at Kalaheo in June.

A EULOPHID WASP (Bestiola mira) reared from Odonaspis greeni (an armored scale) was reported as a new Western Hemisphere record. The scale was infesting a bamboo plant at Honolulu, Oahu, in January. An ENCARTID WASP (Aphycus portoricensis), reared from Asterolecanium pustulans (a pit scale) collected at Barbers Point, Oahu, in April 1965, was reported as a new State record. Adults of an ENCARTID WASP (Tachinaephagus zealandicus) were recovered in a light trap at Honolulu in December 1968 for the first time since it was introduced in November 1967 to control muscoid flies. Adults of a BRACONID (Opius melanagromyzae) were recovered from bean fly-infested snap beans and yardlongbeans from several backyards on Oahu. It was introduced in April 1969 to control Melanagromyza phaseoli (bean fly). Adults of a PTEROMALID WASP (Halticoptera patellana) emerged from about 25 percent of bean fly pupae collected from backyard and volunteer snap and long beans on Oahu. By the end of 1969, it was the main parasite of bean fly on Oahu. Recorded from Maui for the first time in November, H. patellana now occurs on Oahu, Kauai, Maui, and Hawaii. A PTEROMALID WASP (Muscidifurax raptor) was recovered for the first time on Hawaii at Kawaihae and Keaau in March. It was released on Hawaii in January 1968 to control Musca domestica (house fly).

Adults of a TACHINA FLY (Trichopoda pennipes var. pilipes) were common on flowers of rattlebox (Crotalaria sp.), bur-marigold (Bidens pilosa), and other weeds in farm areas on all islands. About 75 percent of Nezara viridula (southern green stink bug) adults observed or collected bore eggs of this parasite. Adults of a SCIOMYZID FLY (Sepedon sauteri) were recovered for the first time on Hawaii in November at Kulanui Puu, elevation 4,600 feet. It is now established on Oahu, Maui, Kauai, and Hawaii. This species was introduced in September 1966 to control Lymnaea ollula (liverfluke snail).

Adults of a TEPHRITID FLY (Tetraeuaesta obscuriventris), a seed feeder, were heavy on flowers of elephants-foot (Elephantopus mollis) and in pastures at Kalaheo, Kauai, in June and July. MELASTOMA BORER (Seica brunella) almost completely defoliated about 200 acres of Indian rhododendron (Melastoma malabathricum), a rangeland weed, on Kauai in late spring and early summer. Numbers were light for the rest of the year on Kauai and throughout the year on Hawaii. LANTANA DEFOLIATOR CATERPILLAR (Hypena strigata) was medium in pastures at Ulupalakua and Waihee, Maui, in February but light on lantana elsewhere. Almost all of the eggs collected from several islands were parasitized by Trichogramma semifumatum (a minute egg parasite). LANTANA HISPID (Uroplata girardi) was medium to heavy on lantana on Maui and Hawaii during spring and summer. Damage was heavy on about 75 percent of the leaves.

Miscellaneous Insects

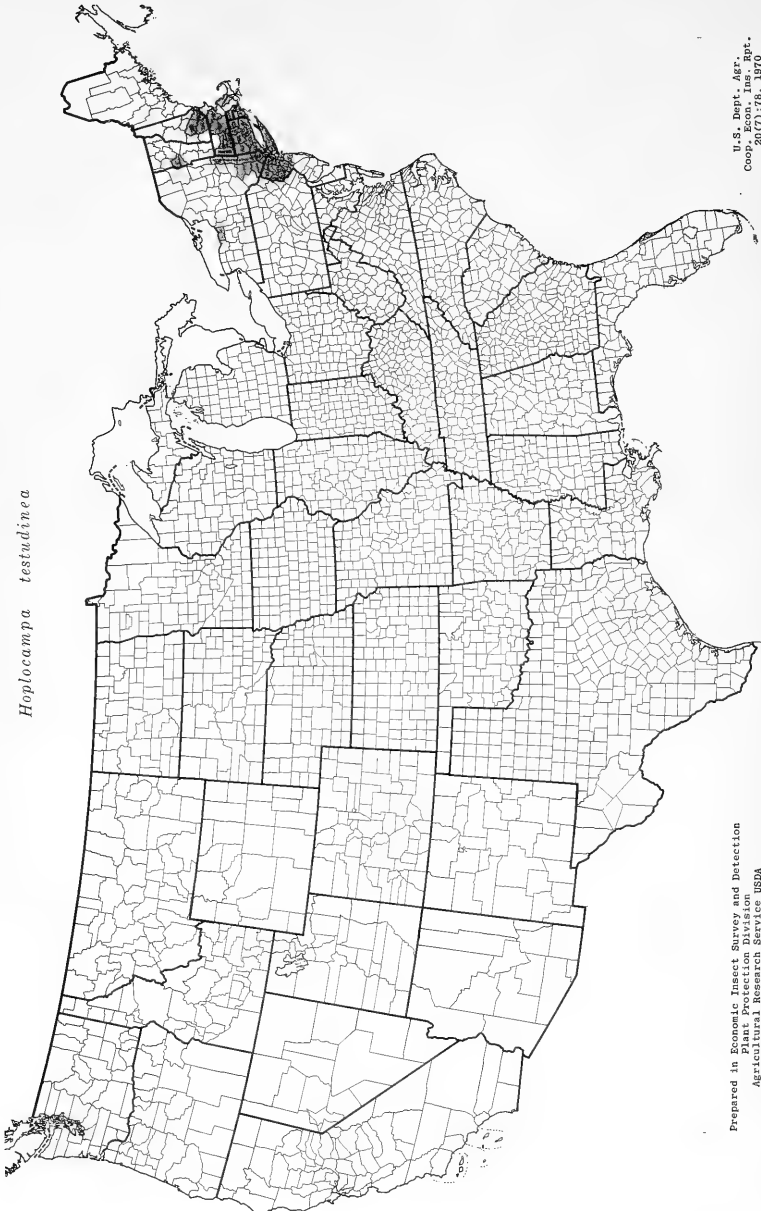
An ASSASSIN BUG (Oncocephalus pacificus), collected at Waikiki, Oahu, in September 1968, was reported as a new Western Hemisphere record. A second adult was captured at Wahiawa in October 1968. None has been captured since. A CYDNID BUG (Rhytidoporus indentatus), collected in a light trap at Hilo, Hawaii, in October 1969 was a new State record. A RHOPALID BUG (Jadera haematoloma) was generally light on balloonvines on Oahu and Kauai.

Two LONCHAEID FLIES were reported as new State records. Lonchaea polita was collected on Oahu, Maui, and Hawaii and L. striatifrons on Maui, Lanai, Molokai, and Hawaii. Original collections were in 1953. A MIDGE (Goeldichironomus holoprasinus) taken in a light trap at Honolulu, Oahu, in March 1969 was also a new State record. It has since been found breeding in moats, ponds, and containers of water. It is common in Honolulu, and on windward Oahu. Larvae and adults of a TEPHRITID FLY (Ensina sonchi) were heavy all year on flower heads of sowthistle at Waimanalo, Honolulu, Pearl City, and Ewa on Oahu. It has not been found infesting other composites.

Loud stridulations by a LONGHORN GRASSHOPPER (Euconocephalus nasutus) at night in wastelands annoyed residents and led to the capture of specimens from many areas on Oahu. Loud stridulations heard in several areas of Kauai beginning in September led to the capture of a male in November. A GRASSHOPPER (Oedaleus abruptus) was light in brush and grass at Hickam Air Force Base, Oahu. Eradication efforts attempted from January to May ended in July after adults were found outside the base. VAGRANT GRASSHOPPER (Schistocerca vaga) was heavy mostly in wastelands, especially in areas with dense growths of slender mimosa (Desmanthus virgatus). Adults were occasionally taken in residential areas. It was found for the first time on Molokai in March and on Lanai in May. Previously, it occurred only on Oahu and Kauai.

Distribution of European Apple Sawfly

Hoplocampa testudinea



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Cooperative
**ECONOMIC INSECT
REPORT**



Issued by

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AGRICULTURAL RESEARCH SERVICE

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AGRICULTURAL RESEARCH SERVICE

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ECONOMIC INSECT SURVEY AND DETECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT**HIGHLIGHTS**Current Conditions

GREENBUG increasing in wheat in southwestern Oklahoma. (p. 81).

MOSQUITOES unusually prevalent in California. (p. 83).

Predictions

GRASSHOPPER infestations in 1970 expected to be moderate to abundant in central Minnesota and potentially the most serious problem in the northeast and north-central districts of Kansas. (p. 89).

Detection

STOMBLER MOTH, a new species of noctuid closely resembling corn earworm and originally described from California, reported for first time from Arizona and Florida. (p. 81).

Other new State records include ALFALFA WEEVIL from Arizona (p. 81), a TEPHRITID FLY from Louisiana (p. 82), and a BRACONID from Maryland (p. 83).

For new county records see page 84.

Special Reports

Summary of Insect Conditions in the United States - 1969

Introductions. (p. 85).

Federal and State Plant Protection Programs. (pp. 85-94).

Distribution of Cereal Leaf Beetle. Map. (p. 86).

Status of European Chafer - 1969. Map. (p. 88).

The Armyworm Situation in the U.S. - 1969. (pp. 95-98).

Reports in this issue are for week ending February 13 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance.....81

Insects Affecting

Corn, Sorghum, Sugarcane.....81	Citrus.....82
Small Grains.....81	Ornamentals.....82
Turf, Pastures, Rangeland.....81	Man and Animals.....83
Forage Legumes.....81	Households and Structures.....83
General Vegetables.....82	

Beneficial Insects.....83

Federal and State Plant Protection Programs.....83

Hawaii Insect Report.....84

Detection.....84

Light Trap Collections.....84

Summary of Insect Conditions in the United States - 1969

Introduction.....85	
Federal and State Plant Protection Programs.....85	
Distribution of Cereal Leaf Beetle. Map.....86	
Status of European Chafer - 1969. Map.....88	
The Armyworm Situation in the U.S. - 1969.....95	

WEATHER BUREAU'S 30-DAY OUTLOOK

MID-FEBRUARY TO MID-MARCH 1970

The Weather Bureau's 30-day outlook for mid-February to mid-March is for temperatures to average above seasonal normals over the western half of the Nation. Below normal temperatures are indicated for the Great Lakes region and the Southeast while near normal values are expected in unspecified areas. Precipitation is expected to exceed normal in the Pacific Northwest, the Great Lakes region, and the Southeast. Subnormal totals are indicated from the southern Plateau through the southern Plains. Elsewhere near normal precipitation is in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price \$5.00 a year.

WEATHER OF THE WEEK ENDING FEBRUARY 16

HIGHLIGHTS: Mild temperatures continued in the West while stormy cold weather predominated in the East.

PRECIPITATION: Light rain fell along the Pacific coast but mostly sunny weather prevailed on most days elsewhere over the West. Stormy weather brought snow to much of the northeastern quarter of the Nation. Sometimes, the snow fell mixed with sleet and freezing rain. The heaviest snow of the season hit parts of the southern Appalachians, accumulating to 20 inches at Halston Mountain, about 15 miles east of Bristol, Tennessee, by midforenoon Tuesday. By 7 a.m. Wednesday, snow in western and central Pennsylvania had accumulated to 10 to 18 inches. Mount Washington, New Hampshire, received 10.12 inches of precipitation in 18 hours ending at 6 a.m. Wednesday. The gusts at Mount Washington reached 123 m.p.h. and 1 foot of ice accumulated in 3 hours. The weekend brought more miserable weather to much of the East--mixtures of snow, sleet, and freezing rain. On Saturday, highway travel became hazardous over a dozen States from Missouri and Arkansas across the Ohio River Valley to the middle Atlantic coast. The light precipitation in the central Great Plains improved the topsoil moisture but more rain was needed to prevent wind erosion. Weather of the week continued on page 94.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

BEEF LEAFHOPPER (Circulifer tenellus) - CALIFORNIA - Variable rainfall throughout overwintering areas caused uneven concentrations from Los Banos Hills southward through Kings County. Winter control efforts may be suspended until spring nymphs emerge. Beet leafhoppers are scattered on flats in every area except in northern Los Banos Hills. (Cal. Coop. Rpt.).

GREENBUG (Schizaphis graminum) - CALIFORNIA - Medium and damaging 80 acres of barley at Holtville, Imperial County. (Cal. Coop. Rpt.). ARIZONA - Spotted and heavy in one treated wheatfield at Yuma, Yuma County. (Ariz. Coop. Sur.). NEW MEXICO - Ranged 0-10 per linear foot on wheat in Curry County. (Campbell). Ranged 0-3 per linear foot on barley in Chaves County. (Mathews). OKLAHOMA - Increasing in wheat in southwestern quarter of State, Counts per linear foot: 100-200 in several fields in Jackson, Cotton, and Tillman Counties; 50-100 in Gray County; 75 in Stephens County; and 0-10 in Jefferson County. Still light in Payne County, ranged less than 1 to 25 per linear foot. Light in Garvin County. (Okla. Coop. Sur.). KANSAS - Ranged 1-5 per linear foot in wheat in Wabauensee County. Survey negative in Riley and Geary Counties. (Redding).

CORN, SORGHUM, SUGARCANE

STOMBLER MOTH (Heliothis stombleri Okumura and Bauer*) - CALIFORNIA - The holotype and the allotype of this new species of noctuid, resembling H. zea (corn earworm), were described from specimens collected in Davis and Yolo, Yolo County, in September 1969 by W.H. Lange, Jr., and V. Stomblor, respectively. Specimens have also been collected in Colusa, Fresno, Kern, Merced, Monterey, Riverside, Sacramento, San Bernardino, San Diego, San Joaquin, and San Mateo Counties. Additional light trap records include Maricopa County, Arizona; Alachua County, Florida; Boone County, Missouri; Grant and Yakima Counties, Washington; and the State of Sinaloa, Mexico. Critical study of H. stombleri and H. zea revealed no definite external character to differentiate the two species, except for the rounded emargination on the eighth sternite in the female. Males apparently can be distinguished only by examining the genitalia. (Okumura, Bauer). Arizona and Florida are new State records. (PPD).

SMALL GRAINS

ENGLISH GRAIN APHID (Macrosiphum avenae) - OKLAHOMA - First of season, 2 females, collected in wheatfields near Stillwater, Payne County. (Okla. Coop. Sur.).

TURF, PASTURES, RANGELAND

A MARCH FLY (Dilophus orbatus) - CALIFORNIA - Larval infestations more numerous than usual in lawns and soil at Manteca, San Joaquin County. (Cal. Coop. Rpt.).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - ARIZONA - Adults collected from alfalfa at Colorado City, Mohave County, by J. May on September 16, 1969. Determined by R.E. Warner. This is a new State record. (Ariz. Coop. Sur.).

PEA APHID (Acyrtosiphon pisum) - NEW MEXICO - Ranged up to 5 per square foot on most alfalfa near Roswell, Chaves County; counts 22 per square foot in one field. (Mathews).

*Okumura, G.T., and Bauer, W.R. 1969. Cal. Dept. Agr. Bur. Ent. Occasional Papers No. 18, pp. 8.

GENERAL VEGETABLES

CABBAGE LOOPER (Trichoplusia ni) - ARIZONA - Larval emergence light in some lettuce fields at Yuma, Yuma County. (Ariz. Coop. Sur.).

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Several lettuce fields treated at Yuma, Yuma County. (Ariz. Coop. Sur.).

BULB MITE (Rhizoglyphus echinopus) - CALIFORNIA - Heavy on onion seedlings at Shafter, Kern County. (Cal. Coop. Rpt.).

CITRUS

Citrus Insect Situation in Florida - End of January 1970 - CITRUS RUST MITE (Phyllocoptura oleivora) infested 78 (norm 63) percent of groves; economic in 47 (norm 46) percent. Populations decreased throughout month but still slightly above normal and in high range in most districts. Increase expected. Highest districts west, central, east, and north. CITRUS RED MITE (Panonychus citri) infested 41 (norm 36) percent of groves; economic in 15 (norm 12) percent. Population slightly above normal for month but in low range. Little change expected. Only few scattered infestations will be important. Highest districts west and north. TEXAS CITRUS MITE (Eutetranychus banksi) infested 27 (norm 33) percent of groves; economic in 9 (norm 12) percent. Below normal; will remain low. Highest district west. SIX-SPOTTED MITE (Eotetranychus maculatus) in 2 percent of groves; none economic. Not expected to become important until April. GLOVER SCALE (Lepidosaphes gloverii) infested 79 (norm 78) percent of groves; economic in 5 (norm 15) percent. Moderate and near normal statewide, but infestations generally lighter. Little change expected. Highest districts east, west, and north. PURPLE SCALE (L. beckii) infested 71 (norm 77) percent of groves; economic in 6 (norm 8) percent. Slightly below normal and in moderate range with very few heavy infestations. Little change expected. Highest districts north and west. CHAFF SCALE (Parlatoria pergandii) infested 43 (norm 59) percent of groves; economic in 1 (norm 10) percent. Below normal and in low range. No change expected. All districts low. BLACK SCALE (Saissetia oleae) infested 27 (norm 37) percent of groves; economic in 6 (norm 17) percent. Cold weather reduced population below normal and at very low level, except in warmer districts. Highest district east. YELLOW SCALE (Aonidiella citrina) infested 64 (norm 60) percent of groves; economic in 9 (norm 12) percent. Population near normal and at moderate level. Slight decrease expected. District populations range from north and east to west. An ARMORED SCALE (Unaspis citri) infested 25 (7 moderate to heavy) percent of groves. Highest on record for January. Expected to increase. WHITEFLIES above normal, expected to continue at current moderate level. (W.A. Simanton (Citrus Expt. Sta., Lake Alfred)).

A TEPHRITID FLY (Tephritis subpura) - LOUISIANA - Adult collected in citrus nursery at Port Sulphur, Plaquemines Parish, February 2, 1970, by T. Mayeux and W. Harris. Determined by G. Steyskal. This is a new State record. Previously recorded from New Jersey, Virginia, and Florida. Hosts include Xanthium echinatum, galactia, myrtle, mango, and guava. (PPD).

ORNAMENTALS

WHITE PEACH SCALE (Pseudaulacaspis pentagona) - OREGON - Small infestations found on Akebono cherry at several residences in Portland, Multnomah County, February 11. (Larson). VIRGINIA - Severe on peach and lilac in Arlington County. (Allen).

STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus) - OREGON - Damage on arborvitae noted February 3 in field nursery at Portland, Multnomah County. About 1 percent of twigs girdled. Similar girdling also noted at Salem, Marion County. (Larson).

MAN AND ANIMALS

SCREW-WORM (Cochliomyia hominivorax) - No cases reported in U.S. February 8-14. Total of 51 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico February 1-7 as follows: Sonora 36, Chihuahua 9, Coahuila 1, Tamaulipas 5. Total of 10 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 168,000; Mexico 89,770,000. (Anim. Health Div.).

COMMON CATTLE GRUB (Hypoderma lineatum) - OKLAHOMA - Numbers in backs declining in Payne County. Averaged 3 per head in cattle (ranged 0-5 in yearlings and 0-11 in mature cows). Ranged 5-10 per head in 55 heifers in Mill Creek area of Johnston County and 0-10 per head in cattle in Garvin County. Moderate in Mayes County cattle and light in Hughes County. (Okla. Coop. Sur.). MISSOURI - Ranged 0-28 (averaged 2) per cow on 78 untreated cattle in central area. (Ronald).

MOSQUITOES - CALIFORNIA - Unusually prevalent and irritating to homeowners. Due to excessive rains and unseasonably warm weather, hibernating females emerging in large numbers. Little egg laying to date. (Cal. Coop. Rpt.).

CATTLE LICE - MISSOURI - Bovicola bovis (cattle biting louse) light on 2 cows in herd of 67 in central area. (Ronald). OKLAHOMA - Lice, mainly Haematopinus eurysternus (short-nosed cattle louse) moderate on cattle in Mayes, Hughes, and Garvin Counties; light in Cleveland County. (Okla. Coop. Sur.). ALABAMA - Unspecified species increasing on cattle in Lee, Bibb, and other counties. Several herds recently treated in Bibb County. (Odom, Teague).

HOG LOUSE (Haematopinus suis) - OKLAHOMA - Moderate on hogs in Garvin County. Light in Mayes County. (Okla. Coop. Sur.).

HARD-BACKED TICKS - OKLAHOMA - One replete and 3 unfed females of Dermacentor variabilis (American dog tick) found on dogs near Altus, Jackson County. (Okla. Coop. Sur.). MARYLAND - Rhipicephalus sanguineus (brown dog tick) heavy in 2 homes in Prince Georges County. (U. Md., Ent. Dept.).

BROWN RECLUSE SPIDER (Loxosceles reclusa) - TENNESSEE - Specimen collected in Marion County February 2. This is a new county record. (Mullett).

HOUSEHOLDS AND STRUCTURES

EASTERN SUBTERRANEAN TERMITE (Reticulitermes flavipes) - MARYLAND - First swarm of season found in College Park, Prince Georges County. (U. Md., Ent. Dept.).

BENEFICIAL INSECTS

A BRACONID (Microctonus aethiops) - MARYLAND - One male and one female of this parasite of Hypera postica (alfalfa weevil) emerged from cocoons February 17, 1970. H. postica adults collected November 7, 1969, in field at Thurmont, Frederick County, and caged at Beltsville. M. aethiops determined by R. Schroeder. This is a new State record and first recovery since release in State in 1969 and earlier. (Schroeder).

CONVERGENT LADY BEETLE (Hippodamia convergens) - OKLAHOMA - Light in wheatfields in Jefferson, Tillman, and Payne Counties. (Okla. Coop. Sur.).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - NORTH CAROLINA - Workers collected at Kuhns, Jones County, January 28 by W. Federonko. Determined by V.H. Owens, confirmed by D.R. Smith. This is a new county record. (PPD).

MEXICAN FRUIT FLY (Anastrepha ludens) - MEXICO - First sexually mature male trapped at La Paz, Territorio sur de Baja California, February 3. Numerous Anastrepha spatulata also trapped. (PPD).

WHITE GARDEN SNAIL (Theba pisana) - CALIFORNIA - Second seasonal baiting at Manhattan Beach, Los Angeles County, 66 percent complete. Survey negative for live snails. (Cal. Coop. Rpt.).

WOOLLY WHITEFLY (Aleurothrixus floccosus) - CALIFORNIA - Hosts that received first treatment 14 days ago inspected; 94 percent mortality of A. floccosus noted. Mortality 97.8 percent on hosts treated second time 2 months ago. (Cal Coop. Rpt.).

HAWAII INSECT REPORT

General Vegetables - Larvae and eggs of CABBAGE LOOPER (Trichoplusia ni), IMPORTED CABBAGEWORM (Pieris rapae), and DIAMONDBACK MOTH (Plutella xylostella) trace in one acre of head cabbage at Pulehu and in 3 acres at Omapio, Maui. (Miyahira). Adults and egg clusters of a PLATASPID BUG (Coptosoma xanthogramma) abundant on snap beans at Kilauea, Kauai; 10 percent of eggs parasitized by Trissolcus sp. (a scelionid wasp). Adults moderate in 30 acres of surrounding shrubs and trees. (Sugawa). Adults of LEAF MINER FLIES (Liriomyza spp.) heavy in one acre of snap beans at Pulehu and Omapio, Maui; leaf mines trace to light. All stages of GREENHOUSE WHITEFLY (Trialetrodes vaporariorum) light in same area. (Miyahira). A PIT SCALE (Asterolecanium pustulans) heavy on 100 feet of oleander hedge at Lihue Airport, Kauai; caused severe pitting and dieback. (Sugawa).

Man and Animals - MOSQUITOES - Total collected from 52 light traps on Oahu during January: VEXANS MOSQUITO (Aedes vexans nocturnus) 232 and SOUTHERN HOUSE MOSQUITO (Culex pipiens quinquefasciatus) 1,888. Aedes ranged zero to high of 45 per trap at Punaluu. Culex ranged zero to high of 365 at Sunset Beach. (Mosq. Control. Br., Dept. Health).

Miscellaneous Insects - Adults of KOA HAOLE LOOPER (Anacamptodes fragilaria) heavy and causing annoyance to residents in Waimea Heights, Kauai; larvae moderate on koa-haole (Leucaena glauca) in adjoining wasteland. (Sugawa). An adult male VAGRANT GRASSHOPPER (Schistocerca vaga) collected in wild vegetation at Keawakapu, Maui, is second specimen taken on this island. (Ah Sam).

Beneficial Insects - Adults and larvae of LANTANA DEFOLIATOR CATERPILLAR (Hypera strigata) heavy on lantana (Lantana camara) in several hundred acres of wasteland at Mana, Kauai; severe defoliation noted in many areas. (Sugawa).

DETECTION

New State Records - ALFALFA WEEVIL (Hypera postica) ARIZONA - Mohave County. (p. 81). A BRACONID (Microctonus aethiops) MARYLAND - Frederick County (p. 83). STOMBLER MOTH (Heliothis stombleri) ARIZONA - Maricopa County, FLORIDA - Alachua Parish (p. 81). A TEPHRITID FLY (Tephritis subpura) LOUISIANA - Plaquemines Parish (p. 82).

New County Records - BROWN RECLUSE SPIDER (Loxosceles reclusa) TENNESSEE - Marion (p. 83). IMPORTED FIRE ANT (Solenopsis saevissima richteri) NORTH CAROLINA - Jones (p. 83).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville, 2/6-12, BL - Black cutworm (Agrotis ipsilon) 3, granulate cutworm (Feltia subterranea) 1.

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1969

INTRODUCTION

The summary of insect conditions, beginning in this issue, will be continued in several succeeding issues of the Cooperative Economic Insect Report. This summary was compiled by the Economic Insect Survey and Detection Staff from annual summaries submitted by various State and Federal cooperators. A list of the individuals who assisted in assembling data, as well as a summary of the weather for 1969, will appear after the last section of this summary is published. The Economic Insect Survey and Detection Staff appreciates the assistance of all individuals who have participated in the preparation of material for the 1969 summary.

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

BOLL WEEVIL (*Anthonomus grandis*) pheromone traps were operated in the High Plains control zone of TEXAS to reduce populations. Weevils were trapped during January, February, April, May, June, and July. By July 24, when trapping was terminated, 12,000+ weevils had been taken. Control on the High Plains was begun on September 2 and continued through November 1, 1969.

All areas of Kent and Dickens Counties in the control zone were declared generally infested during August. Heavy boll weevil populations noted in the Rolling Plains during July decreased considerably. Numerous fields were found infested in the Turkey area and on the Caprock in Briscoe, Floyd, Crosby, and Garza Counties. More infested fields had been found by the end of August than for the corresponding period in past years. Several fields were found infested in Lubbock County. This is the first occurrence of boll weevil in Lubbock County since 1965. Weevils were detected in fields adjacent to the Caprock in Lynn, Borden, and Dawson Counties. Some fields in Dawson County had square infestations up to 55 percent. Installation of a trap line running from the Red River in Hall County south to U.S. Highway 82 in Dickens County was completed. Traps were placed every 0.5 mile along the eastern side of the control zone to determine if weevil movement into the control zone could be detected.

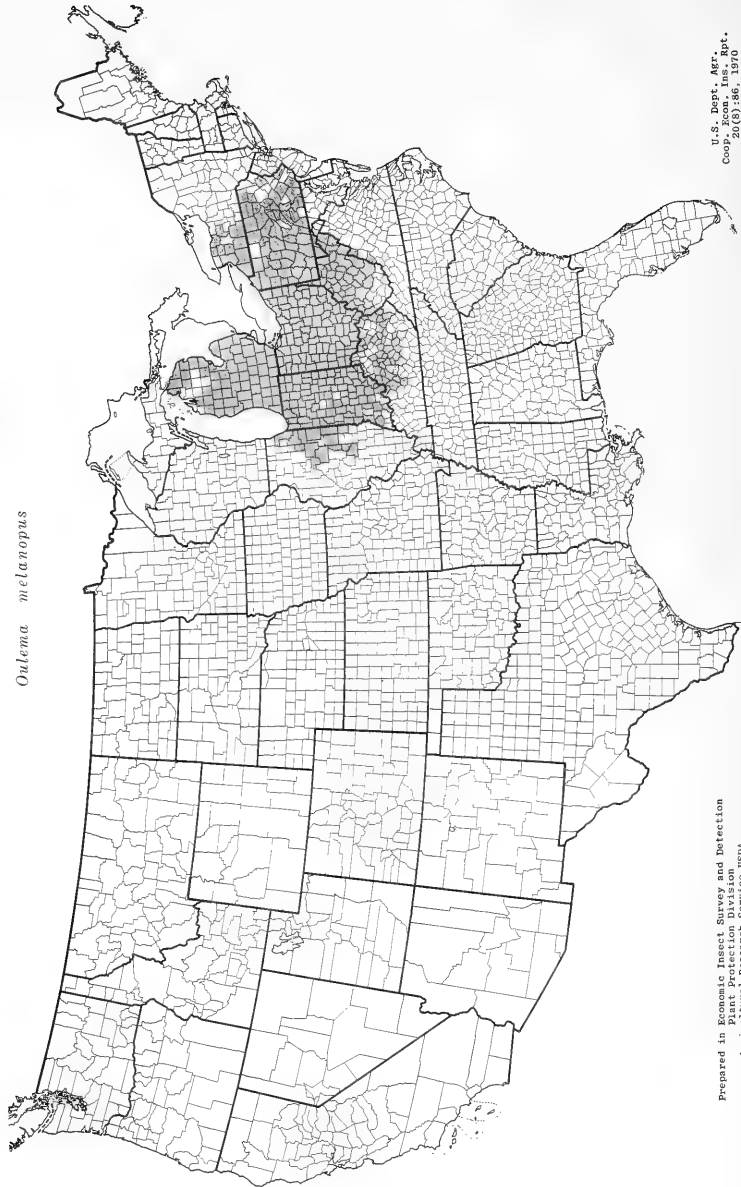
Survey was continued west of known infested fields on the Caprock. Survey work was continued in the trapping zone to gather data on populations. Significant extensions of infestations were found in northern Briscoe County, southeastern Floyd County, Crosby County, and western Garza County. By the end of September, an estimated 140,000 acres of cotton was found infested above the Caprock. Control operations were started September 2. An aggregate of 149,150 acres was treated on the first application, 115,000 acres on the second, and 208,000 acres on the third application. Because of the large increase in infested acreage, only the infested area above the Caprock was treated on the last three applications.

Detection traps for **BOLL WEEVIL COMPLEX (*Anthonomus grandis* complex)** were operated in NEW MEXICO, ARIZONA, and CALIFORNIA. New Mexico remains free of the boll weevil complex, while no significant numbers of the pest were collected in Arizona or California.

The **BROWN-TAIL MOTH (*Nygmia phaeorrhoea*)** survey was started during January and completed during May. Infestations were found as far east as Phippsburg, Sagadahoc County, MAINE. The following towns were found infested: Brunswick, Freeport, Falmouth, Harpswell, Portland City, and Yarmouth in Cumberland County. In Casco Bay, 21 of 26 islands surveyed were infested. Clipping of webs was done by State crews. A total of 80 townships in NEW HAMPSHIRE was surveyed, of which two were found infested. Infestations consisted of single webs--one in Henniker Township, Merrimack County, and three at sites in Moultonborough Township, Carroll County. State cooperators clipped webs at all known infestations. In MASSACHUSETTS over 75 gallons of winter webs found during the winter of 1968-1969 on generally infested park land in Provincetown and Truro were clipped and burned. Egg

Distribution of Cereal Leaf Beetle

Oulema melanopus



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deposition was reported from Provincetown, Barnstable County, on July 24. Detection surveys in the remainder of Massachusetts were negative and no extensions of the generally infested areas of Cape Cod were noted. Results of brown-tail moth survey in CONNECTICUT and RHODE ISLAND were negative.

CARIBBEAN FRUIT FLY (Anastrepha suspensa) was not found in any new counties of FLORIDA in 1969; trap catches are apparently leveling off or diminishing.

The eastward spread of CEREAL LEAF BEETLE (Oulema melanopus) during 1969 was phenomenal. Infestations were found for the first time in 15 counties in INDIANA, 2 counties in OHIO, 34 counties in KENTUCKY, 41 counties in WEST VIRGINIA, and 36 in PENNSYLVANIA. Infestations were found in 10 western NEW YORK counties during 1969, 2 western MARYLAND counties, and 2 western VIRGINIA counties. The last three States represented new State records. Such spread caused a reassessment of quarantine measures. Westward movement of this pest was limited to two counties in ILLINOIS--McLean and Piatt.

In Ohio, populations were high enough to cause damage to oats and warrant control. This was the first report of damage during the 7 years the pest has been in the State. Treatment was applied in Illinois to over 57,000 acres. Parasites were released in Indiana and Ohio. Survey of 250,000+ acres for this pest was accomplished in 25 additional States not now known to be infested. Results were negative.

Over 30,000 trees were examined for CITRUS BLACKFLY (Aleurocanthus woglumi) in southern TEXAS. No citrus blackfly was found in the State, although a rather heavy infestation was discovered in Matamoros, Nuevo Leon, Mexico. Infestations were found at Nuevo Laredo and Reynosa, Mexico, also.

EUROPEAN CHAFER (Amphimallon majalis) was reported for the first time in RHODE ISLAND. An adult was taken in a light trap in Providence County June 25, 1969. This chafer was found for the first time in Middlesex County, CONNECTICUT; Hampden County, MASSACHUSETTS; and Fulton County, NEW YORK, during the year.

EUROPEAN CRANE FLY (Tipula paludosa) adults were collected in a light trap at Mt. Vernon, Skagit County, WASHINGTON, September 24. Adults were taken also in light traps in Whatcom County. Skagit County was a new county record.

GIANT AFRICAN SNAIL (Achatina fulica) was discovered in North Miami, Dade County, FLORIDA, in September 1969. Additional snails were found later at Hollywood in southern Broward County. This was the first known established infestation of this pest in the continental United States. Eradication operations were begun immediately. By the end of 1969 the population had been drastically reduced.

Adults of a HELICID SNAIL (Helix pomatia) were collected in North Miami, FLORIDA, for a new State record. This snail is a potential pest of succulent plants, including vegetables. Control measures were undertaken to eradicate this pest from the State.

GOLDEN NEMATODE (Heterodera rostochiensis) was reported for the first time in DELAWARE on a potato farm near Middletown, New Castle County. This farm was fumigated in 1969. Following fumigation the farm was again sampled. No cysts were recovered. No additional infestations were found in Steuben County, NEW YORK. Fumigation of farms on Long Island is progressing.

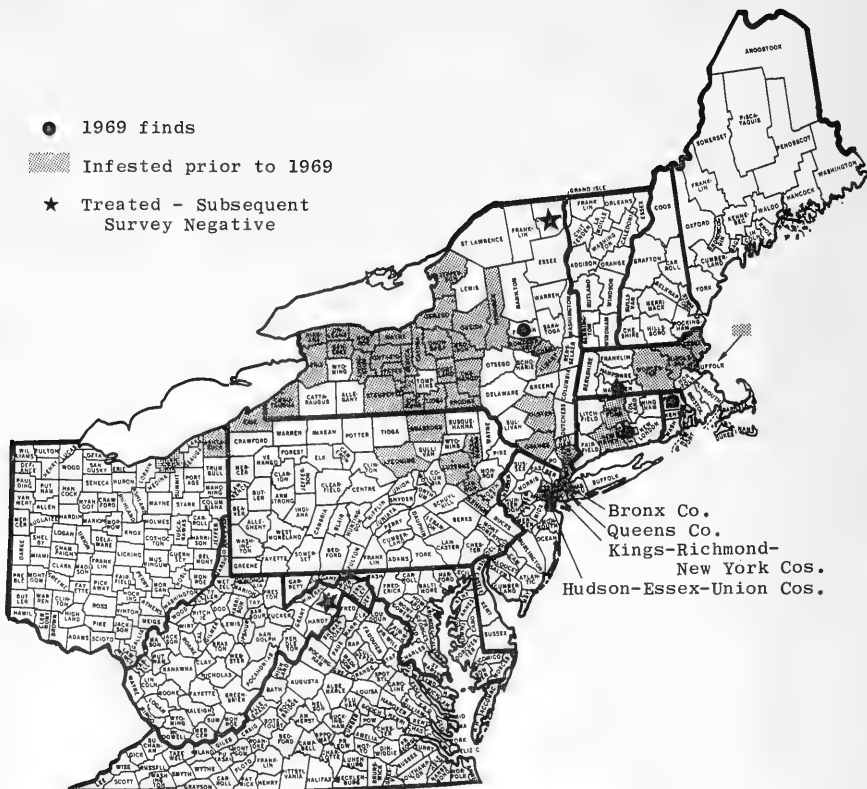
GRASS BUGS caused noticeable damage on 35,000 acres of crested wheatgrass on the Hualapai Indian Reservation, ARIZONA, in June. In NEW MEXICO, controls were necessary on 4,000 acres of rangeland. Labops hesperius, Irbisia pacifica, I. brachycera, and Irbisia spp. caused substantial losses to range grasses in UTAH, but damage was less extensive than during the preceding 3 seasons. Damage was heaviest in Kane and Garfield Counties. In Kane County a rancher control program was conducted on private lands. L. hesperius damaged crested wheatgrass and adjacent borders of wheat in Goshen and Laramie Counties, WYOMING. Controls were effective.

Status of European Chafer - 1969

● 1969 finds

▨ Infested prior to 1969

★ Treated - Subsequent Survey Negative



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Plant Protection Division
Agricultural Research Service USDA
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Labops hesperius and L. utahensis infested roadside grasses in Latah County, IDAHO. Adults and nymphs had damaged crested wheatgrass by May 4 in Ada County. These pests had damaged about 50 percent of the crested wheatgrass and wild rye-grass in an area 15 miles wide and 30 miles long in Elmore County by May 21 when controls were justified. In late May, nymphs and adults severely damaged 2,000 acres of intermediate wheatgrass in Washington County. Native giant wild-rye in the East Slope area and intermediate wheatgrass in the Dixie area of Idaho County showed drying and yellowing due to these pests. L. utahensis severely damaged grass pasture in the Swan Valley area of Idaho, with controls required in early June. Grass bugs infested several thousand acres of grass pastureland in Clark County. L. hesperius damaged bromegrass, intermediate wheatgrass, pubescent wheatgrass, and orchard grass in Baker and Lane Counties, OREGON. Light colored foliage on 1,000 acres in Baker County and 400 acres in Lane County indicated much damage to these grasses. Most of the infested area has been in soil bank land for several years. Irbisia pacifica and other grass bugs damaged field borders of wheat near wheatgrass and other grassfields in several eastern WASHINGTON counties. These pests severely affected fields of timothy and alfalfa hay mixture in Kittitas County.

GRASSHOPPER populations in MINNESOTA showed some downward trend in 1969. Infestations were economic on 148,600 acres of forage crops, but damage was not apparent until late in the season when drought restricted plant growth. However, damage was not serious. Melanoplus femurrubrum was the dominant species. The outlook for 1970 is for moderate to abundant infestations in central Minnesota. Grasshoppers were noneconomic over most of NORTH DAKOTA due to unfavorable spring weather. Eggs hatched from mid-May through mid-July, with adults present by late July. Counts ranged up to 40 adults per square yard in alfalfa and soil bank fields, and marginal damage to small grains and soybeans occurred in several areas. Grasshopper egg hatch and development were delayed over most of eastern SOUTH DAKOTA due to an unusually cool, moist spring. Eggs first hatched in western and southwestern counties the last half of May. Hatch was light on rangeland in Fall River and Custer Counties during this period, but counts increased to 15-20 grasshoppers per square yard in fields, higher in margins, by late June. Counts were highest in several southeastern counties. Economic damage was limited to borders of corn adjacent to mowed alfalfa due to abundant vegetation in eastern South Dakota. Counts during the 1969 fall survey were highest in southeastern counties. Populations of Melanoplus bivittatus and M. differentialis, and in some areas M. packardii, increased compared with 1968. Infestations occurred mostly in alfalfa, but some flax was damaged. Grasshoppers are potentially economic over most of eastern South Dakota for 1970.

Grasshopper populations in NEBRASKA showed some increase over those of 1968. Heavy local populations damaged corn, sorghum, and soybeans in eastern, northeastern, southern, and southeastern sections of the State but were not economic on a wide area basis. These pests were mostly noneconomic in other sections of the State. The fall survey revealed some areas of infestation along the Platte River and along the Nebraska and South Dakota State line. In KANSAS, grasshopper adults in fall were heaviest in the northeast district, with heavy damage to border rows of corn, sorghum, and soybeans and to some alfalfa and clover. Counts were high at scattered locations in the north-central district. Grasshoppers are potentially the most serious problem in these 2 districts in 1970. Counts were heavy in a small area of rangeland but below economic levels in southwestern Kansas. Grasshoppers ranged very light to light elsewhere in the State. Egg hatch began in central OKLAHOMA in early April and continued through May in some areas. Fall surveys revealed 690,000 acres of rangeland were economically infested in 20 panhandle, northwestern, west-central, southwestern, and south-central counties.

Grasshoppers were serious on rangeland grasses on the Santa Clara and San Juan Pueblo Indian Reservations in NEW MEXICO, with treatments made in some areas. Infestations were also heavy on rangeland near Montoya, Quay County. Economic infestations were found on 923,000 rangeland acres in fall surveys. Grasshoppers were generally light in all rangeland areas of ARIZONA, with economic infestations found on only 28,000 acres during the fall survey. Grasshopper populations

in UTAH were lower than normal in 1969. However, several species were damaging on about 50,000 acres of cropland, with treatments made on about 25 percent of this acreage. Of 378,860 acres of infested rangeland, 50,000 acres were treated by landowners.

In WYOMING, grasshopper adults were economic on 257,140 acres of rangeland during late summer; counts were highest in Converse, Hot Springs, and Johnson Counties. The fall survey showed small and scattered infestations on rangeland in Wyoming, due to cold, wet weather reducing populations during June. The 1969 fall survey in MONTANA revealed the lightest rangeland infestations since 1953. Some alfalfa fields in the western part of the State had 50+ grasshoppers per square yard however.

Surveys in southern IDAHO indicated 355,000 acres of rangeland were infested with 8 or more grasshoppers per square yard. Treatment was made on 14,256 acres along the south fork of the Boise River on the Boise National Forest in July. Controls were also applied to 28,896 acres on the Payette National Forest in Washington County. Grasshoppers averaged 8 or more per square yard on these rangeland areas in early September. Treatments were made on 13,000 acres in the area along the South Fork of the Payette River and on 44,000 acres south of Glens Ferry. Rain reduced the effectiveness of controls at Glens Ferry. Grasshoppers migrated from drying rangelands to many alfalfa, sweetclover, pea, and grain fields in northern Idaho in July. Counts ranged 8-15 per square yard in greener rangeland and along margins of peafields throughout Nez Perce County. Generally, counts remained high in the Clearwater area and there is a good possibility controls will be required in this area in 1970. The 1969 fall survey showed grasshopper infestations were economic on 1.77 million acres and light on 1.5 million acres in Idaho.

Grasshopper populations were generally at the same levels as in 1968 in NEVADA, with only small, localized acreages teated. Controls were applied to 3,500-4,000 acres of alfalfa and grain, and crop borders were baited in the Diamond Valley of Eureka County in June and July when Melanoplus sanguinipes ranged 40-90+ per square yard. Small, localized populations of M. rugglesi were observed in 2 areas in Pershing County and one area of Humboldt County during the same period. This is the first time this grasshopper has been seen in the field in Nevada for about 15 years. The fall adult survey in Nevada indicated potentially damaging infestations on 37,510 acres of rangeland and 12,370 acres of cropland in 1970. Grasshopper infestations increased throughout CALIFORNIA in 1969, but landowner control programs held populations below economic levels generally. Treatments were made on an 80-acre pine plantation to control Bradynotes obesa opima, a wingless species, which has become damaging in the Shinn Peak area of Lassen County. Controls were applied to 300 acres in the Hunter Liggett Reservation in Monterey County, as well as 200 acres on Shasta-Trinity National Forest and 500 acres at Doe Peak, both in Siskiyou County. Grasshoppers required controls on range, alfalfa, grain, and gardens in many northern California counties, where populations have increased steadily the past 3 years. Economic infestations in north-central California will bear watching in 1970.

Grasshoppers, mostly Melanoplus spp., infested scattered rangeland areas of OREGON during 1969. Counts averaged 15+ per square yard on 33,700 acres in Umatilla and Wallowa Counties during the fall adult survey. Grasshoppers averaged 10 per square yard in local areas of southwestern Oregon. Several species of grasshoppers severely damaged rangeland throughout eastern and central WASHINGTON, defoliating coniferous forest trees in some instances. These pests were heaviest in Klickitat and Stevens Counties, but were economic in 11 other counties in eastern Washington. Soil erosion may increase in some areas completely stripped by grasshoppers. The fall survey indicated grasshoppers were economic on 160,000 acres of rangeland in Washington.

GYPSY MOTH (Porthetria dispar) defoliated about 256,000 acres in 1969. NEW YORK led with 121,000 acres, while CONNECTICUT and NEW JERSEY followed with over 50,000 in each State. Defoliation occurred to a lesser degree in MAINE, NEW HAMPSHIRE, MASSACHUSETTS, RHODE ISLAND, and PENNSYLVANIA.

Gypsy moth was found for the first time in 3 States in 1969: Sussex County, DELAWARE; Cecil County, MARYLAND; and Albemarle County, VIRGINIA. New County records included New Castle County, Delaware; Hudson County, New Jersey; and Centre, Union, Snyder, Mifflin, Juniata, Perry, Adams, and York Counties, Pennsylvania. There was a general increase in gypsy moth populations in eastern Pennsylvania where infestations are building up in areas treated in 1965, 1966, and 1969. As many as 750 egg clusters per acre was not uncommon.

During the seasonal survey in New York, 59 positive sites were found in the suppressive and nonregulated areas of the State. Jefferson County was found reinfested this year, and trap catches were significant in northern Franklin County. Female moths were ovipositing as late as September 16 in Clinton County.

Several million *Ooencyrtus kuwanai*, an encyrtid wasp parasitic in gypsy moth eggs, were released at positive trap sites in Maryland, Delaware, New Jersey, Pennsylvania, and New York. *Brachymeria intermedia* (a chalcid) and 3 tachina flies, *Exorista rossica*, *E. segregata*, and *Blepharipa scutellata*, as well as *O. kuwanai*, were released in these 5 States and in Massachusetts. Acres sprayed in 4 States were 321 in Connecticut, 27,105 in New Jersey, 20,207 in New York, and 400 in Pennsylvania.

IMPORTED FIRE ANT (*Solenopsis saevissima richteri*) was detected for the first time in Claiborne Parish, LOUISIANA. This pest is now known from every parish of the State. New county records include Flagler County, FLORIDA; Camden, Charlton, Appling, and Toombs Counties, GEORGIA; Georgetown and Williamsburg Counties, SOUTH CAROLINA; Shelby, Madison, and Lavaca Counties, TEXAS.

Extensions of existing infestations were found in 14 counties in Georgia, 3 parishes in Louisiana, 10 counties in MISSISSIPPI, 6 counties in NORTH CAROLINA, 3 counties in ALABAMA, 8 counties in South Carolina, 12 counties in Texas, and 7 counties in Florida. Some spread was noted in Union County, ARKANSAS. Eradicative treatments were made on over 7 million acres in Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, and Texas. All surveys in TENNESSEE were negative in 1969.

JAPANESE BEETLE (*Popillia japonica*) traps were placed in nonregulated areas of MAINE where previous infestations had been detected. No infestation was found in the State. Traps were removed in September. Japanese beetle was found in Lee County, VIRGINIA, the only county in which the insect had not been found previously. At Dover Air Force Base, DELAWARE, adults were so numerous that treatment of planes was necessary. The base was declared nonhazardous on August 19.

Survey in ALABAMA resulted in again finding beetles in Jefferson and Lee Counties. Established infestations were found in GEORGIA in Barrow, Clarke, Fayette, Jackson, Madison, Oconee, and Walton Counties, and the remainder of Gwinnett County was found infested. New infestations and extensions totaled 419,000 acres. In TENNESSEE the first adults of the season were taken on June 12 in Monroe County. Adults were trapped in Campbell, Carter, Claiborne, Loudon, Hamilton, Greene, Hawkins, Montgomery, Polk, Sevier, Unicoi, Washington, Madison, and Anderson Counties. The cities of Loudon and Lenoir City are becoming reinfested.

An increase in the number of beetles and new finds over last season was indicated in the East St. Louis and Chicago areas, as well as at Moline and Vandalia, ILLINOIS. A nursery in St. Joseph County, INDIANA, was found infested. An extension of the Paducah, KENTUCKY, infestation was found. Beetles also were trapped in Clay, Gallatin, and Oldham Counties. An estimated 190 acres is known to be infested. No Japanese beetles were found on the Kentucky side of Ft. Campbell.

Japanese beetles were found in Detroit, Warren, and in Berrien County, MICHIGAN, where treatments were made in 1968. On July 16 at the Marywood Golf Course north of Battle Creek, Japanese beetles were observed "balling" as they emerged on Fairway Number 9. This area was treated 3 years ago. Single beetles were found in Marshall, Flint, Ypsilanti, at the Erie Truck Scales in Monroe County, and at

Edwardsburg in Cass County. In MISSOURI the only beetles found were at St. Louis where 24 were trapped at 21 sites. Heavy infestations of Japanese beetles were reported in Butler County. Light to moderate infestations were noted on border areas of corn and soybeans; however, some damage was done to these crops. Survey for this pest in 18 uninfested States was negative.

MEXICAN BEAN BEETLE (Epilachna varivestis) was found infesting bean plants in more than 350 gardens at Boise, Ada County, and 50 gardens at Rupert, Minidoka County, IDAHO, during May and June. Eradicative treatments were made.

During the MEXICAN FRUIT FLY (Anastrepha ludens) trapping period of March and early April, 63 flies were found on 42 properties in Cameron, Willacy, Hidalgo, Starr, Zapata, and Dimmit Counties, TEXAS. The single fly trapped in Zapata represents a new county record. Larvae were found in grapefruit in 3 groves in Hidalgo County on April 16, 17, and 23. Inspection of oranges was negative. Trapping was conducted in FLORIDA, LOUISIANA, ARIZONA, and CALIFORNIA, but no A. ludens flies were found in these States. Nine native flies were trapped in Tijuana, Mexico, but no native flies were recovered in Ensenada, Tecate, or La Paz. Sterile flies are released for control purposes in Baja California, Mexico.

MORMON CRICKET (Anabrus simplex) was insignificant in all former problem areas of UTAH, OREGON, IDAHO, MONTANA, and WYOMING. No control was necessary and no banding was observed. Crickets began to build up in areas of Eureka and Pershing Counties, NEVADA, mainly the latter county, where bait was applied to 1,054 acres to protect 10,000 acres in the Humboldt Range. Summer adult surveys in the northern section of the State indicate an increase in several areas with a history of heavy infestations. Current infestations involve 2,700 acres in Eureka County, 4,000 acres in Lander County, and 20,000 acres in Pershing County. Specimens observed in other areas were generally scattered and in the solitary phase.

Eighteen ORIENTAL FRUIT FLY (Dacus dorsalis) adults were trapped at 16 locations in El Monte, Los Angeles County, CALIFORNIA, during September. Intensive trapping and treatment continued into 1970. No larval infestations were found. A single male oriental fruit fly was found in a Steiner trap at Golden Beach in Dade County, FLORIDA, December 3, 1969. Density of traps was increased and fruits were inspected. No additional flies were trapped, and no larvae were found.

The first PINK BOLLWORM (Pectinophora gossypiella) moth catch of 1969 in CALIFORNIA was March 7 at Borrego Springs. Traps were baited with hexalure in all areas of operation. Larvae built up to alarming proportions in the Coachella Valley where release of sterile moths failed to control the infestation. In Kern County, 5 moths were trapped during the 1969 season, but no larvae were found. No moths or larvae were found in this area of California in 1968. In ARIZONA, pink bollworm moths were caught in sex lure traps and larvae were found in lint cleaners during January. By June, larvae infested 25 percent of cotton blooms in western and central Arizona. Pink bollworm larvae built up in cotton fields in NEW MEXICO in Chaves, Eddy, and Dona Ana Counties, but infestations were light in Luna, Hidalgo, and Grant Counties.

Pink bollworm larvae were recovered from debris in several counties of TEXAS. Limited bloom inspection in Hidalgo County revealed 10-30 larvae per acre in a few fields in April. Bloom inspections in most cotton-producing counties of southeastern Texas indicated a generally light infestation. The first pink bollworm of the season in LOUISIANA was found in Rapides Parish in early December.

PISTACHIO SEED CHALCID (Megastigmus pistaciae) surveys were conducted in Alameda, Amador, Butte, Colusa, Contra Costa, Fresno, Glenn, Lake, Madera, Orange, San Diego, San Joaquin, Stanislaus, Sutter, and Tulare Counties, CALIFORNIA. Sticky board traps were used extensively, beginning in March. No emergence was noted until June 3 in emergence cages in the Plant Introduction Station. The first adult was trapped June 16. More than 70 adults emerged from Pistacia chinensis seed for a new host record. By July, M. pistaciae was emerging from P. chinensis trees as far as 0.5 mile from Plant Introduction Station grounds. By August, M. pistaciae

was found at sites up to 4 miles from the Plant Introduction Station; however, all were in Chico, Butte County. At least 15 confirmed infestations are known within the city limits of Chico. Late in the year 4 infestations were confirmed in Orange County near Irvine, and 4 were confirmed from San Diego County in the cities of San Luis Rey, Oak Grove, and Santa Ysabel.

RANGE CATERPILLAR (*Hemileuca oliiviae*) surveys were made in Colfax, Union, Harding, Mora, and Lincoln Counties, NEW MEXICO. Heavy infestations were found on 500,000 acres in Colfax County near Chico and Farley. Approximately 500,000 acres of medium infestations exist in other areas along the Colfax, Union, and Harding County lines. Spot infestations were found outside this generally infested area from Folsom to Cimarron on the west, Clayton on the east, and Watrous on the south. Most of these areas had very few range caterpillars in 1968.

Surveys for SOYBEAN CYST NEMATODE (*Heterodera glycines*) were conducted in 28 States. Local spread was reported from several counties in infested States. The following counties or parishes were reported infested for the first time in 1969: White and Yell, ARKANSAS; Okaloosa, FLORIDA; Union, KENTUCKY; Madison and Morehouse, LOUISIANA; Adams, Alcorn, Holmes, Lee, Prentiss, Sunflower, Union, and Wilkinson, MISSISSIPPI; Hyde, NORTH CAROLINA; and Accomack, VIRGINIA. Crop damage was heavy in Beaufort and Hyde Counties, North Carolina, and in the Elizabeth City area. One field of Pickett variety soybeans was found infested in TENNESSEE, with some damage evident. In the Bootheel area of MISSOURI, some varieties of soybeans are no longer resistant to a new biotype of soybean cyst nematode.

SWEETPOTATO WEEVIL (*Cylas formicarius elegantulus*) infested 5 new properties in ALABAMA, 2 in GEORGIA, 8 in LOUISIANA, and 8 in MISSISSIPPI. Lure traps baited with virgin female weevils proved effective as a survey tool in Louisiana. The police jury of Franklin Parish passed an ordinance prohibiting the planting of sweetpotatoes within one mile of the experiment station at Chase where foundation stock is grown. Seed beds in Franklin and Natchitoches Parishes, Louisiana, were found infested, as was one storage house in Allen Parish. Adults were found in a storage house at Whiteville, NORTH CAROLINA, but no larvae were found in sweetpotatoes. A Tabor City storage house was found reinfested.

No live forms of WESTERN GRAPE LEAF SKELETONIZER (*Harrisina brillians*) were found during 1969 in Sacramento, Yolo, Kings, Placer, or El Dorado Counties, CALIFORNIA. A single moth was taken early in spring at Clovis, Fresno County. Eradicative treatments and inspection continued.

WEST INDIAN SUGARCANE ROOT BORER (*Diaprepes abbreviatus*) adult emergence in FLORIDA began in April, and by the end of the month numerous adults could be found. The infestation is still confined to the Apopka area of Orange and Marion Counties. Surveys were conducted in areas of Citrus, Charlotte, Collier, Palm Beach, Putnam, Alachua, Seminole, Broward, Dade, Lee, Glades, Lake, and Hendry Counties in addition to the area infested. Survey was negative in all but the known infested area.

WHITE-FRINGED BEETLES (*Graphognathus* spp.) were found for the first time at Fort Belvoir in Fairfax County, the city of Alexandria, and in Halifax County, VIRGINIA. In Halifax County, larvae destroyed 25-35 percent of the tobacco in 4 fields on a farm in August. In other areas of the State some spread was noted. Other new county or parish records included Jackson, ARKANSAS; Cook and Mitchell, GEORGIA; Bossier, Webster, and St. Martin, LOUISIANA; Noxubee, MISSISSIPPI; and Knox and Lewis, TENNESSEE. Survey in the infested Bootheel area of MISSOURI revealed no spread during the year, nor was any spread found in TEXAS or MARYLAND. White-fringed beetles damaged many isolated peanut fields in southeastern ALABAMA and most of a 40-acre planting of watermelons in Washington County, FLORIDA. These pests damaged tobacco in Cook County, Georgia. Local spread occurred in many infested counties of Alabama, Florida, KENTUCKY, NORTH CAROLINA, and SOUTH CAROLINA. Surveys were conducted in the noninfested States of OKLAHOMA, NEW JERSEY, ILLINOIS, OHIO, and PENNSYLVANIA, with negative results.

WOOLLY WHITEFLY (Aleurothrixus floccosus) eradivative treatments continued in CALIFORNIA. This pest is still present in the infested area at San Diego, San Diego County.

Bait treatment for WHITE GARDEN SNAIL (Theba pisana) continued in CALIFORNIA during the time snails are not in estivation. Live snails were recorded from one property at Manhattan Beach, Los Angeles County, in 1969.

Weather of the week continued from page 80.

TEMPERATURE: Mild weather continued over most of the western half of the Nation last week making it the fifth consecutive week with warmer-than-normal temperatures. A large area from central Idaho to northern Arizona and from southeastern Oregon to central Colorado averaged 9° to 13° above normal. Storms brought changeable weather to the central and eastern sections of the country which averaged cooler than normal. The eastern section of the northern and central Great Plains and eastward to the Ohio River Valley averaged 3° to 7° below normal. Above normal averages occurred in eastern New England. Near the Great Lakes where the week began with a few mild days, the weather turned sharply colder followed by slight warming over the weekend. The Deep South was mostly cool at the beginning and end of the week with milder weather at midweek. Freezing weather reached the gulf on Tuesday morning and scattered frosts occurred in northern and central Florida. An arctic blast late in the week brought subzero temperatures to the North Central States and parts of the Northeast. Moline, Illinois, registered 7° below zero on Friday morning. (Summary supplied by Environmental Data Service ESSA.)

The Armyworm Situation in the U.S. - 1969

Serious outbreaks of armyworm (*Pseudaletia unipuncta* (Haworth)) were reported in the Midwest during summer 1969. ^{1/} Preliminary reports indicated developing problems in northern and eastern Nebraska, western Iowa, southern Minnesota, eastern South Dakota, and in parts of North Dakota. Outbreaks were also reported in central and eastern Kansas, northern Missouri, and northern Illinois. Less serious infestations occurred in Ohio, Indiana, Michigan, Wisconsin, Oklahoma, Colorado, and Wyoming.

Two complete broods and a partial third brood of armyworm developed in Nebraska in 1969. First-brood larvae appeared in late May and were active into early July. Second-brood larvae appeared about July 15 and damage subsided by mid-August. The few third-brood larvae that appeared in September were negligible in most instances. Damage was first reported in Iowa the week of June 9 from counties along the Missouri River, first in Fremont County and extending northward through Monona County. Activity had decreased by June 21. Adult activity peaked in the southern area the week ending July 1 and in the northern area about July 15. Second-generation larvae were active across southern Iowa during the week of July 7, the central area by July 14, and the northern part of the State by July 21. First heavy populations in Minnesota occurred in Rock County July 21. The first infestation in South Dakota was reported from Turner County July 19, and in North Dakota July 30 in the southwestern area.

The armyworm outbreak in Kansas was first reported in early June in Sumner and Cowley Counties, and in Missouri infestations were economic in areas throughout the northern half of the State by mid-June. The first indication of a potential problem in Illinois was observed the week ending July 14 and in Indiana the week ending July 20. Damage was first reported July 20 in Illinois and July 27 in Indiana. There were a few local outbreaks of armyworm in Ohio, but fall armyworm (*Spodoptera frugiperda*) was heavier throughout the State and infested a much larger acreage than armyworm. The first armyworm problem was reported August 5. In Michigan, field damage to corn first occurred about mid-July, and a potential for problems in Wisconsin was first apparent by July 11.

First reports of armyworm damage in Oklahoma were received the week ending May 30 from central, southwestern, and north-central areas. The problem in Colorado was first noted the last week of July in Boulder, Larimer, and Weld Counties. Armyworm was of minor concern in Wyoming, first being reported near Douglas, Converse County, July 29.

First-generation armyworm infestations in Nebraska were spotty and concentrated in bromegrass, where counts occasionally ranged 10-20 per square foot. Larvae ranged 1-6 per square foot in wheat, but most infestations were noneconomic. Migration to adjacent corn and sorghum began the second week of June. First-brood larvae were heaviest in the southeast and eastern crop districts. Populations were economic on 120,000 acres in Nebraska. Second-brood larvae damaged oats, corn, sorghum, and alfalfa, and caused much concern on lawns in urban areas. Damage was most serious in the central, northern, eastern, and northeastern districts, with a few heavy infestations reported in the northwest district. Larvae also occurred in a few southeastern counties. Second-brood larvae were economic on 85,000 acres in Nebraska. Infestations in Iowa were heaviest in the area north of U.S. High 20 and west of U.S. High 169. Armyworm infested an estimated 1,200,000 acres of oats for grain, oats in diverted acres, and bromegrass pastures. Larvae were also a problem in many lawns.

^{1/} A questionnaire was submitted to cooperators in 15 States in an attempt to gather information on these outbreaks. This report is based on the responses from these States.

In Minnesota, small grains, primarily oats, were most seriously damaged, but corn, soybeans, alfalfa, reed canary grass, peas, and sorghum were infested. Armyworm was also a problem on bluegrass lawns. Larvae were economic in 37 counties in the south-central, central, and southeast districts, with highest counts in Rock, Nobles, Pipestone, and Murray Counties. Larvae were found as far north as Norman County, but numbers were economic primarily in the southern half of the State. The outbreak ended by August 15 although larvae still could be found in some fields. Armyworm infested or threatened an estimated 900,000 acres of oats, barley, corn, and flax in South Dakota. There were no extensive outbreaks in North Dakota. Infestations up to 40 larvae per square foot appeared July 30 in the southwestern area where hail severely damaged crops July 7. A few larvae were detected in many fields throughout the State, but infestations were noneconomic.

Within 10 days of the first report of an outbreak in Kansas, armyworm was economic in most counties in the central, south-central, southeast, east-central, and northeast districts. Severest infestations in wheat were found in the southeast, south-central, central, and east-central districts, and in brome grass in the east-central and northeast districts. Movement to row crops was reported but little damage occurred. The outbreak had subsided in most areas by the end of June. Larvae were light in most crops and in most areas of Kansas throughout summer, but no economic infestations were observed or reported. Larvae ranged 1-4 per square foot in small grains in southeastern Missouri from early to mid-May. In early June, larvae averaged 5 per square foot in dense wheat and brome grass in the central area, and by mid-June, infestations were economic in areas throughout the northern half of the State. Larvae ranged up to 40 per square foot in brome grass pastures the first half of June in the northwest area. Several pastures were completely stripped in Atchison, Nodaway, and Holt Counties. Moth flights were heavy throughout July, with peak numbers recorded from blacklight traps in early August in Platte and Greene Counties. The outbreak in Illinois was due to second-generation larvae which is not typical in the State. Very heavy moth flights during July indicated the potential problem in the northern half of the State. Infestations involved corn, oats, and government acreages.

The armyworm outbreak in Indiana was unusual in that it also involved second-generation larvae. All crop damage was to about 2,000 acres of corn which had already set ears. The outbreak in Ohio was not of major importance and apparently only involved corn. The infestation in Michigan was scattered through most of the State. Corn was the principal crop infested, but a few late crops were involved. Corn damage appeared about mid-July and ended about mid-August. A potential problem was apparent in Wisconsin by August 1. Larvae were first noted in grass field margins in Columbia County. Infestations were too late to affect much pea acreage. Oats and corn were the principal crops affected. Close examination showed that most infestations were fall armyworm. The problem had abated by August 22.

Armyworm outbreaks in Oklahoma were limited in many parts of the State. Small grains, particularly wheat, were infested most frequently, but larvae were common in native grasses also. Infestations were reported throughout the western half of the State except in the panhandle area. Populations were variable from field to field, and damage was serious in about 10,000 acres. Damage was light to moderate in most fields in western Oklahoma, and outbreaks seldom lasted more than 2 weeks.

Populations were heavier than usual in Colorado, and were economic in grasses, corn, sorghum, alfalfa, and lawns. Armyworm was found throughout the eastern part of the State, but economic infestations were scattered and in many instances not reported. Infestations lasted from late July through August, with most damage occurring the first 3 weeks of August. Armyworm was very scattered in Wyoming, mainly in oats or hail-damaged grain. There was some movement to corn and alfalfa after grain began to dry.

Apparently there were no indications in 1968 that an armyworm outbreak would occur in 1969. A minor outbreak did occur in 4 west-central counties of Minnesota in 1968, and overwintering larvae and pupae were found a few times in Oklahoma, but no outbreaks were predicted. First indications of possible outbreaks in 1969

were heavy moth flights and light trap collections earlier in the season. Crop conditions were ideal for egg laying in many areas, and weather was favorable for larval survival. Cool, wet weather in spring and a large amount of lodged wheat in many areas in May and June were major factors contributing to the severe outbreak in Kansas. These conditions also favored outbreaks in other States. Grass and weeds in some cornfields also provided excellent egg-laying sites. Wide dispersal of adults, due to southerly winds in some areas, also contributed to extensive infestations.

Parasites and predators had very little effect on outbreaks in most areas. Parasites, particularly Winthemia quadripustulata (a tachina fly) and Apanteles militaris (a braconid) are credited with the curtailment of a second generation of armyworm in Wisconsin. Beneficial species had little effect in preventing damage by the second generation in Illinois, but did help prevent another generation from occurring. Parasites eventually reduced populations in Indiana.

According to the contributors to this report, there is very little, if any data available for predicting the armyworm situation for 1970. There is no history of 2 successive years of outbreak in Iowa or Indiana. Outbreaks in northern areas depend upon moth flights from southern areas. Much depends on whether wet weather and good growing conditions occur in the spring of 1970.

Armyworm infested an estimated 3,656,000 acres of small grains, corn, pasture grasses, and some legumes in those States where outbreaks occurred. Approximately 1,113,000 infested acres were treated. The average cost of control per acre ranged from \$1.50 to \$4.80 and averaged \$2.70. The estimated loss to crops due to armyworm infestations in 1969 was in excess of \$7,000,000 with Nebraska, Iowa, Minnesota, South Dakota, Illinois, and Oklahoma reporting the most damage.

See table on page 98.

THE ARMYWORM SITUATION IN THE U.S. - 1969

State	Crop	Estimated Acres Treated	Control Cost Per Acre (Dollars)	Estimated Crop Loss (Dollars)
Colorado	Grasses, corn, sorghum, alfalfa	Not available	Not available	Not available
Illinois	Corn, oats, government acres	250,000	2.50-3.50	750,000-1,000,000
Indiana	Corn	1,700	4.80	Insignificant
Iowa	Bromegrass, oats, corn, alfalfa, some soybeans	293,550	2.75-3.50	1,320,000
Kansas	Wheat, bromegrass	75,000	2.50	Not available
Michigan	Corn, oats	2,000	2.80-2.90	Not available
Minnesota	Small grain, corn, legumes, soybeans, other crops	87,746	1.50	1,372,075
Missouri	Pastures	12,000	Undetermined	Not available
Nebraska	Wheat, oats, bromegrass; some corn, sorghum, alfalfa	177,700	2.50	933,000
North Dakota	Oats, barley, wheat, durum, corn	10,000	1.25-1.50	150,000
Ohio	Corn	Unknown	3.00-4.00	Could not be separated from fall armyworm damage
Oklahoma	Small grains	10,000-15,000	2.20	440,000
South Dakota	Oats, barley, corn, flax	416,000	2.00-3.00	2,220,000*
Wisconsin	Corn, oats, peas	25,000	2.00-2.50	38,000
Wyoming	Oats, corn, alfalfa	200	Not available	Insignificant

* Includes cost of spray treatments.

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Cooperative
**ECONOMIC INSECT
REPORT**



Issued by

PLANT PROTECTION DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PROTECTION DIVISION

ECONOMIC INSECT SURVEY AND DETECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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United States Department of Agriculture
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COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG and WINTER GRAIN MITE damaged small grain in Texas, and greenbug beginning to build up in limited area of Oklahoma. (p. 101).

GREEN PEACH APHID damaged spinach and kale in Texas. (p. 101).

SOUTHERN PINE BEETLE killed 8 million board feet and 8,000 cords of lumber in, 6-million acre outbreak area of Texas in 1969. (p. 102).

Predictions

MOSQUITOES expected to be heavy in 1970 in California. (p. 103).

CORN ROOTWORMS expected to be economic in southeast and southwest Minnesota, expected to increase in Nebraska (p. 119), and populations expected to be the same or higher in South Dakota in 1970 (p. 121).

Detection

New State records include an ARMORED SCALE and TULIP BULB MITE from Hawaii (p. 104), a DARKLING BEETLE and a FLAT BARK BEETLE from Wisconsin (p. 103), SPRUCE APHID from NORTH CAROLINA (p. 103), and a WHITEFLY from Texas (p. 102).

For new county records see page 104.

Special Reports

Summary of Insect Conditions in the United States - 1969
Special Insects of Regional Significance (pp. 105-113).
Corn, Sorghum, Sugarcane (pp. 114-122).
Small Grains (pp. 123-125).
Turf, Pastures, Rangeland (pp. 126-128).

Distribution of Northern Corn Rootworm. Map. (p. 120).

Japanese Beetle Quarantine Map. Centerfold.

Reports in this issue are for week ending February 20 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance.....101

Insects Affecting

Corn, Sorghum, Sugarcane.....101	Citrus.....102
Small Grains.....101	Ornamentals.....102
Forage Legumes.....101	Forest and Shade Trees.....102
Cole Crops.....101	Man and Animals.....103
General Vegetables.....101	Households and Structures.....103
Deciduous Fruits and Nuts.....101	Stored Products.....103

Federal and State Plant Protection Programs.....104

Hawaii Insect Report.....104

Detection.....104

Light Trap Collections.....104

Summary of Insect Conditions in the United States - 1969

Special Insects of Regional Significance.....105
Corn, Sorghum, Sugarcane.....114
Small Grains.....123
Turf, Pastures, Rangeland.....126

Distribution of Northern Corn Rootworm. Map.....120

Japanese Beetle Quarantine Map. Centerfold.

WEATHER OF THE WEEK ENDING FEBRUARY 23

HIGHLIGHTS: Last week was the sixth consecutive warm week in much of the West and the third consecutive cool week in the East. The heaviest rains fell along the northern Pacific coast and in the Southeast from northern Florida and southern Virginia.

PRECIPITATION: Two storms brought generous precipitation to the United States early in the week. A Pacific storm lashed the coasts of Washington, Oregon, and northern California with strong winds and heavy rain with snow in the higher elevations. The wind gusted to 85 m.p.h. at Cape Blanco, Oregon, Monday forenoon. Another storm in the southeast spread showers and a few thunderstorms from Alabama to the Virginias, Maryland, and Delaware. A heavy downpour dumped 9.21 inches of rain at Elgin Air Force Base in the Florida Panhandle in 24 hours, ending at 7 p.m. Monday. Freezing rain fell in the northern sections of this precipitation belt. Light snow fell early in the week in the northern Great Plains and the Great Lakes region. Strong winds raced down the eastern slope of the central Rocky Mountains and across the nearby Great Plains, kicking up considerable dust late Tuesday night in eastern Colorado and the western portions of Nebraska and Kansas. Light showers or snow flurries occurred in New York and New England late in the week. Scattered rains began in western Texas Friday and spread eastward Saturday. Light rain fell in Arizona late in the week with snow flurries above 4,000 feet

TEMPERATURE: Arctic air pushed into the northern Great Plains early in the week and spread eastward and southward. Subzero temperatures were confined mostly to North Dakota on Monday morning but were common in eastern South Dakota, Minnesota, and Wisconsin by midweek. Midday temperatures were below zero in parts of North Dakota and Minnesota on Wednesday. Warm, southerly winds brought gulf air northward across the central Great Plains early in the week. Western Kansas warmed to the 80's on Tuesday and Rapid City, South Dakota, registered 66°, the same as at Tampa, Florida, airport. On Wednesday, both St. Louis, Missouri, and Tampa, Florida, registered 60°. But by Thursday morning, St. Louis with 17° was 37° colder than Tampa. As the very cold arctic air advanced southward, temperature drops of 40° or more in 10-12 hours were common in Missouri and Arkansas. However, gulf air continued to warm the extreme Southeast. Savannah, Georgia, registered 44° Tuesday afternoon, but by Thursday had warmed to 74°. Weather of the week continued on page 128.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

GREENBUG (Schizaphis graminum) - NEW MEXICO - Generally light, ranged 3-12 per linear foot, on wheat in Quay, Curry, and Roosevelt Counties. (Mathews). TEXAS - Light to moderate in Wichita, Young, Dickens, and Motley Counties. Damaged small grain in Foard, Haskell, and Jones Counties. (Boring, Feb. 13). OKLAHOMA - Light to moderate in wheat in Kingfisher County. Beginning to build up in few areas of county. (Okla. Coop. Sur.). KANSAS - Surveys negative in wheat in Johnson, Osage, Shawnee, and Wabaunsee Counties. (Iselin).

CORN LEAF APHID (Rhopalosiphum maidis) - NEW MEXICO - Ranged up to 8 per square foot on barley in Luna County. (Campbell).

CORN, SORGHUM, SUGARCANE

WESTERN CORN ROOTWORM (Diabrotica virgifera) - WISCONSIN - Adults collected from corn silks in Winnebago and Waushara Counties by H. Hauser in August 1969. These are new county records. (Wis. Ins. Sur.).

SMALL GRAINS

WINTER GRAIN MITE (Pentaleus major) - TEXAS - Light to moderate on small grain in Archer and Young Counties. Damaged some fields in Jones County. Medium in isolated fields of oats in Blanco and Bell Counties. Damage ranged 50-75 percent in isolated fields near Johnson City. (Boring, Feb. 13).

GREEN PEACH APHID (Myzus persicae) - CALIFORNIA - This species, Rhopalosiphum padi, and Chirothrips mexicanus (a thrips) infested 160 acres of barley at Imperial, Imperial County. (Cal. Coop. Rpt.).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - MISSISSIPPI - Larvae averaged 1.6 per 20 stems of alfalfa in Pontotoc County. (Pitre).

PEA APHID (Acyrtosiphon pisum) - NEW MEXICO - Light, ranged 6-25 per square foot, on alfalfa in Quay, Curry, and Roosevelt Counties. (Mathews).

COLE CROPS

GREEN PEACH APHID (Myzus persicae) - TEXAS - Damaged spinach and kale in Uvalde County. Aerial applicators in area indicated difficulty in control. (Smith, Feb. 13).

GENERAL VEGETABLES

GREEN PEACH APHID (Myzus persicae) - CALIFORNIA - Nymphs 2 per leaf in 80 acres of parsnip at Thermal, Riverside County. (Cal. Coop. Rpt.).

THRIPS - NEW MEXICO - Populations near treatment levels on onions in Dona Ana County. (Campbell).

DECIDUOUS FRUITS AND NUTS

PEAR PSYLLA (Psylla pyricola) - OREGON - Heavy on pear trees at Hood River, Hood River County. Oviposition began February 17. (Piefer).

CITRUS

Citrus Insect Situation in Florida - Mid-February - CITRUS RUST MITE (Phyllo-coptruta oleivora) infested 75 (norm 61) percent of groves; economic in 45 (norm 42) percent. Decrease expected to remove population from high range for first time in 12 months. Will be slightly above normal and may increase. Highest districts west, east, and north. CITRUS RED MITE (Panonychus citri) infested 43 (norm 36) percent of groves; economic in 14 (norm 14) percent. Population near normal and in low range. Little change expected. Highest districts west and north. TEXAS CITRUS MITE (Eutetranychus banksi) infested 23 (norm 31) percent of groves; economic in 6 (norm 11) percent. Population below normal, will remain very low. Highest district west. SIX-SPOTTED MITE (Eotetranychus sexmaculatus) infested 2 percent of groves; none economic. Gradual increase expected. GLOVER SCALE (Lepidosaphes gloverii) infested 78 (norm 78) percent of groves; economic in 7 (norm 17) percent. Population below normal and moderate; little change expected. Highest districts east and west. PURPLE SCALE (L. beckii) infested 70 (norm 77) percent of groves; economic in 7 (norm 9) percent. Population near normal and moderate, except north district with 2 percent of groves heavily infested. Little change expected. CHAFF SCALE (Parlatoria pergandii) infested 42 (norm 64) percent of groves; economic in 2 (norm 10) percent. Population expected to remain below normal and low in all districts. BLACK SCALE (Saissetia oleae) infested 18 (norm 36) percent of groves; economic in 3 (norm 15) percent. Will remain subnormal and very low in all districts. YELLOW SCALE (Aonidiella citrina) infested 60 (norm 62) percent of groves; economic in 8 (norm 14) percent. Decreased slightly. Will remain low to moderate in most districts. Few scattered heavy infestations. Highest district north. An ARMORED SCALE (Unaspis citri) infested 25 percent of groves; moderate to heavy in 8 percent. Population highest on record for month and will increase. WHITEFLY population above normal for January, may enter high range. (W.A. Simanton (Citrus Expt. Sta., Lake Alfred)).

CALIFORNIA RED SCALE (Aonidiella aurantii) - CALIFORNIA - Heavy on citrus at Arvin, Kern County. (Cal. Coop. Rpt.).

ORNAMENTALS

A WHITEFLY (Aleyrodes spiraeoides) - TEXAS - Specimens collected on iris at El Paso, El Paso County, November 6, 1969 by R.M. Eads. Determined by L.M. Russell. This is a new State record. (Green).

FOREST AND SHADE TREES

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - TEXAS - Populations decreased. Last detection flight of season resulted in only 20 new multiple-tree spots over 6-million acre outbreak area. Total of 861 multiple-tree spots of 69,337 trees, controlled. About one-third level of 1968. Cooperators report 8 million board feet and 8,000 cords of infested timber killed in 1969. Salvage continued as primary control; 70+ percent of volume removed for commercial use. This is increase of 15 percent over 1968 and 30 percent over 1967. Southern pine beetle reported in lawn trees in Longview, Gregg County. A record northward extension of outbreak area; about 50 miles north of known infestations. Flights for 1970 will start in mid-January. (Mason, For. Pest Activity Rpt., Oct.-Dec.).

BLACK TURPENTINE BEETLE (Dendroctonus terebrans) - TEXAS - Infestations noticeable, direct controls not required. Activity heaviest in Trinity, Shelby, and Angelina Counties. (Mason, For. Pest Activity Rpt., Oct.-Dec.).

ENGRAVER BEETLES (Ips spp.) - TEXAS - Population levels high through summer, decreased steadily during October and November with cool weather. About 200 trees controlled. (Mason, For. Pest Activity Rpt., Oct.-Dec.).

A BARK BEETLE (Phloeosinus cupressi) - CALIFORNIA - Medium on Italian cypress nursery stock at Santa Paula, Ventura County. (Cal. Coop. Rpt.).

A FLAT BARK BEETLE (Pediacus depressus) - WISCONSIN - Specimen collected in black-light trap in warehouse in Milwaukee County by W.F. Simmons and R. Edmonds during first week of August 1969. Determined by T.J. Spilman. This is a new State record. (Wis. Ins. Sur.). Feeds beneath bark of trees. (PPD).

NANTUCKET PINE TIP MOTH (Rhyacionia frustrana) - TEXAS - Heavy on planted loblolly and shortleaf pines throughout eastern part of State. Particularly severe near San Augustine, San Augustine County, and Kay, Harris County. (Mason, For. Pest Activity Rpt., Oct.-Dec.).

SPRUCE APHID (Elatobium abietinum) - NORTH CAROLINA - Colonies fed on needles of ornamental white spruce (Picea glauca) at Bent Creek Experimental Forest near Asheville, Buncombe County, December 7, 1967. Collected by G.F. Fedde. Determined by L.M. Russell. This is a new State record and first record of this species in eastern United States. (Fedde).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - FLORIDA - Eggs hatched at Gainesville, Alachua County, February 10-16 on wild plum and black cherry. (Hetrick).

MAN AND ANIMALS

SCREW-WORM (Cochliomyia hominivorax) - No cases reported in U.S. February 15-21. Total of 34 Laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico February 8-14 as follows: Sonora 24, Chihuahua 7, Nuevo Leon 1, Tamaulipas 2. Total of 3 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 168,000; Mexico 123,580,000. (Anim. Health Div.).

COMMON CATTLE GRUB (Hypoderma lineatum) - OKLAHOMA - Moderate in Mayes County cattle. Averaged 2 per head in cattle in Payne County. Adults active in Ottawa County on February 12. Grubs heavy in 60-70 percent of cattle slaughtered in packinghouse at Miami, Ottawa County. (Okla. Coop. Sur.).

MOSQUITOES - CALIFORNIA - Hibernating females again emerging after few days of cold weather. Annoyance high. Males appearing. Breeding may be early following wet winter. Much standing water indicates populations may be heavy this season. (Cal. Coop. Rpt.). MARYLAND - First instars of Aedes canadensis active throughout State. A. grossbecki larvae active in Prince Georges County. (U. Md., Ent. Dept.).

HOG LOUSE (Haematopinus suis) - MISSISSIPPI - Averaged 2.5 behind each ear on 30 hogs at State College, Oktibbeha County. (Pitre).

CHICKEN MITE (Dermanyssus gallinae) - MISSISSIPPI - Moderate on chickens at State College, Oktibbeha County. (Sartor, Feb. 13).

BROWN RECLUSE SPIDER (Loxosceles reclusa) - TENNESSEE - Specimen collected in Lawrence County. This is a new county record. (Ring). ALABAMA - Specimen collected inside home at Albertville, Marshall County. Determined by C.B. Williams. (McQueen).

HOUSEHOLDS AND STRUCTURES

POWDER-POST BEETLES (Lyctus spp.) - TENNESSEE - Damage severe to hardwood flooring in home in Davidson County. (Gordon).

STORED PRODUCTS

A DARKLING BEETLE (Palorus subdepressus) - WISCONSIN - Specimen collected in blacklight trap at warehouse in Milwaukee County by W.F. Simmons and R. Edmonds during second week of July 1969. Determined by T.J. Spilman. This is a new State record. (Wis. Ins. Sur.). Feeds on stored products. (PPD).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

IMPORTED FIRE ANT (*Solenopsis saevissima richteri*) - SOUTH CAROLINA - Adults collected in housing development at Darlington, Darlington County, January 27, by S.W. Weaver. Determined by W.H. Owens; confirmed by D.R. Smith. This is a new county record. (PPD).

HAWAII INSECT REPORT

New State Records - Two specimens of an ARMORED SCALE (*Melanaspis aliena*) collected from Cymbidium at Hilo, Hawaii, on June 19, 1956, by Q.C. Chock. Determined by J.W. Beardsley. This species recorded from orchids, mostly Cattleya spp., in Florida, Cuba, Mexico, and Guatemala, and apparently is not a serious pest. (Kawamura). Specimens of TULIP BULB APHID (*Dysaphis tulipae*) collected on carrot leaves at Hilo, Hawaii, by B. Hu on March 4, 1965. Determined by L.M. Russell. Reported on Liliaceae and Iridaceae bulbs and shoots in northwest Soviet Union, central Asia, western and southwestern Europe, southwest Asia and Asia Minor, North Africa, and North and Central America. (Kawamura).

Corn - Nymphs and adults of CORN PLANTHOPPER (*Peregrinus maidis*) moderate on sweet corn in community garden at Kaunakani, Kauai. Nymphs of Tyththus mundulus (cane leafhopper egg sucker) light. (Sugawa).

General Vegetables - CARMINE SPIDER MITE (*Tetranychus cinnabarinus*) adults light (1-2 per leaf) on eggplant in small community garden at Puunene and in small planting at Waikapu, Maui. All stages medium in 0.75 acre of snap beans at Waianae, Oahu. (Miyahira, Funasaki). CHINESE ROSE BEETLE (*Adoretus sinicus*) foliar damage heavy (75 percent of leaf surface affected) in small planting of peanuts and moderate damage to older broccoli leaves at Puunene. (Miyahira). Nymphs and adults of CABBAGE APHID (*Brevicoryne brassicae*) light on broccoli flower heads in small community garden at Puunene. (Miyahira).

Nuts - All instars of BLACK CITRUS APHID (*Toxoptera aurantii*) light on flowers of Macadamia sp. at Kilauea, Kauai. (Sugawa).

Forest and Shade Trees - All instars of an ERIOCOCCID (*Eriococcus araucariae*) heavy in 3 acres of young Araucaria sp. at Kilauea, Kauai. (Sugawa).

DETECTION

New State Records - An ARMORED SCALE (*Melanaspis aliena*) HAWAII - Hawaii Island (p. 104). A DARKLING BEETLE (*Palorus subdepressus*) WISCONSIN - Milwaukee County (p. 103). A FLAT BARK BEETLE (*Pediacus depressus*) WISCONSIN - Milwaukee County (p. 103). SPRUCE APHID (*Elatobium abietinum*) NORTH CAROLINA - Buncombe County. This is the first record in the eastern United States. (p. 103). TULIP BULB APHID (*Dysaphis tulipae*) HAWAII - Hawaii Island (p. 104). A WHITEFLY (*Aleyrodes spiraeoides*) TEXAS - El Paso County (p. 102).

New County Records - BROWN RECLUSE SPIDER (*Loxosceles reclusa*) TENNESSEE - Lawrence (p. 103). IMPORTED FIRE ANT (*Solenopsis saevissima richteri*) SOUTH CAROLINA - Darlington (p. 104). SOUTHWESTERN CORN BORER (*Diatraea grandiosella*) ILLINOIS - Hamilton, Perry, White (p. 117). WESTERN CORN ROOTWORM (*Diabrotica virgifera*) WISCONSIN - Green (p. 119), Waushara, Winnebago (p. 101). YELLOW SUGARCANE APHID (*Sipha flava*) ARKANSAS - Washington (p. 121).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville, 2/13-19, BL - Armyworm (*Pseudaletia unipuncta*) 1, granulate cutworm (*Feltia subterranea*) 10.

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1969
(continued from page 94)

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

Highlights:

ARMYWORM outbreaks were serious in several Midwest and Plains States during 1969. ARMY CUTWORM was economic on crested wheatgrass in Idaho. Infested acreage in Nevada was about half that of 1968. This pest damaged sugarbeets, oats, and barley in North Dakota. BEET LEAFHOPPER damaged sugarbeets in some areas of California and Arizona and reduced yields in some fields in Idaho by 50-100 percent. CORN EARWORM damaged soybeans in Alabama and Virginia, and was the heaviest on corn, soybeans, and tomatoes since 1966 in Maryland. This pest was economic on soybeans in Arkansas. GREENBUG was heavy on sorghum for the second consecutive year in California, and controls were required in several areas of New Mexico. This pest was damaging in Kansas, but predators in some areas kept populations low. Predators held greenbug in check in most areas of Nebraska, but were not numerous enough in South Dakota. POTATO LEAFHOPPER damage declined in Maryland alfalfa, and is at a 25-year low in Michigan soybeans.

ARMYWORM (*Pseudaletia unipuncta*) outbreaks were serious in several Midwest and Plains States in 1969. Less serious infestations occurred in adjacent States. Infestations involved an estimated 3,656,000 acres of small grain, corn, pasture grasses, and some legumes. Approximately 1,113,000 infested acres were treated. The estimated loss to crops was in excess of \$7 million.

Spring flights were heavier than usual in KANSAS. Larval buildups were heavy due to the wet spring and large amount of lodged wheat. The first outbreak occurred in Sumner and Cowley Counties in early June. Within 10 days, infestations were economic in the eastern two-thirds of the State. Damage was severe, particularly to downed wheat in the south-central, southeast, and central districts. Larvae caused much damage to bromegrass when they moved from maturing wheat in the east-central and northeast districts. About 450,000 acres of wheat and 120,000 acres of bromegrass were damaged. Controls were applied to an estimated 50,000 acres of wheat and 25,000 acres of bromegrass. Heavy populations damaged some isolated wheat in the western area in September. Blacklight trap catches were heavier than usual in central and western Kansas in the fall. Two complete broods and a partial third brood of armyworm developed in NEBRASKA. Larvae first appeared in late May and were active into early July. Infestations were spotty and concentrated in bromegrass where counts ranged 10-25 per square foot. Larvae ranged 1-6 per square foot in wheat, but most infestations were non-economic. First-brood larvae were heaviest in the southeast and east crop districts. Activity declined about July 1. Populations were economic on about 120,000 acres. Second-brood larvae appeared about July 15 and damaged oats, corn, sorghum, and lawns. Damage was most serious in the central, north, east, and northeast districts, but a few infestations were reported in the southeast. About 85,000 acres were involved. Damage had ended by mid-August.

Armyworm threatened or infested an estimated 900,000 acres of barley, corn, flax, oats, and wheat in SOUTH DAKOTA. Some soybeans and alfalfa were involved also, but corn was the main host. Problems were reported in some counties west of the Missouri River. Larvae ranged up to 75 per square foot in swathed alfalfa in Walworth County. Counts declined in August. Populations are expected to be above normal in 1970. Crop loss was estimated at \$2 million in South Dakota. Although there were no extensive armyworm outbreaks in NORTH DAKOTA, infestations were economic in the western area by late July. Up to 40 larvae per square foot appeared in oats, barley, wheat, and corn damaged by hail in early July in Dunn, Stark, Hettinger, and Golden Valley Counties. About 100,000 acres were infested and loss was estimated at \$150,000. Populations in MINNESOTA were heaviest in

Rock, Nobles, Pipestone, and Murray Counties. Economic damage occurred to small grains, primarily oats, but corn, sorghum, reed canary grass, alfalfa, soybeans, and peas were damaged. Losses, including treatment costs, were estimated at about \$1.5 million. Parasites and predators were very scarce.

Armyworm moths appeared in blacklight traps May 18 in Dane and Waushara Counties, WISCONSIN. A few large larvae were observed in Dane County July 4, and large numbers of moths began appearing in blacklight traps. Young larvae infested oats, alfalfa, and peas July 25. By August 8, corn, oats, and some peas had been treated in several counties. Up to 98 percent of oat heads and new seeding alfalfa was clipped by larvae in a few fields. Parasites were scarce in early August. Pupation was underway by August 15, and moth flights heavy by August 22. Moths were numerous until October 28 in Wisconsin. First armyworm moths were taken April 18 in southwest INDIANA, and flights were heavy July 5-11 in northern and southern districts. Moth flights reached a second peak in the southwest district August 16-22 and in the southwest, east-central, and northwest districts August 30 to September 5. First damage was noted in early August. Infestations were widespread but covered small, isolated areas. Corn was damaged in all districts, but only one field required controls. Second-generation damage ranged light to severe on grasses in the central, west-central, and northeast districts.

Moth catches in blacklight traps in northern ILLINOIS were almost too large to count. Larvae appeared in grassy corn by July 20 from Hancock County to McLean County to McHenry County. Counts of 25-40 per square foot were common. Populations were reduced by a virus, but 492,035 acres of corn required controls. Many lawns were heavily damaged. First armyworm larvae of the season in MISSOURI were observed April 16 in Cape Girardeau County. Infestations were light in dense wheat and barley during mid-May in the southeastern area. Larvae infested wheat in the central and northwest areas during June. Extensive controls on small grains were required only in the northwest area. Larvae ranged up to 40 per square foot in bromegrass pastures, and several pastures were stripped in Atchison, Nodaway, and Holt Counties. Moth flights were heavy in the northwest area in July. About 12,000 acres of pastures were treated in Atchison County.

Armyworm caused some concern in other areas. Damage was moderate to heavy on wheat in scattered counties in the western half of OKLAHOMA in late May and early June. Small outbreaks in WYOMING occurred in oats, barley, and corn in Goshen, Converse, and Crook Counties in late July and early August. Some oats were successfully treated in Goshen County. Damage was minor to lawns and gardens at Torrington, Goshen County, and Worland, Washakie County.

Spring armyworm moth collections in MICHIGAN light traps were 30 percent below normal for the past 2 to 3 years. In 1969, moth catches increased about mid-July, when it was too late to damage wheat and oats. Damage to field corn resulted from infested grasses in fields instead of from migration. Feeding in field corn was widespread, but damage was light. In 25 years, only one major armyworm outbreak has occurred east of U.S. Highway 27, which runs north and south through Lansing. Armyworm was generally very light throughout NEW JERSEY, and caused only minor damage in several Cumberland County barley fields. By early May, adults were very common in blacklight traps in DELAWARE. From late May through early June larvae infested scattered grain fields statewide. Populations in MARYLAND were well below normal on small grains and corn. Little acreage needed controls. Armyworm was generally lighter than last year in VIRGINIA, except in the southwest area where infestations on sod-planted corn were higher in Washington County. Most problem fields had been sod-planted following small grain. Mixed populations of *Pseudaletia unipunctata* and *Spodoptera frugiperda* (fall armyworm) were heavy in ALABAMA on several thousand acres of small grain from Montgomery south to the State line during September and October. Controls were required. Larvae infested Coastal Bermuda grass in Geneva County, August 12. Spotted areas required control in numerous counties north to Bibb County late in the season.

For special report on the armyworm situation in 1969 see CEIR 20(8):95-98.

ARMY CUTWORM (Chorizagrotis auxiliaris) destroyed 40 percent of the new barley plantings at Bancroft, Caribou County, IDAHO, during May. In early June this pest and WESTERN FIELD WIREWORM (Limoniis infuscatus) reduced yields by 10 percent in a 70-acre alfalfa field at Bonners Ferry, Boundary County. Larvae ranged 4-8 per square foot in mid-April and destroyed most of a 7,500-acre Bureau of Land Management new seeding of crested wheatgrass and 4,500 acres of a two-year-old seeding in the Butte and Pothole Creek areas of Elmore County. In this same area, larvae also destroyed several hundred acres of flixweed, an important spring host of Circulifer tenellus (beet leafhopper). Economic populations on seed alfalfa in Humboldt County, NEVADA, required control. The infested acreage was about half that of 1968. No damage occurred in other counties. Damage to small grains was spotted and generally below normal in UTAH. Alfalfa was damaged in local areas in several counties. Army cutworm was light to moderate in north-east and east-central COLORADO. Larvae were first found in early March and peaked in mid-April with 0-4 per linear foot on wheat. Heavy populations were scattered. Controls were applied in isolated cases. Crop loss was light. Army cutworm was below levels of 1968 in WYOMING and caused little damage to wheat or alfalfa in 1969. Moths began appearing May 14 in Goshen County.

Scattered infestations in NORTH DAKOTA damaged oats and barley in Hettinger and Golden Valley Counties. Up to 6 larvae per square foot reduced stands as much as 50 percent in oats and barley. Over 3,000 acres of sugarbeets in Pembina County were reseeded or treated. Army cutworm populations were light in alfalfa in the central, south, southwest, and west districts of NEBRASKA. Damage was not economic on most alfalfa, but some scattered severe damage was noted on new seedings. Losses to new seedings were in Howard, Valley, and Perkins Counties. Damage declined by mid-May. Most controls were ineffective. Populations on wheat were less than in 1968. Populations were low but generally widespread throughout the southwest and panhandle areas. Populations on wheat in Nebraska in 1970 are expected to be about the same as in 1969. Populations in KANSAS were economic in only a few fields of small grains in the west-central and southwest districts, although blacklight catches in fall 1969 at Garden City and Hugoton were much higher than any time during the last 5 years. Development was about two weeks late. The first larvae were observed in late March. Army cutworm infested wheat and alfalfa from late January to mid-April in north-central, central, west-central, and south-central OKLAHOMA. Moderate populations were common but few heavy infestations were observed.

ASTER LEAFHOPPER (Macrosteles fascifrons) damaged wheat in south-central OKLAHOMA during late October and early November. Leafhoppers were detected in oats in Kenosha County, WISCONSIN, May 9. Counts increased from 1 per 100 sweeps to 30 per 100 sweeps in Dane County by May 16. Populations were higher in the eastern third of the State by July 4, with 120 per 100 sweeps of oats in Brown County. The percentage of leafhoppers carrying aster yellows was 3 times as great as in 1968, but populations were lower. Disease in lettuce and carrots was low due to preventive treatments. Adults were found as late as October 24. Damage by this economically important species was low due to control. Aster leafhopper was moderately heavy in MICHIGAN, but aster yellows was relatively light.

BEEF LEAFHOPPER (Circulifer tenellus) damaged sugarbeets and required treatment in some areas of CALIFORNIA. Controls continued with regular spring, fall, and winter applications. Incidence of curly top remained generally low. There were some heavy infections in areas adjacent to breeding grounds. Beet leafhopper was heavy on sugarbeets in Cochise County, ARIZONA, in April and June. Some fields were treated. Numbers were heavy on sugarbeets in Maricopa and Pinal Counties during May, and unusually heavy populations infested most alfalfa in the Salt River Valley, Maricopa County. This leafhopper was generally low on sugarbeets in central and northern UTAH.

Overwintered beet leafhopper adults in WYOMING declined to 1.1 per 10 square feet in wasteland areas in the Worland Valley of Washakie and Big Horn Counties in April. About 6,912 acres of wasteland were treated. Counts after spraying indicated 0.1 adult per 10 square feet. Curly-top disease was first detected in Washakie County July 29. Beet leafhopper adults from 9 combined range breeding areas in southern IDAHO averaged 60 per 100 1-square-foot samples in April compared to 42 in 1968. About 45,000 acres needed control to prevent excessive migrations into croplands. The percentage of viruliferous leafhoppers often exceeded 20 percent, 4 to 6 times greater than in the past 2 years. Numbers were more abundant on sugarbeets and beans in the southern area than in previous years. Yields in many fields were reduced 50-100 percent.

CORN EARWORM (Heliothis zea) infested a variety of crops at Belle Glade, Palm Beach County, FLORIDA. Larvae were abundant in late spring and early summer and damaged 91 percent of sweet corn ears on unsprayed plots. Damage was less severe than in previous years on sweet corn in the muck soil growing area at Zellwood, Orange County. Larvae were light on pigeonpea at Gainesville, Alachua County, during July and heavy on 40+ acres of peas during August. Young blooms and pods were damaged. Corn earworm was one of the major pests of soybeans in southern ALABAMA with lesser damage in central and northern areas. Following a heavy buildup on cotton and other crops, larvae infested peanuts in Geneva and Pike Counties the first week of August. H. zea occurred in mixed populations with other leaf feeders throughout the southeastern peanut area. Control of these soybean pests required 2-4 applications of insecticides to 60 percent of the total State acreage. Larvae were widespread and damaged pretassel corn and sorghum and ear corn in milk and dough stages. First-generation larvae occurred in March and April on crimson clover, vetch, and other winter legumes. Larvae were heavy on some varieties of late-planted soybeans in west TENNESSEE during September. Pod damage was 25-50 percent in some instances. Damage by H. zea to soybeans does not appear to have affected the statewide yield. In most instances control was effective. In WEST VIRGINIA, corn earworm caused light damage to field corn, primarily to tassels. Larvae averaged 2 per plant in 10 percent of the plants in Hampshire and Hardy Counties. Sweet corn was damaged in late July and August, and larvae averaged 2 per ear on a small percentage of plants in Logan and Boone Counties. Larvae caused severe economic damage to soybeans during September in the Tidewater section, Northern Neck, and on the Eastern Shore of VIRGINIA. Some fields were almost completely destroyed by buildups in nearby corn. This infestation was considered to be the worst in years. It was not uncommon to find 50 percent of the pods empty. Loss at Holland, Nansemond County, averaged 20 percent in treated plots and 28 percent in untreated plots. H. zea larvae severely defoliated many peanut fields in Southampton, Isle of Wight, Sussex, Surry, and Nansemond Counties. Some growers failed to get satisfactory control, probably due to improper timing of application.

Corn earworm infestations in MARYLAND were the heaviest since 1966 on corn, soybeans, and tomatoes and three times heavier than 1968. Larvae first infested corn June 20 and by early August infestations averaged 70 percent in Kent, Queen Annes, Caroline, and Wicomico Counties, and 50 percent in Prince Georges, Charles, and St. Marys Counties. Damage peaked and ranged 80-100 percent by mid-August in southern Maryland and on the Eastern Shore. In Frederick, Howard, Baltimore, Harford, and Montgomery Counties, damage to corn peaked in late August and ranged 10-80 percent. Late-season carryover to soybeans and tomatoes was heavy. Damage to young soybean pods ranged 5-20 percent in Queen Annes, Talbot, Dorchester, and Worcester Counties. About 7,000 acres of soybeans needed controls. Crops left in the fields in Dorchester and Wicomico Counties were heavily infested after controls had been discontinued. Larvae caused economic losses in two extensive plantings of greenhouse chrysanthemums in Prince Georges and Carroll Counties. Corn earworm moths were first found in Sussex County, DELAWARE, during mid-May. Flights continued to increase with very heavy counts noted from early August through mid-September. Infestations in corn started in late June and continued to be a serious problem. Larvae averaged 10 per row foot on late planted soybeans in Sussex County in September. Larvae were heavy on late-planted lima beans during late August and September. The first blacklight

collection was made in late May in central NEW JERSEY, and by mid-July, moths were abundant. Overwintering survival was higher than normal also in the Atlantic States just to the south. Heavy populations were present throughout August and early September, and declined with cool nights in late September. Moth catches peaked September 5-7 in the Seabrook area, Cumberland County, when slightly over 200 were collected each night. Generally, populations were the heaviest that many farmers remembered over the last 25 years. Crop damage was minimal due to grower awareness of the potential problem. Damage was light to moderate on sweet corn, lettuce, and lima beans. Numbers were average in CONNECTICUT on forage and sweet corn. Some RHODE ISLAND potato fields were 100 percent infested in Washington and Providence Counties on August 18.

An early corn earworm outbreak occurred in a sweet corn test plot July 28 in Monroe County, MICHIGAN. Females were active from June to July. Field problems were below normal. *H. zea* adults were first caught in blacklight traps in Rock County, WISCONSIN, July 25. Counts remained light in Rock County until August 22 when light catches occurred in Grant, Dane, Washington, and Columbia Counties. Significant moth catches of 5 or more in 3 nights occurred at many sites in the southern third of Wisconsin by August 29. Treatments in sweet corn began immediately. Up to 10 percent of sweet corn ears were infested. Although moths appeared somewhat earlier in blacklight traps in INDIANA and in comparable numbers, larvae occurred infrequently in dent corn ears. Corn earworm was not a serious problem in INDIANA. Numbers were fewer than usual, but this pest was present in sweet corn in the northern districts and in green beans in the central section. In IOWA, corn earworm infested 0.29 percent of the corn ears compared to 8.4 percent in 1968.

Corn earworm was economic on sorghum in Chicot County, ARKANSAS, probably due to lack of predator control. Infestations were economic on soybeans in late August and early September. Populations were the heaviest since 1964. A count of 428 larvae in 30 row feet in late August in Desha County set a new high. About 1,723,200 acres or 40 percent of the crop required treatment. Due to high numbers and difficulty of control, 10 percent of the treated acreage required a second application. Control cost and yield loss amounted to \$5,887,400 with control cost being the major factor. Larvae damaged alfalfa, corn, sorghum, peanuts, broomcorn, and pigeonpeas from late May through October in OKLAHOMA. Counts were heavy, mostly in corn and sorghum in the south-central area in July and August, and heavy on peanuts only in the south-central area in late August. Corn earworm was light on corn throughout the summer in KANSAS. Some north-central and north-western areas had moderate to high populations. Larvae were light, averaged less than one per head on sorghum in eastern areas. A few soybean fields had moderate to heavy counts and heavy damage was noted in Cherokee County in mid-September. Some loss was as high as 50 percent. Populations were low on corn in NEBRASKA in 1969. Well below 1 percent of the crop was infested. Numbers were far below levels of 1968.

Corn earworm was one of two pests of lettuce in NEW MEXICO requiring treatment throughout the growing season. Some chilli pepper fields required controls to keep small larvae from entering pods. This pest was light to moderate on corn in UTAH. Infestations were generally light on sweet corn, being heaviest in the southern area. Larvae were abundant in southwestern IDAHO when early planted sweet corn began to tassel. *H. zea* infested 90 percent of the ears in numerous cornfields. Significant losses were evident at harvest. The severe winter reduced overwintering pupae in Yakima County, WASHINGTON. Larvae fed at the stem ends of ripening peaches in an orchard near Medford, Jackson County, OREGON. Corn earworm ranged light to heavy over CALIFORNIA on potatoes, tomatoes, and peppers, and caused local damage to field and lima beans in several locations.

TOBACCO BUDWORM (Heliothis virescens) caused heavy losses to flue-cured tobacco and was the primary pest of cigar-wrapper tobacco in FLORIDA in 1969. Infestations were heavier than in 1968. Damage ranged heavy to severe in 1969 and occurred mostly late in the season. Larvae were very heavy on several acres of pigeonpeas at Gainesville, Alachua County, during July. Counts decreased slightly in August. Mixed populations of tobacco budworm and CORN EARWORM (H. zea) were the most serious pests of tobacco in ALABAMA. Controls kept damage low. Tobacco budworm caused varying degrees of damage to tobacco in several areas of TENNESSEE during July. Tobacco budworm infested sweet corn for the first time in ARKANSAS. Populations on soybeans, although light, were heavier than for several years. Prior to 1969, only 2 of 1,700+ Heliothis larvae collected on this host were H. virescens. In 1969, 474 H. zea and 10 H. virescens were collected from soybeans.

CORN LEAF APHID (Rhopalosiphum maidis) was lighter than usual in CONNECTICUT. Counts were generally light in NEW JERSEY and not so troublesome as in recent years except in several Camden County fields. Numbers were very light on corn in VIRGINIA, and caused no economic damage. Corn leaf aphid was far below 1968 levels in MARYLAND. The only buildup occurred in Frederick, Howard, Baltimore, Prince Georges, and St. Marys Counties where infestations ranged light to moderate on 10-70 percent of the corn. Counts were heaviest in Frederick County. The first colony on corn in OHIO was a small infestation in Seneca County June 25. The first heavy infestation was reported July 20 in Union County. Counts were not abundant until the end of August. Colonies were widespread in southeastern Ohio the last week of August and in northeastern area the first week of September. Populations were light throughout MICHIGAN. Colonies were quickly arrested by Empusa fungus.

Small colonies of corn leaf aphid were noted in 75 percent of corn whorls in Rock County, WISCONSIN, June 11. Increase was slight in June and July due in part to Orius insidiosus (a flower bug). R. maidis infested 90 percent of the corn in southwestern counties by August 1, but only 5 percent had colonies of 500+ aphids. Counts were high in a few late-planted fields in Adams, Monroe, Jackson, Trempealeau, Buffalo, Portage, Waupaca, and Waushara Counties. About 7,500 acres were treated. In ILLINOIS, R. maidis was almost conspicuous by its absence compared to the severe infestations of 1968. Populations in INDIANA were light on 23 percent of corn, moderate on 4.65 percent, and heavy on 0.07 percent by October 1. Populations were lighter than in 1968 and slower in building up. Damage was very light.

Corn leaf aphid was heavy through out ALABAMA, especially in the northern area. Maize dwarf mosaic again appeared quite general throughout the northern area. Corn leaf aphid is suspected as the vector. This aphid caused some damage to small grains in 1969 in Trans-Pecos and central areas of TEXAS. Infestations were light on grain sorghum during late May in central Texas, observed on Johnson grass in the Rolling Plains in early June, and heavy in many South Plains counties in late June. Controls were applied in late June. In early August, numerous light infestations were reported in the High Plains. Corn leaf aphid infested wheat only in southwestern OKLAHOMA in mid-April. Sorghum was infested from late May through September. Infestations were moderate to heavy in west-central, southwest and south-central areas during June and in isolated areas in northwest and northeast counties. Populations were heavy in the panhandle area in July and early August. Corn leaf aphid was normal in KANSAS throughout spring and summer and caused little, if any, damage to corn and sorghum. In October and November light to moderate numbers infested wheat. This pest caused no problems in NEBRASKA. Colonies began developing on sorghum in mid-June, peaked in mid to late July, but did no noticeable damage. Infestations were light on corn early in July, built to a peak by mid-July, then declined as predators increased and corn began to tassel. Infestations were noticeable through mid-August, but little or no damage was recorded. In SOUTH DAKOTA, corn leaf aphid was heavy but noneconomic on sorghum in Hand and Walworth Counties in late July. Lady beetles and snakeflies effected control. In early October, numbers were low (one winged female per 2 row feet) on winter wheat in Stanley and Haakon Counties.

Colonies of Rhopalosiphum maidis were first observed in cornfields in Park County, WYOMING, July 31. Populations up to 2,000 per corn plant infested 20-30 percent of the plants during the first week in August in Goshen, Platte, and Laramie Counties. Predators and parasites kept this pest under control. Infestations were generally scattered throughout IDAHO. Two severe infestations were noted during early August on spring grain at Moore, Butte County, and in the Pahsimeroi River Valley. Numerous lady beetles and syrphid flies materially reduced these infestations. R. maidis was economic on barley and wheat in eastern Idaho. Barley was still in the milk to dough stages at Aberdeen, Bingham County. Economic levels were general in mid to late July. Control was justified in many fields. Corn leaf aphid caused some serious damage to barley in parts of Millard, Cache, Beaver, Sanpete, and Weber Counties, UTAH. Infestations were local elsewhere in the State, and occasionally severe on sweet corn. Infestations were heavy on barley and wheat in Clark County, NEVADA, in April. Populations were reduced below economic levels by predators. Most controls were required in Churchill, Lyon, and Pershing Counties in June and July. Little or no treatment was made in other counties. Corn leaf aphid was not so prevalent in CALIFORNIA in 1969 as in 1968.

GREENBUG (Schizaphis graminum) was heavy on sorghum in CALIFORNIA for the second consecutive year. However, growers were able to control infestations this season. For the first time it was a general pest on barley in California. Greenbug was generally light and spotty on small grains in Clark County, NEVADA, in early April. Predators reduced these infestations to low levels by May. In ARIZONA, greenbug caused no heavy damage to sorghum, barley, or wheat. A few late plantings required controls. Infestations were light in most sorghum fields throughout the State from March through August, but no buildups occurred. Greenbug infested sorghum in Washington County, UTAH, but was not severe. Populations were not so heavy and widespread in COLORADO as in 1968. This pest first appeared in the Arkansas Valley during the last half of June, and peaked the last of July. Greenbug ranged 0-2,000 per sorghum leaf. Infestations spread into Kit Carson, Yuma, and Cheyenne Counties where controls were applied. Populations were found throughout eastern Colorado. Heavy populations were scattered where controls were applied. Damage was light to moderate with overall loss light. Greenbug was found on the Western Slope at Grand Junction. Greenbug and CORN LEAF APHID (Rhopalosiphum maidis) began to buildup in July in southeastern NEW MEXICO. About 80,000 acres of grain sorghum and 10,000 acres of broomcorn were treated in Curry and Roosevelt Counties. Many infestations in sorghum in Luna and Hidalgo Counties required treatment. Spring buildups in small grain caused losses in untreated fields in eastern counties. About 18,000 acres of wheat were treated and losses averaged 1,500 to 2,000 pounds per acre due to greenbug and hot weather in Lea County. About 10,000 to 15,000 acres were treated in Roosevelt County. Almost every field of wheat in Curry County was treated at least once with many requiring additional treatment.

Greenbug remained light on small grains throughout much of TEXAS in January and February with the exception of some Rolling Plains counties. Spotted and heavy infestations were reported during mid-February from many counties in the Rolling Plains, High Plains, and central areas. Controls were applied in many of these areas. Spotted, moderate to heavy infestations were reported from south and central areas, the Rolling Plains, and in the panhandle during late February and early March. Infestations decreased in some Rolling Plains counties and remained unchanged until mid-March when increases occurred in the Rolling Plains and High Plains. Some damage to small grains was reported during April in the Rolling Plains. Activity was light on emerging small grains in Donley and Collingsworth Counties in early October and moderate to heavy in the Rolling Plains in December. Greenbug was detected on Johnson grass as early as April 18 in Deaf Smith County, Texas. In early June light numbers were scattered on grain sorghum in the Rolling Plains. Light populations were detected for first time in the Trans-Pecos region on grain sorghum in mid-June. Infestations ranged light to medium in Glasscock, Midland, and Martin Counties in the Trans-Pecos area as well as Dimmit and Zavala Counties in the lower Rio Grande Valley. Greenbug began to build up in the Blacklands and central Texas about mid-June. The aphid was light in many fields in the South Plains area in late June and in some areas in the High Plains. Infestations increased on grain sorghum in the Rolling Plains, South

Plains, Trans-Pecos, and High Plains regions from mid-July through August, and declined in most of these areas in late August due to increased parasite and predator populations. Greenbug first appeared in damaging numbers in southwest OKLAHOMA in early February, and was moderate to heavy over the southwest quarter of the State through mid-April. Parasites and wheat maturity eliminated most infestations late in the month. First infestations were noted in sorghum in late May in west-central and northwest counties. Counts were heavy in the northeast area during early June, the southwest area in late June, and the panhandle and western counties from mid-July through mid-August. These infestations continued through September. Counts were heavy in Jackson and Harmon Counties by mid-November and moderate to heavy by early December in scattered areas over the southwest quarter of the State. By the end of December colder weather had caused a decline in most areas.

Greenbug was light on wheat in north-central and southeast KANSAS in early March. By mid-May greenbugs moved to some early sorghum, often within two days after germination. Damage was severe in some fields in the southeast, south-central, and north-central areas. About 250,000 acres were treated in these areas and repeated in many fields. Sorghum in all other areas was not economically infested. Within three weeks, counts had declined sharply due to predators, heavy rains, high temperatures accompanied by winds, and other factors. During the summer an additional 325,000 acres were treated. Predators, and in some cases parasites, effectively kept populations low. Greenbug was not economic on corn in the southwest area. Very light numbers were found throughout fall 1969 on wheat in all areas of Kansas except the southwest district.

Greenbug occurred in trace numbers on wheat in east and southeast NEBRASKA April 22-23. Very light catches in suction traps at Lincoln, Lancaster County, indicate light northward migration April 1-7. The pest remained very low in wheat, averaged up to 8 per 20 sweeps, in east and southeast districts, with no damage. First injury to seedling sorghum was noted June 2 in Jefferson County where 75-80 percent of the plants in 9 fields were infested. Scattered damage with some replanting and treatment, occurred in the east, southeast, and south districts of Nebraska, but was not so serious as in 1968. Predators increased much earlier and reduced greenbug numbers in the southeast by July 1. First damage was noted in late July and controls were applied in scattered areas of the south, southwest, central, and southeast districts. A peak of 700-800 greenbugs per lower leaf was reached about August 15. Predators drastically reduced the population by August 22. Greenbug caused no serious problem on winter wheat in spring or on new seedlings in the fall in Nebraska. Slight buildup was noted in winter wheat in late September in the east district, but did not develop to economic levels. It damaged a rye seeding 30 percent in Washington County on September 26. Greenbug remained below economic levels on wheat in WYOMING. In SOUTH DAKOTA, greenbug averaged 100 per plant on grain sorghum 3.5 feet high in Bon Homme and Charles Mix Counties in early August. By the middle of the month, the first 4-6 leaves on the plants were dead. In heavily infested fields, counts ranged up to 2,000 (averaged 200) per leaf. Infestations were found in Gregory, Tripp, Davison, Clay, and Brookings Counties also. Greenbug also infested 8-foot silage sorghum south of Geddes, Charles Mix County. Predators were not numerous enough to check populations. Infestations on sorghum in 1969 were more intense and more widespread than in 1968. Economic numbers infested about 120,000 acres of sorghum, of which 50,000 acres were treated. Infestations built up rapidly during head development. Yields were reduced in untreated acres. Although winter wheat had stood well, leaves were shorter than at a comparable time in 1968. Cold weather and snow came earlier in the fall than in 1968 in winter wheat areas. These and other factors may have kept greenbug populations below levels necessary for progressive buildup in the fall. Only one field had economic numbers--in northwestern Beadle County in late October.

Greenbug populations were light on small grains through the 1969 season in MINNESOTA. Alates were in oats at Spring Green, Sauk County, WISCONSIN, May 23. A few alates were in oats in Adams County June 13. Greenbug was very scarce in all areas, and colonies were not detected in the State. In MISSOURI, greenbug

infested seedling sorghum in Barton and Jasper Counties during June. Counts ranged from 5 to over 50 per plant. This was the only area that needed controls. Greenbug counts per 100 sweeps of small grains in northwestern ARKANSAS ranged 10-15 in late February, 20-25 in early March, and 200-300 in mid-April when one-third of the aphids were parasitized. Greenbug was occasionally found on sorghum in Washington County. Infestations were not economic. Greenbug infested small grain fields throughout ALABAMA, but no damaging infestations were reported. In MARYLAND, greenbug was heavy and seriously injured several hundred acres of bluegrass turf seedlings on turf farms in Prince Georges and Queen Annes Counties.

MELONWORM (Diaphania hyalinata) was the most serious pest of cucumbers, cantaloups and pumpkins in ALABAMA during the 1969 season.

POTATO PSYLLID (Paratrioza cockerelli) adults began appearing on Lycium sp. May 15 in Goshen County, WYOMING. Timely control applications early in the season resulted in little damage to potatoes from psyllid yellows in Goshen and Laramie Counties. Populations were heavy on tomatoes and potatoes in eastern COLORADO. Adults appeared in mid-May and peaked by mid-June in the northeastern area. Counts ranged 0-4 per 100 sweeps in most fields, but up to 30 in more heavily infested fields. Potato psyllid ranged 0-35 per 100 sweeps and peaked by the end of July in the Arkansas Valley. Damage was light and losses light to moderate. Potato psyllid populations were generally lower than usual and damage was light on potatoes in UTAH.

POTATO LEAFHOPPER (Empoasca fabae) ranged light to moderate on beans and potatoes in NEW JERSEY, but no damage was noted. Damage to alfalfa has continued to decrease over the past 3 years throughout MARYLAND. Part of the decline has been due to timely controls and cuttings. In 1969, potato leafhopper first appeared in Frederick County about July 4 at 3-5 per sweep. Counts peaked about July 18 with highest counts of 32-75 per sweep in Frederick, Baltimore, Harford, and Montgomery Counties. Populations decreased and phased out about August 29 at 0-3 per sweep. There was no damage to other crops. Light to moderate "hopperburn" on alfalfa was limited to Washington, Baltimore, Frederick, Montgomery, Howard, and Harford Counties. This leafhopper caused little or no damage to forage crops in VIRGINIA.

Potato leafhopper is normally a serious problem on second and third cuttings of alfalfa in OHIO, but it caused very little damage in 1969. Adults averaged 10-15 per 10 sweeps statewide, but fields were seldom yellowed. In INDIANA, this leafhopper infested most alfalfa fields sampled. Counts averaged 35 (ranged 0-192) per 10 sweeps throughout the season. Potato leafhopper was not important in ILLINOIS, although it occurred statewide during the season. The pest appeared later than usual in MINNESOTA, and no problems were reported on alfalfa. E. fabae adults were first observed in alfalfa in southern WISCONSIN June 13. Counts averaged 3 per 10 sweeps in alfalfa statewide June 20, and in potatoes in gardens June 27. Populations increased late in July when adults and nymphs averaged 1 per sweep. Counts averaged 3-5 per sweep in alfalfa in southwestern counties by September 12. About 24,000 acres were treated for this pest in Wisconsin. Potato leafhopper infestations reached a possible 25-year low on soybeans in MICHIGAN in 1969.

SPOTTED ALFALFA APHID (Therioaphis maculata) infestations were medium on common varieties of alfalfa in Clark County, NEVADA, in early April. Parasites and predators reduced these infestations to low levels (0-2 per sweep) by late April. This aphid was generally light in UTAH, but an outbreak did develop on several hundred acres of alfalfa in an area of Millard County. There were no areas of general infestations in NEW MEXICO, but an occasional economic infestation of spotted alfalfa aphid was found in the Pecos and Mesilla Valleys which required treatment. Spotted alfalfa aphid ranged up to 2,500 per 100 sweeps of alfalfa in late August and early September in the Arkansas Valley of COLORADO. Damage was

light to moderate and overall loss light. No economic infestations were found in WYOMING. This aphid was found for the first time in Campbell, Converse, Crook, Niobrara, and Weston Counties in 1969.

Spotted alfalfa aphid averaged 8 per 100 sweeps in a year-old alfalfa stand east of Spearfish, Lawrence County, SOUTH DAKOTA, the third week of May. Alfalfa was 6 to 8 inches high. Counts had increased to 100 per 100 sweeps west of Spearfish 7 days later. Infestations of this aphid were very light throughout the east, northeast, southeast, and central districts of NEBRASKA early in the season, but caused no appreciable damage. One new alfalfa seeding observed August 22 in Dawson County showed some damage. Aphids averaged 92 per 10 sweeps. Populations in KANSAS remained low throughout summer and fall. Infestations were light on alfalfa in most areas of OKLAHOMA. Heavier counts occurred in a few south-central and southwest counties in April and late June, and in scattered areas in September. Spotted alfalfa aphid caused some problems on forage legumes in TEXAS. Spotted alfalfa aphid was light in ARKANSAS in 1969. Surveys were negative in most areas during spring and summer. Populations built up to 1,000-1,500 per 100 sweeps in the northwest area in early October following extended dry weather but immediately fell to zero following heavy rains. Trace numbers on alfalfa were first observed in Harrison County, INDIANA, in late April. Numbers remained at trace levels. Spotted alfalfa aphid was very light on forage crops and caused very little damage in VIRGINIA.

TOBACCO HORNWORM (*Manduca sexta*) caused light damage to flue-cured tobacco in FLORIDA late in the 1969 season. A slight increase in populations was noted in the vicinity of cigar-wrapper tobacco fields. Moth collections in light traps were 29 percent greater than in 1968. However, no damage was reported to cigar tobacco in Florida. In RHODE ISLAND, tobacco hornworm infestations ranged moderate to heavy on tomatoes about August 1 in Washington and Providence Counties.

TOMATO HORNWORM (*Manduca quadrimaculata*) was light in most tomato and pepper fields in NEW JERSEY. Many parasitized larvae were observed in Gloucester County in mid-August. Tomato hornworm damaged potato foliage in several areas of UTAH, including Emery, Grand, and Salt Lake Counties. Infestations of this pest were virtually absent from potato plantings in southwest IDAHO. No larvae were found in tomato fields by August 1, during the period peak numbers were recorded in previous years.

CORN, SORGHUM, SUGARCANE

Highlights:

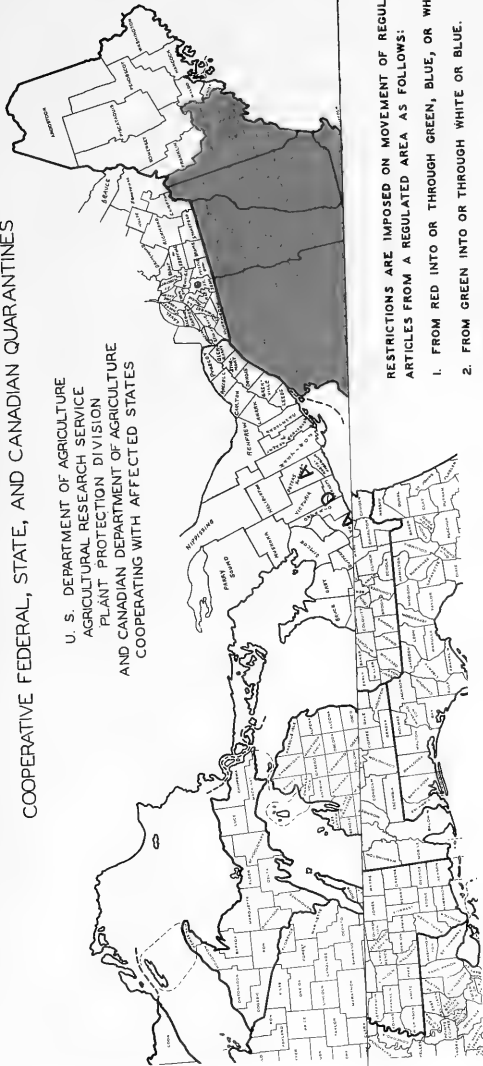
EUROPEAN CORN BORER increased in several corn-producing States. Decreases were recorded in Illinois, Indiana, Ohio, Iowa, and Maryland. Overwintering populations in Missouri were the lightest since 1966 and highest on record in the southwest and west-central districts. FALL ARMYWORM damaged broomcorn and sorghum in New Mexico, was heavy on corn and sorghum in Oklahoma, and was heavy in areas of Texas and throughout Missouri. CORN ROOTWORMS were of concern in several States. These pests are expected to increase in areas of Minnesota, South Dakota, and Nebraska in 1970. YELLOW SUGARCANE APHID caused some severe damage to sorghum in Texas, was heavy on corn and sorghum in Oklahoma, and reported for the first time from Arkansas.

EUROPEAN CORN BORER (*Ostrinia nubilalis*) continued a problem to corn growers throughout its range. Up to 1 larva per stalk infested 0-6 percent of the corn at Roggen and Prospect in Weld County, COLORADO. In the Kiowa Valley, the center of infestation in the State, up to 1 larva per stalk infested 20-50 percent of the treated corn. Larvae ranged 1-3 per stalk in 18-76 percent of untreated corn in the valley. Larval numbers peaked the first week in August. In KANSAS the first generation of European corn borer was heavier than normal in many northeastern

JAPANESE BEETLE

COOPERATIVE FEDERAL, STATE, AND CANADIAN QUARANTINES

U. S. DEPARTMENT OF AGRICULTURE
 AGRICULTURAL RESEARCH SERVICE
 PLANT PROTECTION DIVISION
 AND CANADIAN DEPARTMENT OF AGRICULTURE
 COOPERATING WITH AFFECTED STATES



COUNTIES ENTIRELY COLORED ARE COMPLETELY REGULATED, COUNTIES WITH CIRCLED DOT ARE PARTIALLY REGULATED.

█ GENERALLY INFESTED AREA - STATE AND FEDERAL REGULATIONS.

(█) (ERADICATION TREATMENTS NOT IN PROGRESS OR PLANNED)

█ SUPPRESSIVE AREA - STATE, FEDERAL, AND CANADIAN REGULATIONS.

(█) (SUPPRESSIVE TREATMENTS IN PROGRESS OR PLANNED)

█ STATE AND CANADIAN REGULATIONS.

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RESTRICTIONS ARE IMPOSED ON MOVEMENT OF REGULATED ARTICLES FROM A REGULATED AREA AS FOLLOWS:

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2. FROM GREEN INTO OR THROUGH WHITE OR BLUE.
3. GREEN INTO GREEN.
4. WITHIN GREEN.*
5. FROM BLUE INTO ANY OTHER AREA.**

*IF REQUIRED BY AN AUTHORIZED INSPECTOR.

**IF REQUIRED BY APPROPRIATE STATE QUARANTINE OR BY AN AUTHORIZED INSPECTOR.

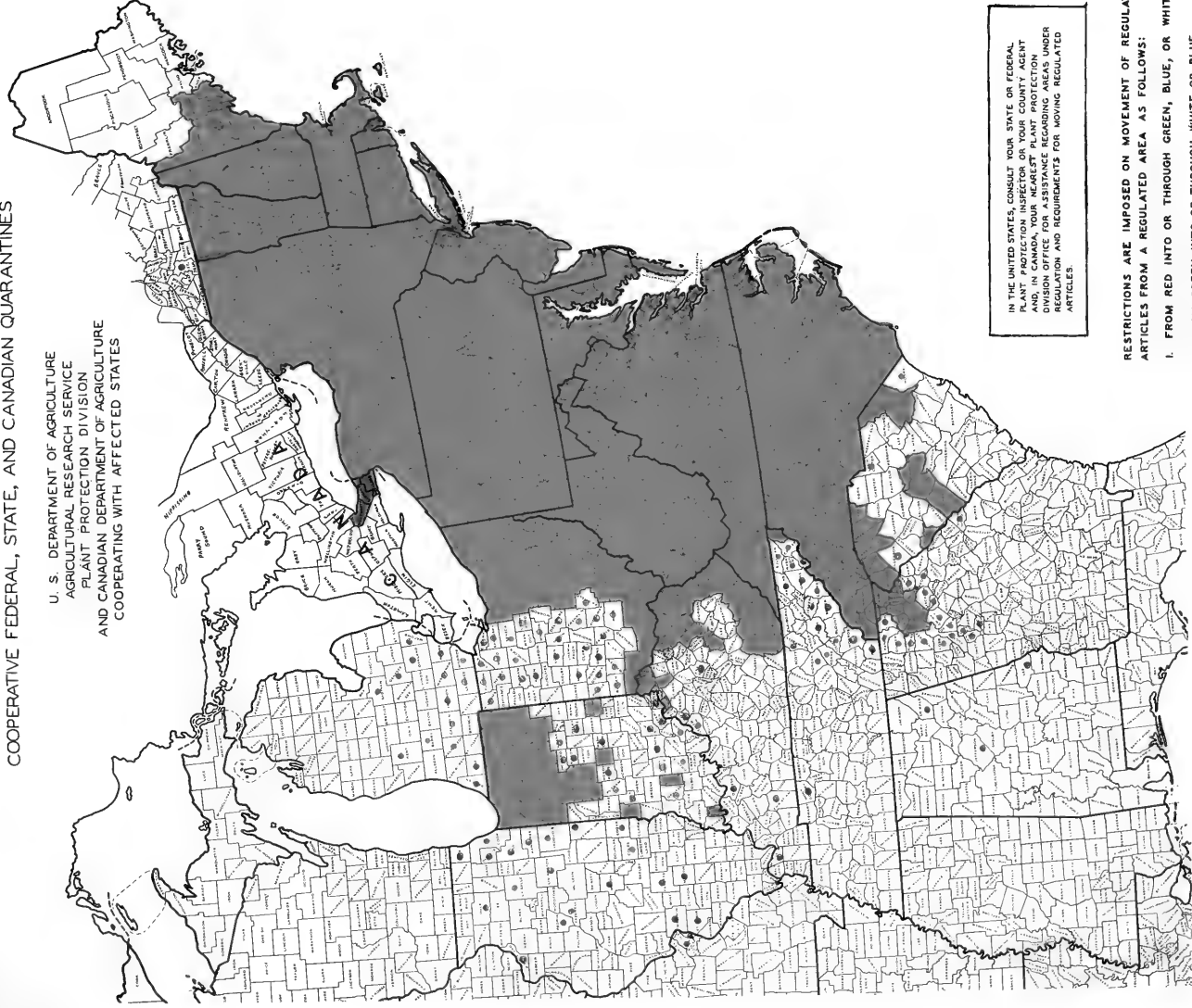
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SEE REVERSE SIDE FOR REQUIREMENTS CONCERNING CERTIFICATION OF REGULATED ARTICLES.

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IN THE UNITED STATES, CONSULT YOUR STATE OR FEDERAL QUARANTINE OFFICE, YOUR COUNTY AGENT AND, IN CANADA, YOUR NEAREST PLANT PROTECTION DIVISION OFFICE FOR ASSISTANCE REGARDING AREAS UNDER REGULATION AND REQUIREMENTS FOR MOVING REGULATED ARTICLES.

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used mechanized self-moving equipment is exempt** if cleaned and repainted.

*Information as to designated laboratories may be obtained from an inspector.

**Exempt if not exposed to infestation after cleaning or other prescribed handling.

areas, with more than the usual number of broken stalks. Fall population counts were higher than in the last 10 years. Up to 12 larvae per stalk completely infested many fields in the Kansas River Valley. Many stalks were broken, but much of this breakage was due to rot. Larval infestation ranged up to 30 percent in many sorghum fields in southeast and east-central Kansas, with many broken stalks in some fields.

European corn borer winter survival in Cuming and Hall Counties, NEBRASKA, was above the 15-year average and higher than in 1968. Borers per acre averaged 2,407 in Cuming County and 1,799 in Hall County. Infestations ranged 25-75 (averaged 54) percent in several Dixon County cornfields July 17. Most first-generation damage was confined to the southeast district. First-generation larvae averaged 38.7 per 100 plants in 47.2 percent of the corn in Cuming County and 2.25 per 100 plants in 8.1 percent of the corn in Hall County. This compared to second-generation infestations of 465.7 larvae per 100 plants on 97.7 percent of the corn in Cuming County and 111.6 larvae per 100 plants in 74.4 percent of the corn in Hall County. The fall population in Cuming County was the highest and that in Hall County the fifth lowest compared to the 15-year average for these counties. The 1969 fall populations were about double those of 1968. The largest increases occurred in the northeast and east districts. European corn borer infested about 2 percent of sorghum heads in a few fields in the southeast quarter of Nebraska, but damage was negligible. Winter survival in SOUTH DAKOTA ranged 30-100 percent in 9 southeastern counties from mid-April to mid-May. Survival was lowest in Bon Homme County. Although winter survival was lower than in the past 2 years, larvae increased during the season. Since very few fields were treated, damage was higher than in recent years. The overwintering population in 35 eastern counties in fall 1969 was the highest in several years. Winter survival in NORTH DAKOTA was 86 percent, a 5-percent increase over 1968. During fall, larvae averaged 177 per 100 plants in Cass, Richland, Ransom, Sargent, and Dickey Counties, a 58-percent increase over last year.

European corn borer fall populations increased in 7 districts of MINNESOTA. Increases ranged from 5 percent in the south-central to a high of 217 percent in the southwest district. The average percent of increase for the State was 64 percent. Stalk breakage ranged 2-10 percent. The outlook for 1970 is for higher populations and damage in the southwest, west-central, and northwest districts. In IOWA weather did not favor the first generation, but conditions were favorable for the second generation. The highest populations in the fall were in the western and southern areas. Trends were the same as in 1968. The first and second generations of European corn borer were economic in corn in all areas of MISSOURI. The 1969 overwintering populations are the highest since 1966, and the highest on record in the southwest and west-central districts. Overwintering larvae averaged 4,659 per acre in ARKANSAS, a 90-percent increase compared to 1968 fall infestations.

European corn borer infested corn throughout ALABAMA. Infestations were lower than for the period 1960-1966, but about the same as in 1968. Isolated populations damaged late corn as far south as Autauga County in 1969. In central TENNESSEE, larvae damaged sweet corn the week ending June 20, with 40-50 percent of the plants infested in the area by June 27.

Winter survival in ILLINOIS was higher than normal, ranging 80-90 percent in late March and early April. Severe storms killed many moths, and egg laying, which had just begun, ceased almost completely. The first generation numbered 11 per 100 stalks in the northeastern section but ranged 1-7 in other sections. The second generation almost returned to the fall 1968 level. Controls were used on 195,000 acres. Winter survival in WISCONSIN ranged 92-96 percent from Dane to Portage Counties April 11. Leaf feeding ranged 5-12 percent on July 18 with the heaviest feeding on sweet corn. Up to 40 percent of canning sweet corn was infested July 25; much treatment was made. Eggs were common in southern counties August 29 but scarce in east-central counties. Immediately after eggs were found, treatment for second-generation larvae began. Up to 80 percent of the sweet corn in southern counties was infested with a combination of European corn borer, CORN EARWORM

THE FOLLOWING CROPS OR ARTICLES MUST BE MOVED UNDER CERTIFICATE OR PERMIT YEAR-ROUND EXCEPT AS INDICATED:

1. Soil, compost, decomposed manure, humus, muck, and peat, separately or with other things.

Soil samples of any size shipped to U.S. Army Corps of Engineers Soil Laboratories within the conterminous U.S. are exempt. Soil samples of one pound or less are exempt if shipped to a designated laboratory.*

Compost, decomposed manure, humus, and peat are exempt** if dehydrated, ground, pulverized, or compressed.

2. Plants with roots, except soil-free aquatic plants, moss, and Lycopodium (clubmoss or ground-pine or running pine).

3. Grass sod.

4. Plant crowns and roots for propagation.

5. True bulbs, corms, rhizomes, and tubers of ornamental plants when freshly harvested or uncured.

True bulbs, corms, rhizomes, and tubers (other than clumps of dahlia tubers) of ornamental plants are exempt** if free of soil.

6. Used mechanized soil-moving equipment.

Used mechanized soil-moving equipment is exempt** if cleaned and repainted.

*Information as to designated laboratories may be obtained from an inspector.

**Exempt if not exposed to infestation after cleaning or other prescribed handling.

(*Heliiothis zea*), and FALL ARMYWORM (*Spodoptera frugiperda*). The fall survey, mostly in field corn, showed a State average of 46 larvae per 100 plants. About 408,260 acres were treated for corn pests in Wisconsin. Winter survival in MICHIGAN was high. Moths peaked the week of July 1; Lenawee County recorded a count of 557 and Livingston County 327. The second generation emerged August 10 and a constant flight was sampled until October 6. Population overlap was evident as the two generations continued to emerge. In October larvae averaged 62 per 100 stalks, a 24-percent increase over 1968. Populations are more concentrated in the southern tier of counties. Control was not satisfactory until 1969. Winter survival in INDIANA was high, one larva per 6.7 feet of cornstalk. Percent infestation was similar to 1968, a year of heavy infestation, but the number of live borers per 100 plants, 39.8, decreased 52 percent. European corn borer adults in OHIO during spring were the heaviest in recent years. Larvae were more abundant than in 1968. First-generation larval infestations averaged 20-30 percent statewide. Heavy infestations of 75 percent or more of the corn occurred in Williams, Fulton, and Lucas Counties where similarly heavy numbers were found last fall. Other counties with 75 percent or heavier infestations were Montgomery, Preble, Highland, Brown, Knox, Warren, Clinton, and Tuscarawas. Adults this spring were the heaviest in recent years. Larvae were more abundant this year than last.

Light throughout WEST VIRGINIA, European corn borer larvae averaged 3 per corn plant. Damage was light to moderate on field corn but heavy on sweet corn. Larvae infested 80 percent of the corn in many widely scattered areas of VIRGINIA, but infestations were generally lighter than last year. Damage ranged light to medium.

European corn borer infestations in MARYLAND dropped sharply from 1968 levels, but damage remained moderate to heavy. June infestations increased rapidly on early planted corn in all counties south of Kent and Prince Georges Counties. By late June, larvae infested 20-40 percent of the fields on the Eastern Shore and 1-10 percent of the fields in Frederick, Carroll, Howard, and Harford Counties. Heavy infestations peaked in early August with the highest levels on the Eastern Shore, 40-100 (average 80) percent, in the southern area 30-100 (average 50) percent, and in the central counties 0-100 (average 70) percent. Controls were needed on 20,000 acres of processing corn. The DELAWARE State average of 357 borers per 100 corn plants during fall 1969 reflects the very high densities infesting several crops statewide. Parasitism of overwintered larvae by *Macrocentrus grandii* (a braconid) averaged 6.3 percent for the State with the highest percentage (42) in northern New Castle County. Adult flights occurred in three distinct peaks: A low in late May and early June, in mid to late July, and a very high peak from mid-August through early September. In PENNSYLVANIA, overwintered larvae per cornstalk averaged 0.61 in Lancaster County and 1.35 in York County. The first generation infested only 10 percent of the stalks in July compared with over 50 percent in 1968. European corn borer populations were generally light to moderate in NEW JERSEY. Injury to sweet corn was insignificant in treated fields. Second-generation larvae presented no serious problems. Larvae in CONNECTICUT were a severe problem on sweet corn.

STALK BORER (*Papaipema nebris*) was noneconomic and well below 1968 levels in NEBRASKA. Larvae in eastern KANSAS lightly damaged border rows of some corn. Up to 18 percent of the plants were infested. In ILLINOIS the most severe infestations occurred in Stark and St. Clair Counties. In one area of Stark County, larvae infested the border rows of every cornfield on several farms and in some places, destroyed all the corn. Chemical control was isolated. Stalk borer infested border rows of oats but was scarce in corn in Dane County, WISCONSIN, June 20. In mid-July, damage to corn was minor in Walworth, Rock, Dane, Columbia, Grant, and Trempealeau Counties. Larvae infested up to 50 percent of the plants in border rows of sweet corn in Columbia County. Stalk borer was general in field corn in eastern and central TENNESSEE, with severe damage in isolated areas.

SOUTHWESTERN CORN BORER (*Diatraea grandiosella*) lodged cornstalks in eastern NEW MEXICO. Counts were lighter this season in the southwestern counties and in counties along the Rio Grande. Damage in south-central and southeastern KANSAS was less than in 1968. Most fields in the southern half of the State had light infestations in September and October. Larvae infested up to 40 percent of the corn in southeastern MISSOURI from mid-June through July. The percent of plants girdled was 10.3; the percent of plants infested but not girdled was 21.6. The loss was 1,853,100 bushels. Southwestern corn borer lodged 6.1 percent of the corn in ARKANSAS compared to 5.5 percent in 1968. Populations in ILLINOIS were heavier in Pulaski and Alexander Counties than in 1968. Larvae infested about 50 percent of the plants compared with 22 percent in 1968. Perry, Hamilton, and White Counties are new county records; Franklin County was reported during the year. *D. grandiosella* was serious on corn in northwestern and north-central ALABAMA. Counts were light as far south as Washington County. Montgomery County was a new county record, for a total of 39 counties known to be infested. SUGARCANE BORER (*D. saccharalis*) in FLORIDA bored into 7 percent of the sugarcane joints causing about 7 percent loss of sugar.

FALL ARMYWORM (*Spodoptera frugiperda*) damage in NEW MEXICO was extensive on broom-corn and grain sorghum from August 15 to October 15 in Roosevelt, Curry, and Quay Counties. Infestations in TEXAS were medium on forage sorghum in Jasper County on July 18. Heavy infestations in mid-August occurred in the Rolling Plains and in some north-central counties. Fall armyworm damaged corn and sorghum from July through September in OKLAHOMA. Infestations were heavy in all areas except in the southeastern area at various times during summer. Larvae damaged broomcorn in the south-central area in early August. Losses in eastern KANSAS ranged up to 75 percent in many late corn and sorghum fields in July and August. In September, damage ranged light to moderate on wheat seedlings in many areas. Larval activity was confined to the east, southeast, and south districts of NEBRASKA. One field in Pawnee County had about 65 percent of ears and ear shanks infested. Most fields were less than 2 percent infested. Fall armyworm was heavy in late-planted corn throughout MISSOURI from mid-July through August. Infestations ranged 90-100 percent in many fields. Some corn was killed.

Fall armyworm damaged sweet corn and late field corn early in September in WISCONSIN. Damage to sweet corn was severe in some fields in the southern area where up to 100 percent of the plants were infested. Damage was most significant when fall armyworm infested late sweet corn with CORN EARWORM (*Heliothis zea*) and EUROPEAN CORN BORER (*Ostrinia nubilalis*). Damaging populations of fall armyworm in ILLINOIS were first reported July 10-15 from Gallatin and Massac Counties. Moths from this area concentrated in late corn in the northern half of the State. Extremely late fields were defoliated. Over 202,000 acres were treated. Damage in INDIANA occurred more frequently in 1969 than in at least 4 years. Only a single or a few fields in any county were infested. Whorl damage, usually in late corn, was confined to a single or a few patches in any field. Ear damage was as widespread but far more regular than whorl damage. Damaged ears averaged 11.94 percent statewide, ranging from 6.32 percent in the northern districts to 25.39 percent in the southernmost quarter of the State. Three-fourths of this damage is believed due to fall armyworm. Heaviest fall armyworm infestations in Frederick County, MARYLAND, averaged 10 percent. Damage in this area only occurred on late corn planted for silage. By late August, larvae infested 20-100 percent of 500 acres of corn. Controls were needed at Ceresville and Frederick.

Fall armyworm infested sweet corn most of the year in Palm Beach County, FLORIDA. Larvae comprised about 90 percent of the leaf-feeding insects affecting corn in fall. Controls were applied. Overall populations at Zellwood, Orange County, were lower than in previous years. Fall armyworm was light and scattered on late corn and sorghum throughout ALABAMA. Foliage damage was severe on some late corn in southwest TENNESSEE.

BLACK CUTWORM—(Agrotis ipsilon) fed on corn in several areas of DELAWARE in mid-June. This species appears to have been increasing in the State during the last few years. Moth catches in blacklight traps and field infestations in MICHIGAN were below the averages for the past two years. Black cutworm caused moderate damage to corn in Waushara, Green, Lake, Adams, and Richland Counties, WISCONSIN, late in May. Damage was light in Dane, Sheboygan, and Adams Counties in early July. About 15,200 acres were treated in Wisconsin. In SOUTH DAKOTA, Agrotis spp. damaged corn seedlings in Lyman, Lincoln, Douglas, and Hutchinson Counties during late May and early June. By the end of June much damage occurred from Gregory County east. About 45,000 acres were infested; 9,000 acres were treated. A. ipsilon larvae in NEBRASKA were the heaviest on corn in recent years. Damage ranged from less than 1 to 12 percent, mostly in eastern and southeastern areas. Light numbers of A. ipsilon damaged some corn seedlings in eastern and central KANSAS in June.

PALE WESTERN CUTWORM (Agrotis orthogonia) damaged some corn and sorghum seedlings in west-central and southwestern KANSAS in May and June. Several fields had to be replanted and many were treated. In COLORADO, A. orthogonia ranged moderate to heavy on wheat. Larvae peaked in mid-May. Counts ranged 0-15 (averaged 4-6) per linear foot. Controls were effective. Damage ranged light to heavy; loss was moderate. In WYOMING, A. orthogonia damaged a few cornfields in Goshen and Laramie Counties. Controls were applied to a few fields.

WESTERN BEAN CUTWORM (Loxagrotis albicosta) larvae were heavy and widespread in northeastern and east-central COLORADO. Infestations peaked the last half of August. Larvae ranged 3-16 (average 4-6) per 50 row feet of corn. Larvae were heavy throughout Kit Carson, Yuma, Washington, and Phillips Counties, and scattered in Weld, Morgan, Logan, Sedgwick, and Cheyenne Counties. Damage ranged light to moderate. Controls were used in Morgan and Yuma Counties where populations were heavy in 1968. Larvae in KANSAS infested up to 12 percent of the corn ears in Thomas, Sherman, Wallace, Wichita, and Finney Counties. One field in Thomas County had over half of the ears infested with up to 4 larvae per ear. Sherman, Wallace, and Wichita Counties were reported as new county records. Found in 7 NEBRASKA counties in 1969, this cutworm now infests 54 counties. Flights peaked July 19-24 in Dawson County and at North Platte, Lincoln County. Larvae continued to build up late in July and into August when eggs or young larvae infested 0-30 percent of the corn in eastern, central, and southwestern areas. Most fields were 10 percent or less infested. Damage was negligible. In Dawson County an average of 0.61 larva per ear infested 28 percent of ears in 44 fields. Grain loss was estimated at 0.92 percent per infested ear and at 0.02 percent for all ears examined. Total grain loss in 1968 was estimated at 1.84 percent. Western bean cutworm moths were taken in light traps in Tripp, Fall River, and Meade Counties, SOUTH DAKOTA. These were new county records. Adults were taken in a Bon Homme County light trap in 1968. Larvae of this noctuid could become a major pest of corn in South Dakota.

Larvae of a NOCTUID MOTH (Pseudopluaia includens) damaged many sweet corn ears at Zellwood, Orange County, FLORIDA, for the first serious attack on corn. Comprising 95 percent of the looper populations on May 22, larvae infested as much as 50 percent of 300-400 acres of sweet corn at Belle Glade and Pahokee, Palm Beach County. Fall numbers were less abundant.

SORGHUM WEBWORM (Celama sorghiella) larvae infested sorghum in southeast KANSAS in early September. Most fields were 8-15 percent infested, but infestations were as high as 80 percent in a few fields with up to 12 larvae per plant.

NORTHERN CORN ROOTWORM (Diabrotica longicornis) adults were collected in Franklin, Marshall, and Madison Counties, ALABAMA, for new county records. Corn yields were so badly reduced by many pests over the State that losses by northern corn rootworm and SOUTHERN CORN ROOTWORM (D. undecimpunctata howardi) could not be estimated. D. longicornis continued to spread southeastward in MARYLAND with Cecil, Kent, Queen Annes, Caroline, and Talbot Counties recorded as new county records. Lodging due to northern corn rootworm and D. undecimpunctata howardi ranged 0-15 percent,

an increase over 1968's levels, in Frederick and Carroll Counties. No damage occurred elsewhere. Northern corn rootworm adults, 1-5 per ear, infested 90-100 percent of the ears at Emmitsburg, Frederick County, and Keymar, Carroll County. Continued increase in damage and spread southeastward are expected for the next few years. Diabrotica longicornis adults in light traps in New Castle County, DELAWARE, increased greatly over 1968. D. longicornis appeared to be somewhat heavier in 1969 than in 1968 in NEW JERSEY, especially in Warren, Hunterdon, and Somerset Counties. Lodging and silk feeding were almost nil. D. longicornis has become economically important in PENNSYLVANIA. Levels are high enough to warrant controls in parts of Lycoming, Northumberland, and Union Counties along the Susquehanna River; in Lancaster and York Counties; and in the eastern half of Northampton, Lehigh, and Bucks Counties.

D. longicornis damage to corn roots peaked July 20-25 in OHIO. The first sizable adult counts, 4-5 per silk, appeared the last week of July in the southeast area. By August 20, counts of 2-4 per silk were common in the northwest area, and 10-12 in the north-central area. Corn rootworms are economically important in the southwest area, and rarely a problem in northeast Ohio. D. longicornis had damaged corn silks in southern INDIANA by July 11. Averaging fewer than 6 per 10 silks, adults infested fewer than half of the fields. Damage to corn roots was light if it occurred at all. D. longicornis and WESTERN CORN ROOTWORM (D. virgifera) were light in ILLINOIS. During hatch, extensive rains raised the water table almost to the soil surface. Better chemical control also reduced numbers and the adult population was also low. The State average showed 3 adults per plant. Organic phosphates and carbamates were used on 1,990,138 acres of corn. D. virgifera was reported in Champaign and Lake Counties for new county records.

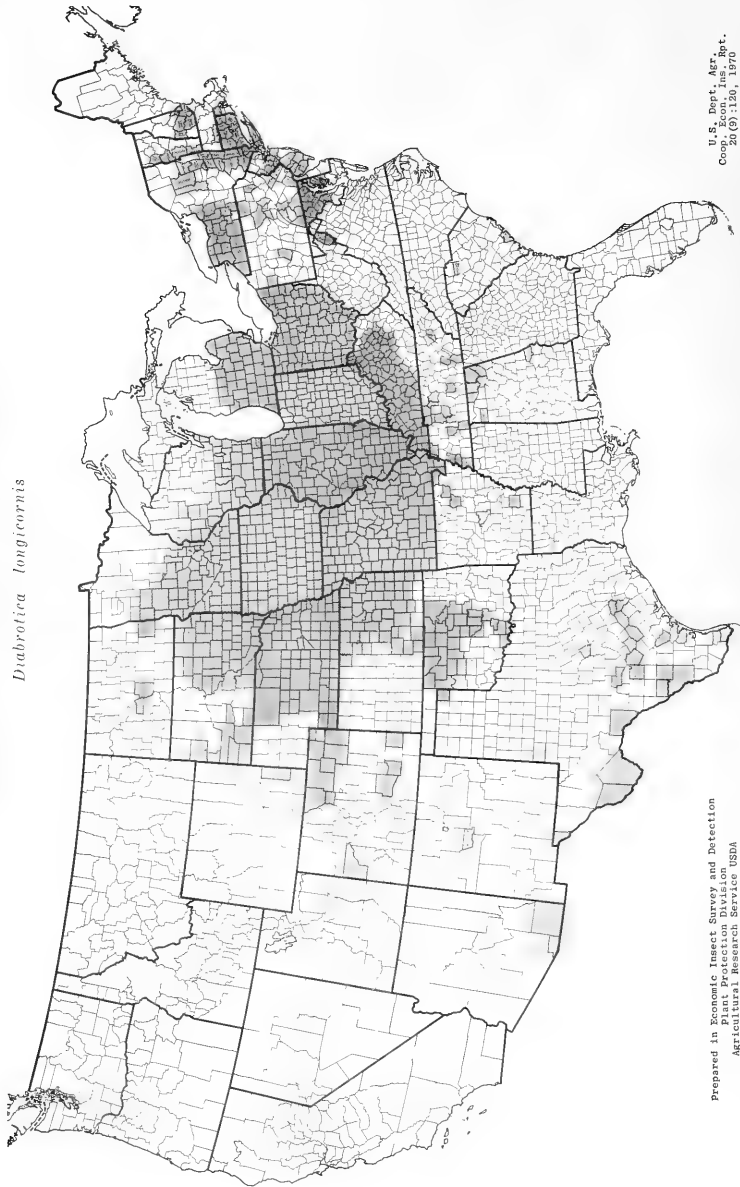
In MICHIGAN only 2 out of 82 fields surveyed showed detectable damage by D. longicornis. Population intensity has been decreasing the last few years. D. longicornis in WISCONSIN averaged less than 1 larva per corn plant July 25, but some fields had 20+ per root mass. By August 1, untreated fields began to show damage. By August 15, adults averaged about 8 per silk in some southern counties, and some spraying was done. Larval damage was light due to preventive treatments. Lodging was severe in a few fields. Populations appeared lower than in 1968. Larval treatment covered about 678,225 acres; adult treatment covered about 40,000 acres. D. virgifera was as high as 15 per corn plant in a few fields in Grant County. This species comprised 10-100 percent of the adult corn rootworms in the southwestern counties. It was more numerous in Grant, Rock, and Dane Counties in 1969 than in 1968. Green County is a new county record. Damage was severe in a few fields.

D. longicornis and D. virgifera continued to be a major insect problem on corn in MINNESOTA. Infestations appeared lighter throughout the season. In August adults had increased in the southwest, south-central, and southeast districts and decreased in the west-central, central, and east-central districts. The percentage of western corn rootworms increased in all districts, but the northern corn rootworm continued to be predominant. Most economic infestations in 1970 will occur in the southeast and southwest districts with fewer in the south-central district. Other districts will have widely scattered rootworm problems, but they will be less severe than in 1969. Corn rootworms in IOWA were down in 1969. Lodging was 0.75 percent in 1969 and 6.2 percent in 1968. D. virgifera in MISSOURI lodged stalks in Bates County. Because numbers were low, larval damage was not severe in the northern area. Barton, Callaway, Jasper, and Montgomery Counties were new county records.

D. undecimpunctata howardi, D. longicornis, and D. virgifera in KANSAS caused no more damage than they have for the last three years. Many fields, particularly in north-central and northwest areas, were treated for adults in August and September. At this time, adults ranged up to 35 per plant in some fields in Thomas and Sherman Counties. Northern corn rootworm was reported in Elk County, and western corn rootworm was reported in Sumner, Cowley, Elk, Chautauqua, Wilson, and Labette Counties for new county records. In NEBRASKA 1969 was the least successful year for corn rootworms since 1958. Soil insecticides were adequate and adult damage was minor.

Distribution of Northern Corn Rootworm

Diatraea longicornis



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Adults were low. Larvae ranged 10-15 per plant in untreated corn at Mead, Saunders County. Diabrotica virgifera adults peaked in late July. Western corn rootworm is expected to increase in 1970. In SOUTH DAKOTA a cool, wet spring in the eastern area delayed hatch of Diabrotica spp. D. virgifera made up at least 80 percent of the rootworm population. Infestations were more general and rootworm populations were heavier than in 1968. Dependent on winter and spring survival, populations are expected to be the same or higher in 1970, compared with 1969. About 1,000,000 acres are treated annually. D. virgifera in NORTH DAKOTA remained light with evident damage. Up to 10 adults per 100 plants occurred in Dickey, Ransom, and Sargent Counties. Traill and Dickey Counties were new county records.

D. virgifera was unchanged in WYOMING. Adults were heaviest, 5-9 per plant, in Goshen and Platte Counties. Controls for larvae and adults were applied in Goshen, Platte, and Laramie Counties. D. virgifera ranged light to moderate on corn in eastern COLORADO. Adults ranged up to 4 per corn plant. Larval damage was light to moderate; adult damage was light. Control was widespread for larvae but isolated for adults.

CORN FLEA BEETLE (Chaetocnema pulicaria) first infested early corn in DELAWARE in late April and early May. Shortly thereafter, injury was severe in several areas where densities reached 4-5 per young corn plant. Heavy numbers of C. pulicaria appeared in MARYLAND in June and early July and peaked in late July and August. Damage was heaviest in Washington, Frederick, and Carroll Counties. Injury ranged light to moderate in 50-90 percent of the fields. Several hundred acres in Frederick County showed conspicuous feeding. C. pulicaria damage was generally light throughout VIRGINIA with a few locally severe infestations in Augusta County. DESERT CORN FLEA BEETLE (C. ectypa) damaged corn and sorghum in UTAH.

WIREWORMS continued to be a problem on sugarcane in the Everglades area of FLORIDA, where 95 percent Melanotus communis and 10 percent Conoderus sp. severely damaged 1,000 acres of young sugarcane planted in the fall. Wireworms reduced stands of corn in the Everglades area. Stand reduction ranged 5-17 percent in some fields without treatment and up to 10 percent with treatment. Wireworms caused spotty, severe damage over VIRGINIA. Damage was severe in Washington and Russell Counties and in parts of Nansmond County. Wireworms were numerous in a few cornfields of Park and Washakie Counties, WYOMING. Some fields had to be replanted. Thousands of CARABID BEETLES (Clivina spp.) per night were sporadically attracted to blacklight traps in ILLINOIS from early June to early July, particularly July 1-8. They were found under almost every clod of dirt in the most heavily infested cornfields. Seed damage was slight where germination was rapid. Stand reduction ranged 20-35 percent in some fields south of Springfield, Sangamon County. Losses in other fields ranged up to 3,000 plants per acre. Overall damage was probably less in 1969 than in 1968.

YELLOW SUGARCANE APHID (Sipha flava) was medium on grain sorghum in Jackson County, TEXAS, in mid-May and in several north-central and Rolling Plains counties. Scattered fields throughout the Blacklands area were severely damaged. Infestations were light to medium in late June and early July in Caldwell and Brazos Counties. Infestations were light on grain sorghum in Crosby and Lubbock Counties during early July. In OKLAHOMA this aphid was heavy on corn and sorghum in north-central, northeast, and east-central areas in late May and June and lighter in the south-central area. Numbers were heavy in the panhandle area in early July. Yellow sugarcane aphid was reported as a new State record for ARKANSAS, being collected on sorghum in Hempstead County in May. Shortly after, it was collected in Washington County; this is a new county record. Infestations were not economic. CORN ROOT APHID (Anuraphis maidiradicis) was found for the first time on corn in NEW JERSEY on August 8, 1969, in a field near Blawenburg, Somerset County.

A DELPHACID PLANTHOPPER (Saccharosydne saccharivora) built up heavily late in 1969 on at least 5,000 acres of sugarcane in FLORIDA. Counts of 1-2, occasionally up to 40, per whorl heavily damaged young plants in the Okeechobee and Everglades areas. Biological control has been so effective that apparently not enough hosts were available to maintain the parasite at a desirable level.

WESTERN BROWN STINK BUG (Euschistus impictiventris) was heavy on sorghum in ARIZONA in early November. SAY STINK BUG (Pitedia sayi) and other species damaged grain sorghum in Luna and Hidalgo Counties, NEW MEXICO. Many growers treated.

SORGHUM MIDGE (Contarinia sorghicola) is potentially the major pest of sorghum in ARKANSAS. Infestations were nearly absent in 1969, due probably to early, uniform planting. In Chicot County, 8,000-10,000 acres were treated. Populations on grain sorghum were medium in Maverick County, TEXAS, May 30, and light to medium in Jackson County during early June. During the first half of July, infestations were heavy and spotted on sorghum in the central and Blacklands areas, and medium to heavy in Milam and Robertson Counties during late July. Infestations in the northern panhandle were light. Moderate damage in OKLAHOMA occurred occasionally in the west-central and southwestern areas from mid-August to mid-September. No problems occurred in KANSAS.

SEED-CORN MAGGOT (Hylemya platura) damaged sweet corn in Ventura County, CALIFORNIA, and to a lesser degree in other areas of the State. Larvae damaged corn seed in portions of fields in Kosciusko and St. Joseph Counties, INDIANA, in mid-June. In PENNSYLVANIA, H. platura and CABBAGE MAGGOT (H. brassicae) were heavy and injury was extensive on corn.

BANKS GRASS MITE (Oligonychus pratensis) started increasing on silage corn in NEVADA in late July and early August, and ranged medium to heavy in some fields by September in Churchill County where most of the State's crop is grown. Although numbers were lighter than normal, as much treating was done as in prior years due to earlier increases. Late-treated fields generally had higher populations and damage than early treated fields. Infestations were about normal throughout UTAH. Damage was generally moderate to sweet corn but severe in Grand, Sevier, and Weber Counties and scattered areas elsewhere. Numbers in WYOMING remained below economic levels on corn. In TEXAS medium to heavy numbers occurred in the Trans-Pecos area during August.

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) was probably the most common species encountered on corn, sorghum, and sugarcane in CALIFORNIA. Tetranychus sp. infestations were about normal throughout UTAH. Damage to sweet corn was generally moderate but was severe in Grand, Sevier, and Weber Counties and scattered areas elsewhere. Unspecified SPIDER MITES caused problems in corn throughout most of NEW MEXICO. Yields in Curry County were reduced up to 50 percent in silage corn. T. urticae ranged light to moderate on sweet corn in NEW JERSEY.

SLUGS in INDIANA ranged up to 12 per corn plant and 18 per square foot, particularly in fields that had been in alfalfa in 1968. Damage ranged 30-90 percent in scattered fields in west-central and northeastern districts. With damp spring weather in OHIO, GRAY GARDEN SLUG (Deroceras reticulatum) economically damaged corn in Clark, Fayette, Highland, Preble, Delaware, and Wayne Counties June 20. Slugs damaged or killed 50-75 percent of the plants in nearly all fields. All fields were 20 inches or less in height. SLUGS in VIRGINIA were severe on corn seedlings in many sod-planted fields in the southwestern area.

SMALL GRAINS

Highlights:

PALE WESTERN CUTWORM heavily damaged wheat in several areas of Wyoming, South Dakota, and Nebraska. FALL ARMYWORM caused heavy losses to fall sown wheat in New Mexico. Damage and populations were variable in several other States. ENGLISH GRAIN APHID populations were down in Idaho and counts in South Dakota and Minnesota were below treatment levels in most areas. Predator populations were variable. BROWN WHEAT MITE was reported for the first time from North Dakota. South Dakota growers treated about 20,000 acres, and 30,000 acres was left untreated. HESSIAN FLY was kept under control in most States due to planting dates and use of resistant wheat varieties.

PALE WESTERN CUTWORM (*Agrotis orthogonia*) was heavier than in 1968 in WYOMING, and heavily damaged wheatfields in Goshen, Platte, and Laramie Counties in April and May. Controls were limited to a few fields. Counts averaged up to 8 per linear foot in the more heavily infested fields. Noneconomic populations in SOUTH DAKOTA infested 2 winter wheatfields near Ideal, Tripp County, the first week of May. Economic populations during the third week of May damaged winter wheat near Okaton, Jones County, at Stanford, Jackson County, and west of Billsburg, Haakon County. Damage was severe in spots. For the second consecutive year wheat was heavily damaged in NEBRASKA. Another outbreak is predicted for 1970. About 250,000 acres in the southwest and southern panhandle areas was treated. Egg hatch and early signs of feeding damage were observed March 23-26 in Dundy and Chase Counties. Larval counts of 8-12 per linear foot were common in Chase, Dundy, and Perkins Counties. Injury was accentuated by dry conditions. Damage by pale western cutworm had peaked in most areas of Nebraska by late May. A few instances of damage in late May and early June occurred when corn was planted following wheat that had been destroyed by *A. orthogonia*. One 80-acre cornfield in Hayes County was totally destroyed. Fall moth flights compared in size to those of 1968; moth flights in 1968 were the largest ever recorded. In KANSAS blacklight catches were in the thousands in Finney and Stevens Counties during fall 1968. The first 1969 larvae were found 30 days later than in 1968. Expected highs were not reached, probably due to wet soils at hatch. A few fields in the southwest area were treated. Pale western cutworm caused scattered damage to small grains in the panhandle area of OKLAHOMA in late April and early May.

FALL ARMYWORM (*Spodoptera frugiperda*) caused heavy losses in fall-sown wheat during September and October in eastern NEW MEXICO. About 60 percent of wheat was lost in the Causey, Rogers, and Arch areas of Roosevelt County. Similar losses occurred in Lea and Curry Counties. Damage occurred on about 20,000 acres of wheat and rye in Quay County. Many growers in this area either replanted or discd the remaining crop. Infestations were heavy throughout TEXAS during 1969. Fall armyworm was heavy on wheat in Kent County, and in several High Plains counties in mid-September. During the same period it was heavy in isolated areas of Martin County. Populations were moderate to heavy on wheat in the Rolling Plains during late September. Heavy infestations were noted during early October throughout Texas on oats and other small grains. Populations were decreasing in the High Plains. Damage was medium to heavy in the central, north-central, and Rolling Plains areas the first 2 weeks of October. Controls were applied at that time. Populations had decreased in the Blacklands in late October. Fall armyworm infested small grains in the western half of OKLAHOMA from early September through mid-November. Two generations of larvae destroyed volunteer and planted fields in many areas. Counts on young wheat were very heavy and required treatment in September and October in Lafayette and Independence Counties, ARKANSAS. Fall armyworm damage in NEBRASKA averaged less than 1 percent in 15 fields examined in Jefferson, Gage, and Saline Counties in September. Most damage was observed in early planted fields. Some control was reported. Fall armyworm caused spotty damage to rye and barley seedlings in October in Isle of Wight and Buckingham Counties, VIRGINIA.

Larvae of GRASSWORMS (*Mocis* spp.) were noted in mixed populations with other noctuid larvae in several hundred acres of oats and rye from Geneva County north to Montgomery County, ALABAMA. This was the first report of these pests in Alabama in several years.

LESSER CORNSTALK BORER (*Elasmopalpus lignosellus*) was heavy in wheat in Beckham County and moderate in several south-central and southwest counties of OKLAHOMA in early and mid-October. OMNIVOROUS LEAF TIER (*Cnephasia longana*) appeared in unusually large numbers in the spring of 1969 and wheat was damaged in the Willamette Valley of OREGON. Populations appear to have been much higher than in the last few years, especially in Marion and Washington Counties.

ENGLISH GRAIN APHID (*Macrosiphum avenae*) populations in early July were generally lower than in 1968 in southern IDAHO. In early August infestations were scattered throughout the upper Snake River plains area. On July 17 a 9-acre barley field at Gooding, Gooding County, warranted control. Populations were down in the Boise Valley and fewer wheatfields were treated than in 1968. In SOUTH DAKOTA, this aphid became established on 2 to 3-leaf oats the first week of May in northern Clay County and eastern Hamlin County. Nymphs ranged 2-45 per 40 row feet. Infestations had developed during the cool spring, and were reported on oats the third week of June in Grant, Hamlin, and Aurora Counties, and on barley in Kingsbury County. Controls were not recommended since counts did not exceed 50 per plant. In MINNESOTA, winged forms were found April 13 at St. Paul, Ramsey County. Late June counts in small grain, primarily oats, increased sharply in the sandy soil areas of the east-central district. Up to 250 aphids per row foot were found in Dakota, Anoka, Sherburne, Benton, Isanti, and Hennepin Counties during the week of June 16. English grain aphid was heaviest on small grain 6 inches or higher; counts were lighter on younger grain. Predator populations were variable but most fields had low counts, probably due to the cool spring. *M. avenae* damage was very evident due to high counts and near drought conditions in the light sandy soil areas. Little if any spraying was done. Most infested fields recovered well with adequate rainfall and higher temperatures in July. This pest caused problems for at least 3 weeks in Minnesota.

Alates of English grain aphid were detected in grass at Prairie du Chien, Crawford County, WISCONSIN, April 18. Nymphs ranged 3-5 per sweep in rye in Sauk and Crawford Counties May 9. Elsewhere, 5 per 100 sweeps was average, with 50 percent being alates. Counts ranged 12-30 per 100 sweeps in oats June 13 in southeastern counties, averaged 1 per sweep in central counties, and ranged 60-100 per 100 sweeps in southwestern counties. Counts of 100 per leaf occurred in Chippewa County June 27. Some spraying was reported in Chippewa and Trempealeau Counties. This pest caused much concern in Vernon, Clark, Walworth, and Buffalo Counties. Red leaf (barley yellow dwarf) averaged less than 5 percent statewide July 4. About 6,785 acres were treated in Wisconsin. English grain aphid peaked June 18 at 37.38 per square foot (1.7 aphids per stem) and at 1.44 per stem in 2 oatfields in north-central INDIANA. About 20 percent of the population was parasitized as of June 27. It was of no economic importance. English grain aphid ranged 50-100 per 100 sweeps of small grain in northwest ARKANSAS by late January. Counts ranged 40-50 per 100 sweeps in late February and had increased to 300-400 by early April. This pest infested small grain in OKLAHOMA from late January to mid-May. In early May, counts were heavy in scattered areas. English grain aphid occurred on heads of developing wheat in numerous fields in several southern counties of ALABAMA, but no damage was reported.

The heavy populations of English grain aphid, *Rhopalosiphum padi*, and *Acyrtosiphon dirhodum* present in small grains in the fall of 1968 in OREGON, apparently were influenced by the prolonged rainfall of August 1968. Low populations were observed in August 1969 in scattered areas of the Willamette Valley. No grain aphids were observed in the Klamath Falls area of Klamath County. There was no incidence of barley yellow dwarf noted on cereals in Oregon in 1969. In CALIFORNIA, *R. padi* damaged small grain, primarily barley. Much yellowing occurred early in the season in conjunction with excess moisture. Light numbers of *R. padi*

occurred in small grains from late January to late March in OKLAHOMA. Fall activity began in early October. This aphid was heavy in rye in the west-central area in mid-October.

WINTER GRAIN MITE (*Penthaleus major*) was very abundant in part of a bluegrass seed field west of Imbler, Union County, OREGON, at the end of April. Light populations were first detected damaging small grains in Denton County, TEXAS, in mid-January. It was heavy on wheat in Archer and Wichita Counties, and ranged up to 1,000 per linear foot in some fields. Infestations were light to heavy on small grains in the Rolling Plains until the last part of March. Numbers were light to moderate from early February to mid-April in OKLAHOMA. Infestations were scattered and heavy in several south-central and southwest counties in mid-December.

BROWN WHEAT MITE (*Petrobia latens*) was reported in NORTH DAKOTA for a new State record. Up to 9 per leaf were found in winter wheat in Golden Valley County on June 6. Other infestations in Bowman, Hettinger, and Williams Counties were reported as new county records. Populations developed during April, May, and early June on wheat in Meade, Butte, Harding, eastern Pennington, and Jones Counties, SOUTH DAKOTA. Infestations were severe enough (a minimum of 20-25 mites per plant) to yellow and mottle the wheat. About 20,000 acres were sprayed with another 30,000 acres left untreated. Brown wheat mite was reported only from Cimarron County in OKLAHOMA in late April. Populations subsided following spring rains in UTAH. Brown wheat mite was locally damaging in a few counties, but was generally below normal in 1969. Light populations of this mite caused minor damage to grains in WYOMING. A few wheatfields in the Iowa Center and Lingle areas of Goshen County required controls. Brown wheat mite populations were light in NEVADA. Light to medium damage was noted in May and June in Pershing County. Irrigation was generally used as a control measure.

HESSIAN FLY (*Mayetiola destructor*) Race B infestations in INDIANA averaged 2.2 percent in Monon and 4.7 percent in Arthur wheat varieties. These wheat varieties are W38 resistant. The highest infestation in the non-Race B resistant wheats occurred in the northwest district. Infestations in the two adjacent districts were the next highest. The highest infestation rate usually occurs in the southwest district. Benhur, a Race B resistant wheat variety, had a 0.4-percent infestation rate in 1969, compared with 0.2 percent in 1968. In ILLINOIS, puparia averaged 2 per 100 tillers. Hessian fly infestations increased in wheat areas of NEBRASKA as growers failed to observe fly-safe planting dates. Percent of stems infested by district were as follows: South 4.5, southeast 2.8, and central 2.4. The 2-percent infestation in the panhandle area was unusually high. Based on 1968 acreage figures, the loss in Nebraska for 1969 was estimated at 318,435 bushels of wheat. Hessian fly infestations in KANSAS were greater than any year since 1961. Conditions were favorable for fall and spring generations. Late development of the spring generation had placed the "flaxseed" 3 or 4 inches above the ground on well-developed culms. Damage was estimated at nearly 2,000,000 bushels. This was about 4 times the 1968 infestation but below the annual damage before use of resistant wheat varieties. A total of 571 fields was sampled. Good farming practices of registered seed growers are holding infestations to less than one-half of that experienced by other wheat growers. This pest was noted in some winter wheat plots at Aurora, Marion County, OREGON.

WHEAT STEM SAWFLY (*Cephus cinctus*) cut an average of 0.5 percent of the stems in 44 percent of the fields in 24 western counties of NORTH DAKOTA. Decreases are attributed to the large acreages of Fortuna wheat and to the increased acreages of durum in the northwestern counties.

RICE WATER WEEVIL (*Lissorhoptrus oryzophilus*) has developed a resistance to the chlorinated hydrocarbon used as a seed treatment in ARKANSAS. About 80 percent of the rice acreage was treated at a cost of \$412,000. Drainage was also used for control. This weevil was serious on plantings in most rice-growing areas of CALIFORNIA.

RICE STINK BUG (Oebalus pugnax) first appeared in low numbers on small grain in ARKANSAS in May. A few rice fields in the east-central area were treated in late July. These fields contained barnyard grass.

Unspecified WIREWORMS in damaging numbers infested all crops throughout NORTH DAKOTA. Many untreated fields were reseeded. Stands in other fields were reduced up to 40 percent. The heaviest populations occurred in fields that had been in soil bank in 1968.

Overwintering adults of BARLEY THRIPS (Limothrips denticornis) had migrated into headed rye by the end of May in Cass, Richland, and Ransom Counties, NORTH DAKOTA. By June 13, thrips had entered leaf sheaths in barley fields. Counts were less than 2 per plant in Cass, Barnes, Griggs, Steele, Traill, Grand Forks, and Walsh Counties. Up to 14 per plant were noted in scattered barley fields in McKenzie and Billings Counties, but damage was not extensive.

TURF, PASTURES, RANGELAND

Highlights:

FALL ARMYWORM infestations varied light to heavy in Texas, Oklahoma, and Arkansas. SOD WEBWORMS damaged lawns in eastern Kansas in August, and continued to be major lawn pests in California. WESTERN TENT CATERPILLAR damaged range areas in Utah. SOUTHERN CHINCH BUG damaged St. Augustine grass pastures in Florida and lawns in Alabama.

FALL ARMYWORM (Spodoptera frugiperda) ranged light to heavy on grasses over wide areas of TEXAS during late summer and fall of 1969. Damage was moderate to heavy to lawn and pasture grasses in the northwest, west-central, central, southwest, south-central, and southeast areas of OKLAHOMA. Infestations in ARKANSAS were heavy and widespread especially in the southern area where rainfall was extremely low. Many pastures had to be treated.

SOD WEBWORMS (Crambus spp.) caused light to moderate damage to several bluegrass lawns in Prince Georges and Montgomery Counties, MARYLAND. Adult flights were heavy in May from east and middle TENNESSEE. Damage was moderate to corn and lawn grasses in eastern areas, and moth flights were heavy in central areas during July. Large flights were observed again in middle Tennessee in September. BLUEGRASS WEBWORM (C. teterrellus) caused very little damage to lawns in KANSAS until early August. At this time damage was as severe or more so than in past years in the eastern area. Early rain reduced damage. Crambus spp. caused fewer problems than in 1968 in NEBRASKA. Most lawns at Lincoln, Lancaster County, checked for webworms in August had less than 1 per square yard. A few had 8-9 per square yard. Larvae averaged 4 per square foot in a lawn in Scottsbluff, Scotts Bluff County, on May 6. The first moths, probably C. toparius, were noted May 3 at Moscow, Latah County, IDAHO. Moth activity continued until late September. One lawn at Lewiston, Nez Perce County, required control as early as May 21. Larvae in bluegrass ranged from 1 to 13 per 3-inch diameter crown at Post Falls, Kootenai County, in August. C. bonifatellus continued to be a major lawn pest in CALIFORNIA.

SAGEBRUSH DEFOLIATOR (Aroga websteri) increased in areas of Elko and Humboldt Counties, NEVADA, where damage to sagebrush (Artemisia tridentata) was heavy. Damage was below normal in UTAH.

WESTERN TENT CATERPILLAR (Malacosoma californicum fragile) damaged range areas in San Juan, Grand, and Washington Counties, UTAH. However, populations were lighter than previously in these areas. Larvae damaged a large area of bitterbrush in the mountains of Sevier County, where damage was very severe in 1967 and 1968. Chokecherry, serviceberry, and other range plants also were damaged.

WESTERN TUSSOCK MOTH (Hemerocampa vetusta) infestations and damage to bitterbrush (Purshia tridentata) were light to medium but with spotted, locally heavy areas of damage in Douglas, Ormsby and southern Washoe Counties, NEVADA, in May and June. In the same areas damage and populations on desert peach (Prunus andersonii) were light.

BILLBUGS (Sphenophorus spp.) were of some concern in 1969. S. venatus vestitus increased its range in CALIFORNIA, being reported for the first time in San Joaquin County. In UTAH, BLUEGRASS BILLBUG (S. parvulus) extended its range in Salt Lake County. S. venatus vestitus was less damaging to zoysia lawns in KANSAS than in 1968, probably due to more rainfall in 1969. Adults and larvae occurred in mixed populations in December 1968 and from April through September 1969. It is believed these two stages may be found anytime during the year in Kansas. In NEBRASKA, bluegrass billbug damaged some lawns at Lincoln, Lancaster County, in July. Much of the damage attributed to this insect in 1969 was due to drought, heat stress, and disease. Infestation levels were generally below those of 1968 in Nebraska. Adults of S. minimus caused heavy damage to roots and crowns of orchard grass in Providence County, RHODE ISLAND.

WHITE GRUBS caused some damage in several States. Phyllophaga farcta larvae were heavy in native grasses in Kinney County, and in several northern counties of TEXAS. P. anxia destroyed several sandhills meadows in Cherry County, NEBRASKA, but was not as widespread a problem as in 1967 and 1968. First damage was noted on May 15 in Cherry County. Grubs ranged 40-109 per square yard in severely damaged meadows. Cyclocephala sp. was the most abundant white grub in lawns in central and western PENNSYLVANIA during September. Populations of 10 or more grubs per square foot were common. Additional damage to the infested turf was caused by skunks digging for grubs. Unspecified white grubs caused severe damage to 75 acres of clover and grass mixture pasture in Hardeman County, TENNESSEE. Damage of this type and severity is uncommon. Unspecified species damaged turf and pasture during summer and early fall in FLORIDA. One pasture had 30 acres heavily damaged. Damage in other pastures ranged from spots of a few feet in diameter to 0.25 acre in size. These pests caused considerable loss of grazing at Belle Glade, Palm Beach County.

CHINCH BUG (Blissus leucopterus) had severely damaged some lawns in Kent County, RHODE ISLAND, by June 6. Complaints were received from throughout the State. Adults were active as late as October 9 in Kent, Providence, and Washington Counties. Infestation in 1969 was the worst known in the State. Adults were recovered from many sod samples in WEST VIRGINIA collected from lawns showing early browning in Ohio, Marshall, Wetzel, and Monongalia Counties. Chinch bug was conspicuous in ILLINOIS in 1969 due to its absence. Populations were low during the fall survey. The highest count was 88.3 bugs per square foot of hibernating material collected in Champaign County. Overwintered adults were very light in KANSAS in late February. Populations were noneconomic in corn and sorghum during spring and summer. Chinch bug caused light to moderate damage to St. Augustine grass lawns in southeast OKLAHOMA, and again in the south-central area in early August.

SOUTHERN CHINCH BUG (Blissus insularis) was heavy in most areas of central and north-central TEXAS during 1969, due primarily to very dry conditions. This pest remained serious on St. Augustine grass in central and southern ALABAMA. Damage and difficulty with controls caused many homeowners to replace St. Augustine grass with other grasses. Southern chinch bug caused heavy spot damage to St. Augustine grass pastures in the Everglades area of FLORIDA despite rather wet conditions during summer and fall. Infested spots ranged from a few feet in diameter to over one acre. This chinch bug was found for the first time in Sacramento County, CALIFORNIA. It has been recorded from Los Angeles and Orange Counties also. CHINCH BUGS (Blissus spp.) were a problem on lawns at Astoria in Clatsop County, OREGON, and caused moderate to heavy damage to several lawns in Montgomery and Prince Georges Counties, MARYLAND.

TWO-LINED SPITTLEBUG (Prosapia bicincta) light trap collections were heavier at Belle Glade, Palm Beach County, FLORIDA, than in any previous year of record. However, damage appeared to be less than usual. Damage was moderate on ranches in the Everglades area, where past damage was usually severe. This spittlebug damaged 55 acres of Coastal Bermuda grass at Alachua, Alachua County, during September. Several centipede grass lawns were damaged and the pest was abundant in St. Augustine grass at Gainesville in August. Two-lined spittlebug reoccurred in early spring throughout ALABAMA. It was mainly a pest of Coastal Bermuda grass in central and southern areas, and lawns in isolated parts of the southeast and southwest areas.

SAY STINK BUG (Pitedia sayi) was heavy on rangeland hosts in NEVADA. Beginning in May, economic infestations failed to develop on cultivated crops except on small, isolated acreages.

CICADAS, mostly Okanagana spp. and some Platypedia spp. were heavy in northern NEVADA from late May through mid-July but less so than in 1967. Damage to native shrubs and trees from oviposition was evident. Okanagana spp. and Platypedia spp. were numerous in various canyons and brush areas of UTAH.

Melanoplus femurrubrum, M. differentialis, and Schistocerca americana were the most important GRASSHOPPERS in ALABAMA in 1969. Occurrence was statewide, with M. femurrubrum predominant. Most serious damage was to 2- to 6-leaf clover seedlings in pastures in the fall and to reseeded sod where grasshoppers, in combination with CRICKETS, destroyed many seedling plants and weakened stands. In FLORIDA, Schistocerca obscura occurred in large numbers in the Everglades area. Preferred hosts were elderberry and other wild plants. Several heavy stands of elderberry were defoliated and debarked. Damage ranged light to heavy on Para grass and was light to St. Augustine grass.

A CRICKET (Nemobius fasciatus) remained a pest of crimson, white, and other clovers in pastures and sod throughout the Black Belt counties of central and western ALABAMA from September through November. Damage was caused by heavy population buildups during the year. Crickets fed on clover seedlings, weakening or destroying stands.

BANKS GRASS MITE (Oligonychus pratensis) developed heavy, damaging populations on timothy hay in Lyon County, NEVADA, in May. Controls were required. BROWN WHEAT MITE (Petrobia latens) was moderate on crested wheatgrass and roadside grasses in some localities of UTAH.

GRASS THRIPS (Anaphothrips obscurus) were heavy and damaged timothy hay in Lyon County, NEVADA, in May. Controls were required.

A SNAIL (Bulimulus guadalupensis) was found in a nursery on Snead Island, Palmetto, Manatee County, FLORIDA, in October, and reported as a new United States record. This snail is not considered to be economically important.

Weather of the week continued from page 100.

Temperatures averaged above normal over the West in spite of cooler temperatures late in the week. In some areas, this was the sixth consecutive week with warmer than normal temperatures. Much of the northern and central Rocky Mountains and the central Plains averaged 6-12° warmer than normal. Most of the area south of a line from El Paso, Texas, to Alpena, Michigan, averaged cooler than normal. In general, this area was coolest at midweek. (Summary supplied by Environmental Data Service, ESSA.)

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Cooperative
**ECONOMIC INSECT
REPORT**



Issued by

**PLANT PROTECTION DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE**

AGRICULTURAL RESEARCH SERVICE

PLANT PROTECTION DIVISION

ECONOMIC INSECT SURVEY AND DETECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearinghouse and does not assume responsibility for accuracy of the material.

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Economic Insect Survey and Detection
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United States Department of Agriculture
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Hyattsville, Maryland 20782

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG heavy and damaging to wheat in Texas. (p. 131).

EGYPTIAN ALFALFA WEEVIL larvae damaged alfalfa terminals in limited area of Arizona. (p. 131).

Predictions

GRASSHOPPERS could be a serious problem on soybeans in some areas of Illinois in 1970. (p. 143).

Detection

ELM LEAF BEETLE reported in South Dakota for the first time. (p. 132).

For new county records see page 134.

Special Reports

Summary of Insect Conditions in the United States - 1969

- Forage Legumes (pp. 135-141).
- Soybeans (pp. 142-143).
- Peanuts (p. 144).
- Cotton (pp. 144-148).
- Tobacco (pp. 148-149).
- Sugarbeets (pp. 149-150).
- Miscellaneous Field Crops (p. 150).

Distribution of Alfalfa Weevil. Map. (p. 136).

Survey Methods. Selected References 1945. Part XXVI. (pp. 151-152).

Reports in this issue are for week ending February 27 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance.....131

Insects Affecting

Corn, Sorghum, Sugarcane.....	131	Other Trop. & Subtrop. Fruits.....	132
Small Grains.....	131	Ornamentals.....	132
Forage Legumes.....	131	Forest and Shade Trees.....	132
Potatoes, Tomatoes, Peppers.....	131	Man and Animals.....	132
Cole Crops.....	131	Households and Structures.....	133
Deciduous Fruits and Nuts.....	131	Stored Products.....	133
Citrus.....	132		

Beneficial Insects.....133

Federal and State Plant Protection Programs.....133

Corrections.....133

Hawaii Insect Report.....134

Detection.....134

Summary of Insect Conditions in the United States - 1969

Forage Legumes.....	135
Soybeans.....	142
Peanuts.....	144
Cotton.....	144
Tobacco.....	148
Sugarbeets.....	149
Miscellaneous Field Crops.....	150

Distribution of Alfalfa Weevil. Map.....136

Survey Methods, Selected References 1945. Part XXVI.....151

WEATHER BUREAU'S 30-DAY OUTLOOK

MARCH 1970

The Weather Bureau's 30-day outlook for March is for temperatures to average below seasonal normals in the Pacific Northwest, as well as the Northeast and the remainder of the northern border States. Above normal temperatures are expected in the Southwest while near normal averages are indicated in unspecified areas. Precipitation is expected to exceed normal over the Pacific Northwest and the northern Plains. Subnormal totals are in prospect for the southern Plains, the west gulf coast and New England. Elsewhere near normal precipitation is indicated.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price \$5.00 a year.

WEATHER OF THE WEEK ENDING MARCH 2

HIGHLIGHTS: Generous rains fell in eastern Texas with light to moderate rains across the Deep South. A weekend storm brought rain to southern California and rain and snow to Arizona. Temperatures were generally above normal over the western and central United States and below normal over the eastern third.

PRECIPITATION: Sunny, pleasant weather prevailed over most of the Nation early in the week. An exception was eastern Texas where generous rains caused many streams to rise to or near their flood stages. The northern plains of Texas continued dry as did wide areas from the Great Basin, the central Rocky Mountains and the northern and central Great Plains. Even the State of Washington received only spotty precipitation during the week. Midweek rains brought 0.50 inch to 1.50 inches of moisture to the Deep South from Louisiana. Weather of the week continued on page 134.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

GREENBUG (*Schizaphis graminum*) - ARIZONA - Light in wheat and barley in Maricopa and Yuma Counties. Ranged 5-16 per linear foot in 5 fields at Somerton. No winged females observed. (Ariz. Coop. Sur.). NEW MEXICO - Light on barley in Chaves County. (Mathews). OKLAHOMA - Ranged 50-90 per linear foot in wheat in many fields and 150-200 per linear foot in scattered fields in Tillman, Jackson, and Harmon Counties. Heaviest counts in scattered areas of Tillman County and Elmer area of Jackson County. Moderate in Kingfisher County and light in Payne County. (Okla. Coop. Sur.). TEXAS - Ranged 1-400 per linear foot on wheat in 18 panhandle counties February 13, 16, and 17. Highest count 400 per linear foot in Briscoe County and lowest, 1 per linear foot in Potter and Wheeler Counties. Braconids noted in most fields. (Daniels). Heavy in fields in Hardeman, Motley, Wilbarger, Jones, and Foard Counties. Controls applied in some fields. Infestations moderate in Knox, Young, and Childress Counties. (Boring). Medium but widespread and damaging wheat in Karnes County. Ranged 10-200 per row foot. Injurious only to late-planted wheat. (McNally). Medium locally on dryland wheat near Batesville, Zavala County; wheat 4-6 inches high. Greenbug ranged 30-50 per plant. (Gardner).

CORN, SORGHUM, SUGARCANE

SOUTHWESTERN CORN BORER (*Diatraea grandiosella*) - MISSOURI - Surveys in 2 fields in Scott County in September 1969 indicated live larvae in 93 percent of stalks. Current infestation averaged 0.6 percent in 300 stalks in same fields. (Munson).

SMALL GRAINS

WINTER GRAIN MITE (*Penthaleus major*) - TEXAS - Light to moderate in Young and Jones Counties. Locally heavy in 1 wheatfield near Hillsboro, Hill County. (Boring, Hoermann, Feb. 20). OKLAHOMA - Averaged 75 per linear foot in wheatfield in Eldorado area of Jackson County. Light in Tillman and Harmon Counties. (Okla. Coop. Sur.).

FORAGE LEGUMES

EGYPTIAN ALFALFA WEEVIL (*Hypera brunneipennis*) - ARIZONA - Larvae averaged 500 per sweep and damaged terminals of alfalfa at Dome, Yuma County. (Ariz. Coop. Sur.).

ALFALFA WEEVIL (*Hypera postica*) - MISSISSIPPI - Larvae averaged 7.4 per 20 stems of alfalfa in Pontotoc County. (Pitre).

PEA APHID (*Acyrtosiphon pisum*) - ARIZONA - Averaged 1,000 per 100 sweeps of alfalfa at Dome Valley, Yuma County. (Ariz. Coop. Sur.). NEW MEXICO - Light on alfalfa in southern areas. (N.M. Coop. Rpt.). OKLAHOMA - Light (3-4 per square foot of crown) in alfalfa in Payne County. (Okla. Coop. Sur.).

POTATOES, TOMATOES, PEPPERS

POTATO TUBERWORM (*Phthorimaea operculella*) - ALABAMA - Larvae heavy and damaging on 200 tomato plants in greenhouse in Mobile County. Controls applied. (Leeper, et al.).

COLE CROPS

FORK-TAILED BUSH KATYDID (*Scudderia furcata*) - CALIFORNIA - Medium on cabbage at Vista, San Diego County. (Cal. Coop. Rpt.).

DECIDUOUS FRUITS AND NUTS

ROUNDHEADED APPLE TREE BORER (*Saperda candida*) - IDAHO - Severe in commercial apple orchard at Weiser, Washington County. (Horn, Feb. 24).

OTHER TROP. & SUBTROP. FRUITS

AN ANOBIID BEETLE (Ozognathus cornutus) - CALIFORNIA - Larvae and adults light in macadamia nuts at Vista, San Diego County, February 9. Determined by F. Andrews; confirmed by R.E. White. First known report of this species infesting macadamia nuts. (Cal. Coop. Rpt.).

CITRUS

AN ARMORED SCALE (Unaspis citri) - FLORIDA - All stages moderate on stems of 60 percent of 1,200 nursery plants at Zellwood, and moderate on bark of half of 1,000 trees in grove at Plymouth, Orange County. (Speaker, Feb. 20).

CITRUS RED MITE (Panonychus citri) - FLORIDA - All stages moderate on leaves of 75 percent of 300 Calamondin at nursery in Miami, Dade County. (McHenry, Feb. 4). ARIZONA - None found in survey of old citrus tree planting at Dateland, Yuma County. (Ariz. Coop. Sur.).

ORNAMENTALS

DOGWOOD BORER (Thamnospectia scitula) - ALABAMA - Larvae feeding on cambium layer of numerous dogwoods along streets and on lawns in Lee County. Many larvae destroyed by birds. (McQueen).

A PYRALID MOTH (Herculia phaezalis) - CALIFORNIA - Larval counts 3 per limb on Italian cypress at Artesia, Los Angeles County. (Cal. Coop. Rpt.).

A SNAIL (Rumina decollata) - ARIZONA - Heavy around many residences in Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

FOREST AND SHADE TREES

SILVER-SPOTTED TIGER MOTH (Halisidota argentata) - OREGON - Third instar damage light to pines in nursery at Newport, Lincoln County. (Wheeler).

ELM LEAF BEETLE (Pyrrhalta luteola) - SOUTH DAKOTA - Larvae collected at Yankton, Yankton County, by M.L. Briones August 20, 1969. Determined by E.U. Balsbaugh. This is a new State record. (Jones).

MAN AND ANIMALS

SCREW-WORM (Cochliomyia hominivorax) - No cases reported in U.S. February 22-28. Total of 29 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico February 15-21 as follows: Sonora 21, Chihuahua 8. Total of 4 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 168,000; Mexico 104,550,000. (Anim. Health Div.).

COMMON CATTLE GRUB (Hypoderma lineatum) - TENNESSEE - Infested 26 of 31 head of cattle, averaged 5.4 per head, in Giles County. (Parker, Edwards). OKLAHOMA - Remains moderate in backs of cattle in Mayes County. (Okla. Coop. Sur.).

BROWN RECLUSE SPIDER (Loxosceles reclusa) - TENNESSEE - Collected in Chester and Henry Counties. These are new county records. (Johnson). TEXAS - Specimen collected at Brashear, Hopkins County. (Coster). This is a new county record. (PPD).

HOUSEHOLDS AND STRUCTURES

EASTERN SUBTERRANEAN TERMITE (Reticulitermes flavipes) - MARYLAND - Swarming increasing throughout State. (U. Md., Ent. Dept.).

STORED PRODUCTS

A DERMESTID (Trogoderma variabile) - CALIFORNIA - Larvae heavy in onion seed at seed company in El Centro, Imperial County. (Cal. Coop. Rpt.).

BENEFICIAL INSECTS

AN ICHNEUMON WASP (Bathyplectes curculionis) - MISSOURI - Cocoons collected by Huggans, Hanning, and Munson in Bollinger, Cape Girardeau, Crawford, Franklin, Gasconade, Iron, Jefferson, Madison, Perry, Phelps, Ralls, Scott, St. Charles, St. Francois, Ste. Genevieve, St. Louis, and Washington Counties. These are new county records. (Munson).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

BROWN-TAIL MOTH (Nygmia phaeorrhoea) - Survey revealed medium infestation on Cousins Island in Casco Bay, MAINE. Infestations on mainland light and scattered. Survey results negative in MASSACHUSETTS, RHODE ISLAND, and NEW HAMPSHIRE. (PPD East. Reg., Jan.).

CARIBBEAN FRUIT FLY (Anastrepha suspensa) - FLORIDA - Adults taken in McPhail in navel orange tree at Melbourne, Brevard County. (Levan, Feb. 17).

CITRUS BLACKFLY (Aleurocanthus woglumi) - MEXICO - Chemical Control Zone - Found in 3,084 of 29,835 citrus trees inspected in 4 municipios of Nuevo Leon. Inspected 1,125 trees in 2 municipios of Tamaulipas. In Reynosa, Tamaulipas, 5 trees infested. In Sonora, Baja California, survey negative. (PPD Mex. Reg., Jan.).

GIANT AFRICAN SNAIL (Achatina fulica) - FLORIDA - Infestation continues with 3 live snails found in dump at Opa-Iocka, Dade County. (PPD).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - TEXAS - Specimens collected at Bryan, Brazos County, by O. Barham, February 13. Determined by V.H. Owens, confirmed by D.R. Smith. This is a new county record. (PPD). Light in pastures and roadsides near Anderson, Grimes County. (Barham). FLORIDA - All stages found at Cleremont, Lake County. (Henderson, Feb. 20).

MEXICAN FRUIT FLY (Anastrepha ludens) - MEXICO - Survey in Tijuana, Ensenada, and Tecate, Baja California, negative. At La Paz, Territorio sur de Baja California, neither flies nor larvae found. (PPD Mex. Reg., Jan.).

SWEETPOTATO WEEVIL (Cylas formicarius elegantulus) - MISSISSIPPI - Adult collected on farm at Enterprise, Clarke County, by J.H. Harris, January 26. Determined by V.H. Owens, confirmed by R.E. Warner. This is a new county record. (PPD).

CORRECTIONS

CEIR 19(Index):21 - Stegasta bosquella (red-necked peanutworm) should read Stegasta bosqueglla (red-necked peanutworm).

CEIR 20(8):92 - Lines 2 and 3 should read: ... Heavy infestations of Japanese beetle were reported in Butler County, OHIO ...

CEIR 20(9):114 - TOMATO HORNWORM (Manduca quadrimaculata) should read TOMATO HORNWORM (Manduca quinquemaculata).

CEIR 20(9):126 - C. toparius should read CRANBERRY GIRDLER (C. toparius).

HAWAII INSECT REPORT

Corn - All stages of CORN PLANTHOPPER (Peregrinus maidis) heavy under leaf sheaths in 0.75 acre of sweet corn at Halawa, Oahu. Many plants affected by corn mosaic. Adults and nymphs of CANE LEAFHOPPER EGG SUCKER (Tyrtthus mundulus) abundant in this planting. Adults of P. maidis trace (1 per 5 plants) in 20 acres of corn at Kihei, Maui. (Funasaki, Miyahira). Adults of A SAP BEETLE (Carpophilus humeralis) and DRIED-FRUIT BEETLE (C. hemipterus) heavy on tassels of sweet corn at Halawa. (Kawamura).

General Vegetables - DIAMONDBACK MOTH (Plutella xylostella) larvae light (1 per leaf) in small planting of daikon (Raphanus sativus longipinnatus) at Pearl City, Oahu. SWEETPOTATO VINE BORER (Omphisa anastomosalis) larvae generally light in sweetpotato fields at Waimanalo and Waihole. Infestation confined mostly to older vines; nil in tubers. (Suzukawa, Funasaki). CARMINE SPIDER MITE (Tetranychus cinnabarinus) moderate to eggplant and yardlongbeans at Pearl City; light to medium in snap bean fields at Waianae and Waimanalo. (Kawamura).

Nuts - Colonies of COCONUT SCALE (Aspidiotus destructor) light to moderate on banana in some windward fields on Oahu; remain light on papaya at Koko Head and windward areas. (Funasaki).

Ornamentals - Adults and larvae of ORCHID WEEVIL (Orchidophilus aterrimus) heavy and causing severe damage to backyard dendrobium orchids at Ainaloa, Oahu; light on similar host at Aina Haina. (Kawamura).

DETECTION

New State Record - ELM LEAF BEETLE (Pyrrhalta luteola) - SOUTH DAKOTA - Yankton County (p. 132).

New County Records - ALFALFA WEEVIL (Hypera postica) MICHIGAN - Clare, Huron, Isabella, Lake, Mason, Mecosta, Midland, Montcalm, Oceana, Saginaw, Sanilac, and Tuscola (pp. 136, 137). BROWN RECLUSE SPIDER (Loxosceles reclusa) TENNESSEE - Chester and Henry; TEXAS - Hopkins (p. 132). AN ICHNEUMON WASP (Bathyplectes curculionis) MISSOURI - Bollinger, Cape Girardeau, Crawford, Franklin, Gasconade, Iron, Jefferson, Madison, Perry, Phelps, Rals, Scott, St. Charles, St. Francois, Ste. Genevieve, St. Louis, and Washington (p. 133). IMPORTED FIRE ANT (Solenopsis saevissima richteri) TEXAS - Brazos (p. 133). SWEETPOTATO WEEVIL (Cylas formicarius elegantulus) MISSISSIPPI - Clarke (p. 133).

Weather continued from page 130. to the Carolinas. Little rain fell in the Florida Peninsula. As the weekend approached, snow began in the northern Rockies and across the northern Great Plains and the Great Lakes Region to the northern Appalachians. Freezing rain slicked the highways in parts of Nebraska, Minnesota, and Iowa and rain fell from the Ohio River Valley to the western portion of the gulf coast. The weekend brought light to moderate rain to southern California and Arizona. Snow fell in Arizona above 7,000 feet on Saturday and above 5,000 feet by Sunday night. About 1.5 feet of snow fell at Flagstaff in 24 hours.

TEMPERATURE: Mostly pleasant temperatures prevailed over most of the Nation last week. Temperatures averaged above normal over the western two-thirds of the Nation. Parts of the central Rocky Mountains and the northern Great Plains averaged 6° to 12° warmer than normal. It was the seventh consecutive week with warmer-than-normal temperatures from the Pacific coast to the western slopes of the Rockies. Temperatures over the eastern third of the Nation averaged below normal. The mild temperatures early and late in the week were not sufficient to offset the cold midweek when subfreezing temperatures occurred along the gulf coast and frost occurred in northern and central Florida. Quick warming followed the cold temperatures in the Deep South. At Macon, Georgia, the mercury climbed from 28° on Friday morning to 76° by Sunday afternoon. (Summary supplied by Environmental Data Service, ESSA.)

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1969
(Continued from page 128)

FORAGE LEGUMES

Highlights:

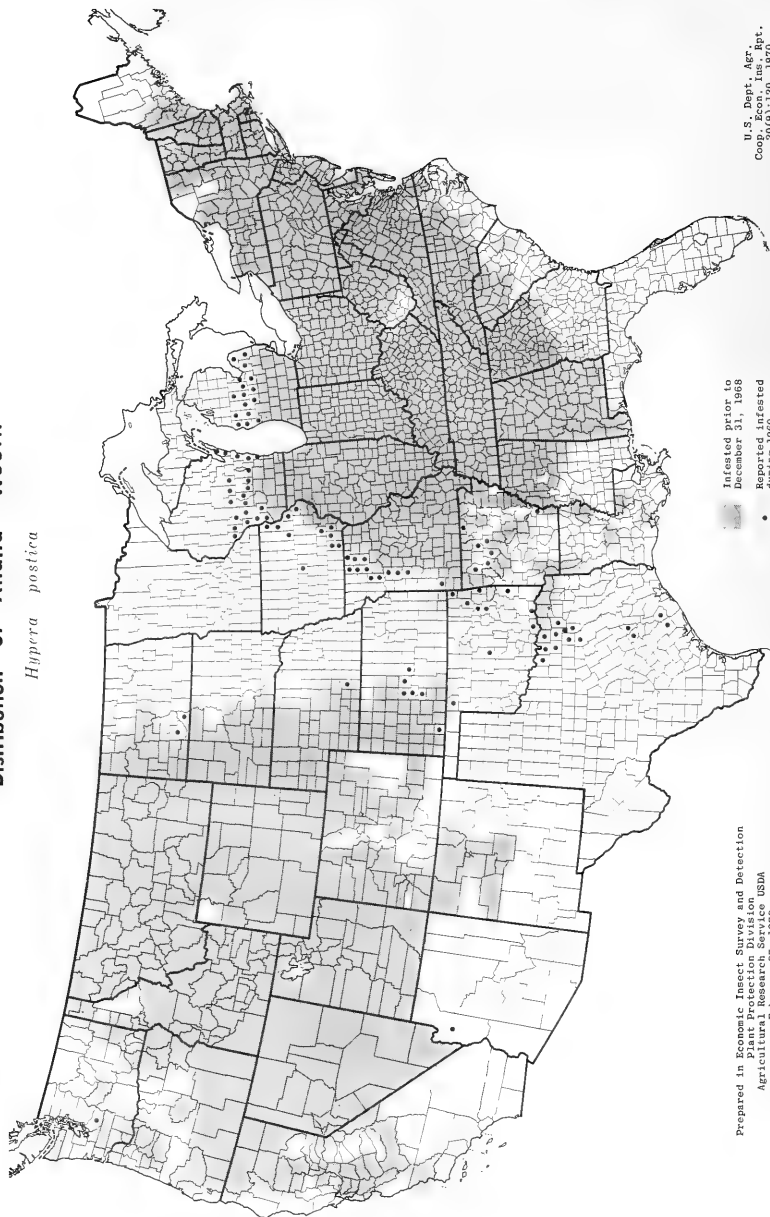
ALFALFA WEEVIL was severe on alfalfa in California, and damage was more extensive in New Mexico. This weevil was the most damaging pest of alfalfa in Utah, Wyoming, and Arkansas; infested more fields and is expected to continue at economic levels in the northern Black Hills of South Dakota; and increased in Nebraska. Alfalfa weevil was heavy on the remaining 3,000 acres of alfalfa in Alabama, and caused heavy damage in central and western Tennessee. Populations were the lowest in 4 years in Illinois. Infestations continued to decline or were light in several Eastern States, and the pest is now considered of minor importance in New Jersey. PEA APHID outbreaks on alfalfa in south-central and eastern Idaho were the largest and most widespread in 20 years. This aphid was economic on alfalfa in eastern South Dakota. Infestations were occasionally economic in the Pecos and Mesilla Valleys of New Mexico, and some problems developed on forage legumes in Texas. MEADOW SPITTLEBUG was heavier than in 1968 in Indiana, and was more abundant than at any time in the last 5 years in New Jersey. ALFALFA CATERPILLAR was more severe and general in New Mexico than in the past 10 years, and counts were heavy in the Arkansas Valley of Colorado. EUROPEAN CLOVER LEAF TIER was reported from California as a new Western Hemisphere record. This gelechiid caused serious damage to many clovers.

ALFALFA WEEVIL (*Hypera postica*) extended its range in Walla Walla County, WASHINGTON, infesting alfalfa hay and seed fields for the first time in the Gardena and Touchet area. Northern extensions were reported from Pierce and Kittitas Counties. In Kittitas County the infestation was extended 3-5 miles beyond the area infested in 1968. Larval populations remained light, less than 5 per sweep, on alfalfa in western OREGON, but appeared to be increasing, especially in Benton County. In other areas of the State where this pest has been established for as long as 50 years, counts were high. Larvae ranged 157-182 per sweep of alfalfa near Prineville, Crook County, in early June. Alfalfa weevil and EGYPTIAN ALFALFA WEEVIL (*H. brunneipennis*) were severe in most alfalfa-growing areas of CALIFORNIA early in the season. Egyptian alfalfa weevil built up on alfalfa in ARIZONA in early February, and averaged 18 per sweep by late February in Yuma County. Counts peaked at 10 per sweep in Maricopa County early in April. Alfalfa weevil adults were collected in Mohave County in mid-September 1969 for the first record of this pest in Arizona.

Cold, damp weather in NEVADA again retarded alfalfa weevil development until about mid-May. Economic populations developed explosively with favorable weather. Larvae peaked in excess of 250 per sweep, and damage occurred near mid-June. Controls were applied in late May and early June. The second crop was not damaged by adults as it was in 1967 and 1968. In IDAHO, larvae averaged 11 per sweep near Juliaetta, Latah County, on June 11 while new adults averaged less than one per sweep in an uncut field of blooming alfalfa. Larvae were abundant in Clark County throughout the year. Alfalfa weevil was the most damaging alfalfa insect in UTAH. Damage ranged from light to very severe. Total damage was slightly below average. Damage to alfalfa in northwest NEW MEXICO was more extensive than in previous years. Counts in COLORADO were heavy, 0-40 larvae and 0-6 adults per sweep, in late May and early June. Damage was moderate to heavy, especially where controls were not applied or were applied too late. Populations leveled off for the rest of the season and losses were light. Control was effective when proper methods and timing were used. Alfalfa weevil was again the most damaging crop pest in WYOMING, and damage was more severe than in 1968. June counts ranged 70-240 per sweep in the most heavily infested alfalfa fields. Counts were heaviest in Washakie, Fremont, Big Horn, and Johnson Counties.

Distribution of Alfalfa Weevil

Hypera postica



Infested prior to
December 31, 1968
Reported infested
during 1969

Prepared in Economic Insect Survey and Detection
Project on Alfalfa Weevil
Agricultural Research Service, USDA
February 27, 1970

U.S. Dept. Agr.
Coop. Econ. Ins. Rpt.
20(9):120, 1970

Alfalfa weevil larvae ranged up to 24.5 per sweep of irrigated alfalfa in McKenzie and Williams Counties, NORTH DAKOTA, by June 20. Up to 0.8 larva per sweep infested irrigated alfalfa in Mercer and Oliver Counties. Damage was less than 1 percent in all areas because alfalfa is cut before extensive damage occurs. Up to 0.9 per sweep on the second crop in mid-July caused no evident damage. Sioux and Grant Counties were new county records. Adults in SOUTH DAKOTA increased to 2.3 per sweep of alfalfa the first few days of June. Untreated alfalfa east of Spearfish, Lawrence County, had a high of 41 larvae per sweep June 17. In mid-July, adults remained at less than 1 per sweep, but larvae dropped to 3 per sweep. Economic damage was confined to the northern Black Hills, and to irrigated alfalfa in Fall River County in the southern Black Hills. Damage occurred primarily to the first crop prior to cutting and to the second crop when the first cutting had been left in windrows. Damaging numbers infested more fields in 1969 than in 1968. Early cutting saved most fields although insecticides were applied when infestations persisted or when the first cutting was delayed. Alfalfa weevil will continue to be economic in the northern Black Hills of South Dakota. Alfalfa weevil increased in NEBRASKA, but most damage in the central area was below economic levels. About June 4, adults declined and larvae peaked at 12.2 per sweep in 1 field. Counts declined gradually. Kearney County was a new county record. This pest was not economic in KANSAS. Rush, Pawnee, Edwards, Barton, Rice, and Seward Counties were new county records.

Alfalfa weevil was light from mid-May to mid-June in all areas where it is known to occur in OKLAHOMA. It was reported for the first time in Ottawa, Mayes, Wagoner, Muskogee, Adair, Le Flore, Choctaw, Bryan, Oklahoma, and Harper Counties. Alfalfa in several northeast counties of TEXAS was found infested with this weevil in mid-April. Surveys revealed heavy populations in Brazos, Burleson, and Wharton Counties. Alfalfa weevil continued to be a major pest of alfalfa in most areas of ARKANSAS. Larvae were heaviest, 10 in one sweep, in the northeast area in mid-April. The peak was passed in late May. One larva was collected in the northwest area August 15 which is unusual for midsummer. Controls cost about \$80,000. Madison, Johnson, Pope, Searcy, Van Buren, Fulton, and Desha Counties were new county records. Infestations were heavy in ALABAMA. All 3,000 acres of alfalfa remaining in the State were treated. Damage also occurred on white clover, vetch, and other legumes. Damage in TENNESSEE was first reported from Lincoln County April 11. Damage was heavy in central and western areas during late spring and early summer. Larvae ranged up to 3 per sweep of alfalfa in Montgomery County.

Alfalfa weevil egg viability in MISSOURI averaged 64.9 percent. Late March and early April larval counts in alfalfa ranged from less than 1 per sweep in the south-central area to 1.2 per sweep in the southeast area. Some controls were applied in the southeast area, but most were applied in the south-central and east-central areas. During 1969, 12 new counties were reported for the first time, making a total of 93 counties known to be infested in Missouri. Populations in ILLINOIS were the lowest of the past 4 years. Infestations were late, and alfalfa was growing rapidly when larvae were generally present. This late emergence enabled Bathyleptes curculionis (an ichneumon wasp) to help control infestations. In some fields over 90 percent parasitism occurred, with 60-80 percent common during periods of high populations. Adults averaged less than 1 per sweep of alfalfa and larvae 1 per stem on May 9 in southeast WISCONSIN. Adults and larvae averaged less than one per sweep from late May until early July. Kenosha County had 1.8 larvae per sweep June 20. Damage was not economic. A total of 22 new counties was reported. Larvae in MICHIGAN infested Mason, Lake, and Clare Counties and all counties south of and in the line running from Oceana County to Huron County. Controls were needed many times over 1968. Some counties harvested the largest part of the first crop without treating; the second crop was treated however. Because weather prevented early harvesting in the southern and southeastern areas, damage to the first crop was heavy. In INDIANA, counts were highest in the south-central district. Larvae ranged 165-761 per square foot by April 26. Counts dropped in the southwest and west-central districts due partly to heavy parasitism, mostly by B. curculionis, and possibly predation by lady beetles. Hippodamia tredecimpunctata and Coleomegilla maculata adults ranged 0.5-1.7 per sweep in the

northwest district by May 16. Damage was reduced statewide except in the south-central and eastern districts. One chemical application sufficed in much of the low-population area. A slow buildup of alfalfa weevil, especially in the east district, allowed growers in the northeast district to take the first crop without treatment. By the week ending May 23, larvae per square foot by district ranged: Northwest and west-central 0-320, central 0-480, and east-central and northeast 80-640. Alfalfa weevil can destroy 50-100 percent of the first alfalfa crop anywhere in OHIO. Egg deposition peaked about May 15. By late May there were about 5 larvae per terminal. By early June, many fields had 15 larvae per sweep and frosting damage. Damage ranged from 50 to 75 percent in untreated alfalfa in the southern area. By the end of June, new adults were almost as numerous, about 0.4 per sweep, as overwintered adults.

Alfalfa weevil adults in WEST VIRGINIA ranged from 0.9 per sweep in some western counties to 0.2 per sweep in the eastern counties. Overall alfalfa acreage was smaller than in past years; most stands were mixed clover and alfalfa. Numbers were heaviest in Mason County on a stand of two-year-old alfalfa. Adults were heavy, but damage was light. Damage ranged light to moderate over most of VIRGINIA. Alfalfa weevil has been declining on alfalfa in MARYLAND. Infestation levels in 1969 were the lightest in 15 years, mainly due to increased parasitism. Microctonus colesi (a braconid), B. curculionis, and Tetrastichus incertus (a eulophid wasp) appear to be the major parasites. Although alfalfa weevil populations were noneconomic in April and May, many growers applied stubble sprays after the first cutting. Damage throughout most of DELAWARE was very light on the first crop of alfalfa. Chemical controls were applied to a very few fields in eastern Sussex County. Populations in NEW JERSEY were extremely light. Only 8.5 percent of the growers needed to apply insecticides. A complex of parasitic wasps has been very active. Formerly the major agricultural pest in New Jersey, alfalfa weevil is now of very minor importance. Alfalfa weevil continued a decline which started 4 years ago in eastern PENNSYLVANIA. It is also declining for the first time in the northwest area. Damage was serious in a few widely scattered fields. Larval feeding before mid-May was nil. About 90 percent of the first crop was cut without spray protection; about 10 percent of the second crop received stubble protection. Alfalfa weevil was below normal in CONNECTICUT, and damage was light in unsprayed alfalfa by June 23 in Washington County, RHODE ISLAND.

CLOVER HEAD WEEVIL (Hypera meles) is still a serious pest of crimson clover seed production in central ALABAMA where 3,000+ acres received 1-2 insecticide applications. CLOVER LEAF WEEVIL (H. punctata) damaged some alfalfa in Millard, Salt Lake, Tooele, and Weber Counties, UTAH. SWEETCLOVER WEEVIL (Sitona cylindricollis) severely damaged new seedlings of sweetclover in some areas of northwest MINNESOTA in June. One report indicated 100 percent damage to 3 to 4-inch sweetclover. CLOVER SEED WEEVIL (Miccotrogus picirostris) in IDAHO ranged 2-30 per sweep of white clover at Nezperce, Lewis County, and 10-35 per sweep in 3,000 acres at Bonners Ferry, Boundary County, in early June.

PEA APHID (Acyrtosiphon pisum) remained low on alfalfa in western OREGON. July counts averaged 100 per sweep of mature second-crop alfalfa at Kiger Island, Benton County. From mid-July to September most aphids were parasitized, principally by Aphidius sp. (a braconid), at Corvallis, Benton County. Pea aphid has increased and become widespread in CALIFORNIA. In NEVADA a buildup on alfalfa hay in Clark County in early April declined to low levels by late April due to predators. In July heavy numbers on alfalfa hay in Lyon County required controls. Populations throughout southwest IDAHO were light on seed alfalfa. Some fields had economic numbers ranging up to one cupful per sweep. From July 15 to August 15, outbreaks stunted alfalfa in south-central and eastern areas. Some fields were cut; others were treated. These damaging populations were the largest and most widespread of any in the last 20 years. Numbers were normal or below in many areas of UTAH. During late summer, alfalfa was damaged in Sevier, Sanpete,

San Juan, Cache, Morgan, and Millard Counties. Pea aphid was active in Hot Springs and Washakie Counties, WYOMING, in early May. Populations peaked in late July and then declined. Parasites and predators were effective. A few alfalfa fields were treated in Fremont, Platte, and Washakie Counties.

Pea aphid infestations were occasionally economic in the Pecos and Mesilla Valleys of NEW MEXICO and required treatment. Some problems developed on forage legumes in TEXAS. Numbers in ARKANSAS ranged from 1 to 12-15 per square foot until late February. Counts increased to 3-4 per 10 sweeps in the southwest area, by mid-March and to 10 or more in one sweep of crimson clover in late April and early May. Populations in OKLAHOMA were heavy mostly in the western half of the State during April and May.

Pea aphid caused no appreciable damage even with a buildup in east, southeast, and central districts of NEBRASKA in May and June. Some light damage to alfalfa occurred in the northeast district in mid to late June. Numbers increased gradually through April and May, peaked the third week of May, and then declined. Counts were highest, 2.8-11.5 per sweep, in Lancaster, Thurston, Jefferson, and Saline Counties May 24; 11.7 per sweep was found in Dawson County in late August. About 100 per sweep caused no damage in 3 sweetclover fields in Butler County November 5-6. In SOUTH DAKOTA a buildup, over 400 per sweep, in June damaged alfalfa at Gayville, Yankton County, and Meckling, Clay County. In early July, numbers dropped but still ranged up to 250 per sweep. Lady beetles increased to 2 per sweep, and checked counts in some areas. Pea aphid was economic in Clay, Yankton, Turner, Deuel, Beadle, and other eastern counties. Of 488,660 acres infested, about 250,000 acres were sprayed, mostly in Clay, Yankton, and Turner Counties. In some of the more heavily infested fields, yields from the second crop were reduced 50 percent or more.

Pea aphid ranged up to 500 per sweep on alfalfa in the southern half of MINNESOTA in July. A small acreage was sprayed in the central district. Pea aphid was not economic in WISCONSIN. Up to 50 per sweep infested alfalfa in Rock, Green, Grant, Iowa, and Dane Counties May 2, but half were parasitized. Parasitism increased in Dane and Rock Counties July 11 and more than 5 aphids per sweep in July and August were unusual. Populations averaged 10 per sweep on alfalfa early in September in south-central and southwest counties. About 50 percent parasitism in central counties resulted in 1 aphid per sweep October 24. Pea aphid populations on alfalfa in northern INDIANA ranged from 7-25 per sweep in May to averages of 40-60 per sweep in September. Counts in OHIO remained at 15 or less per sweep until weather turned hot and dry in August. Counts were 20 per sweep by mid-August in the northwest area, 20-50 per sweep by August 31 in the southeast area, and as many as 100 per sweep by September 3 in some northwest area fields. Yellowing ranged light to moderate in a few fields. Heavy pea aphid infestations occurred so late that chemical control was not economic or needed. A decline in the last half of September may have been partly due to wet weather.

Pea aphid caused no economic damage in VIRGINIA. Numbers in MARYLAND began to increase, 1-10 per sweep on alfalfa in late April. Early May brought sharp increases, 40-80 per sweep, in isolated acreages in Dorchester, Harford, Kent, and Washington Counties. Infestations remained light, 5-20 per sweep, in other areas. Counts in DELAWARE averaged 2.5 per sweep in early May. The highest numbers infested New Castle County alfalfa in mid-June. This aphid caused very little injury in NEW JERSEY.

LYGUS BUGS (*Lygus* spp.) in ARIZONA were a year-round problem. Numerous *L. elisus*, *L. hesperus*, and related species damaged seed alfalfa in UTAH. *Lygus* spp. adults and nymphs in southwestern IDAHO often exceeded 300 per 10 sweeps in untreated seed alfalfa during late summer. *Lygus* sp. infestations on WYOMING alfalfa were about equal to those found in 1968. Populations remained noneconomic.

TARNISHED PLANT BUG (Lygus lineolaris) adults in central INDIANA ranged 30-70 per 10 sweeps of alfalfa by May 2. The July, August, and September average for the State was 23 per 10 sweeps, about half of which were adults. Tarnished plant bug was the most abundant, 2-4 per 10 sweeps, and persistent of 4 plant bugs common on alfalfa and clover in OHIO. Adults were low, 0.6-3.9 per 10 sweeps of alfalfa, over most of WEST VIRGINIA. One field in Mason County had 7.7 per 10 sweeps. Numbers should be similar in 1970. Tarnished plant bug caused very little damage in VIRGINIA. Numbers were lighter than in 1968. Abundant on many crops in DELAWARE, tarnished plant bug peaked on alfalfa in mid-July.

MEADOW SPITTLEBUG (Philaenus spumarius) in MINNESOTA was heavier on alfalfa and clover this past season, but numbers were rarely heavy enough to warrant spraying. It was found only in the southeast and east-central districts and eastern edges of the central and south-central districts. Numbers in WISCONSIN were not economic. They were heavier than normal in central counties and lighter than normal in southwestern counties. About 11,500 acres were treated. Meadow spittlebug was not economic in ILLINOIS. Adults in the fall peaked at 23 per 10 sweeps in Winnebago County and 20 per 10 sweeps in Ogle County. Populations in INDIANA were heavier and more widespread in 1969 than in 1968. By May 9 it infested 20-70 percent of the alfalfa stems in the southeast and northeast districts. Controls were recommended in the latter district. In late April, first instars averaged 9 per 10 stems of clover in Floyd County and occurred in trace numbers on alfalfa in Jackson County. Adults in WEST VIRGINIA ranged 7-17 per 100 sweeps in the eastern counties in mid-July, and 5-25 per 100 sweeps in the western counties. Damage ranged light to moderate over much of VIRGINIA. Infestations were lighter than in 1968. Alfalfa in MARYLAND did not need much control. Red clover needed controls in two 60-acre fields in Queen Annes County. Numbers throughout PENNSYLVANIA are increasing. Damage approached the economic threshold in some fields. Although numbers were not economic throughout NEW JERSEY, they were more abundant than at any time in the last 5 years. Numbers were light on alfalfa June 23 in Washington County, RHODE ISLAND.

ALFALFA PLANT BUG (Adelphocoris lineolatus) remained noneconomic on alfalfa in WYOMING. In WISCONSIN it was not economically important on forage legumes. About 2,300 acres were treated for plant bugs, of which this was the most numerous species. Late instars ranged 40-170 per 10 sweeps in alfalfa in the northern half of INDIANA by June 6. July to September averages dropped to 16 per 10 sweeps. The following plant bugs were 3 of 4 plant bugs common on alfalfa and clover in OHIO. RAPID PLANT BUG (A. rapidus) adults became numerous the last week of May. Counts averaged about 10 per 10 sweeps in southern and southeastern areas. MEADOW PLANT BUG (Leptopterna dolabrata) adults became numerous the last week of May, averaging 10 per 10 sweeps in some fields. A. lineolatus adults became prevalent the last week of July. Averaging 8-10 per 10 sweeps, adults peaked about August 5 in Ohio.

ALFALFA CATERPILLAR (Colias eurytheme) adults were heavy in eastern WASHINGTON in late summer, particularly in Whitman County. Larval damage was scarce. It is still a pest of alfalfa in scattered locations of CALIFORNIA. Larvae in ARIZONA infested alfalfa during July in Cochise and Yuma Counties. Numbers were heavy in Pima, Pinal, and Maricopa Counties. Larvae began building up on second-crop alfalfa in the Mesilla Valley and along eastern NEW MEXICO from Eddy County to Quay County. In July and August many growers cut early or treated. Infestations were more severe and general than in the past 10 years. In COLORADO, larvae ranged up to 1,800 per 100 sweeps of alfalfa in the Arkansas Valley, mainly in Bent and Prowers Counties, in late July and early August. Heavy populations, 0-50 per 100 sweeps, were scattered. Light numbers, 0-20 per 100 sweeps, occurred in north-eastern and east-central areas. Damage ranged light to moderate, heavier in isolated areas. Light numbers occurred in UTAH.

BEET ARMYWORM (Spodoptera exigua) and other cutworms damaged alfalfa and clover in CALIFORNIA. S. exigua larvae in ARIZONA infested alfalfa all year. High numbers occurred in April, May, and August in Yuma County. Controls were needed. FALL ARMYWORM (S. frugiperda) ranged moderate to heavy on alfalfa in the western half of OKLAHOMA, except in the panhandle, from early September to mid-October. Numbers were heavy in the southeastern area in early November.

These noctuids were troublesome in the western area. WESTERN YELLOW-STRIPED ARMYWORM (Prodenia praefica) damaged alfalfa in WASHINGTON. P. praefica in IDAHO ranged up to 2 per square yard of alfalfa and sweetclover at Lewiston, Nez Perce County, in early July. Seedling alfalfa was about 50 percent defoliated. ZEBRA CATERPILLAR (Ceramica picta) was light on alfalfa in Churchill, Douglas, and Pershing Counties, NEVADA, from July through October. Numbers increased noticeably on alfalfa hay in Lyon County in mid-September. Half-grown to full-grown larvae were heavy by late September and early October. Cutting the third crop was a control measure; no chemicals were applied. The infested area in Lyon County was twice as large as that of 1968. CABBAGE LOOPER (Trichoplusia ni) treatments in ARIZONA were required on alfalfa in September and October at Yuma, Yuma County. This was probably the most difficult insect to control in 1969.

Other Lepidoptera were also troublesome. Originally found at Lincoln, Placer County, CALIFORNIA, EUROPEAN CLOVER LEAF TIER (Mirificarma formosella) now occurs in Butte, Nevada, Yuba, Sutter, El Dorado, and Sacramento Counties. It seriously damages many clovers. This was a new Western Hemisphere record. OMNIVOROUS LEAF TIER (Cnephasia longana) was unusually heavy on crimson clover this spring in the Willamette Valley of OREGON. Numbers appear to have been much heavier than in the last few years, especially in Marion and Washington Counties. A WALSHIID MOTH (Walshia miscocolorella) appears to be increasing in eastern NEBRASKA. Damage to sweetclover was very apparent in 1969. Gage, Seward, Butler, Colfax, and Dodge Counties were new county records. EUROPEAN CORN BORER (Ostrinia nubilalis) in CONNECTICUT was extremely heavy, the worst in years.

Economic numbers of FIELD CRICKETS (Gryllus spp.) in SOUTH DAKOTA damaged uncut alfalfa in southeastern Tripp County the first week of July. Counts ranged 5-10 second and third instars per square yard on blooming alfalfa. RED-LEGGED GRASSHOPPER (Melanoplus femurrubrum) and MIGRATORY GRASSHOPPER (M. sanguinipes) slightly damaged alfalfa seedlings in west-central WISCONSIN August 1. Dry, sometimes hot weather late in July and throughout August favored grasshopper development. Numbers were heavy August 29 in alfalfa on light soils in Washburn, south-central, southwestern, west-central, and central counties; some fields had 30 per square yard. Feeding was heavy on soybeans in some Lafayette County fields. Damage statewide was insignificant. Numbers have been increasing slightly the last 3 years. About 5,500 acres were treated.

ALFALFA SEED CHALCID (Bruchophagus roddi) was lighter in NEVADA than in 1968 and much lighter than 1967 when a high of up to 20 percent loss occurred in Humboldt, Lander, and Pershing Counties. Infestations in UTAH were almost normal.

WESTERN FLOWER THRIPS (Frankliniella occidentalis) in UTAH was very numerous in blooming alfalfa in Millard, Tooele, Box Elder, and Utah Counties. A SPRINGTAIL (Sminthurus dorsalis) ranged up to 250 per 100 sweeps in irrigated alfalfa in Oliver County, NORTH DAKOTA, for a new State record. No damage was evident.

PACIFIC SPIDER MITE (Tetranychus pacificus) ranged medium to heavy on seed alfalfa in Humboldt County, NEVADA, in July. Controls were needed on 4,000+ acres, 3 times the acreage treated in 1968. SPIDER MITES (Tetranychus spp.) were widespread on seed alfalfa in southwestern IDAHO. Many fields required treatment in July and August. TWO-SPOTTED SPIDER MITE (T. urticae) reduced seed yields in 18 acres near Nampa, Canyon County, in early September. Overwintered populations of CLOVER MITE (Bryobia praetiosa) were active at Homedale, Owyhee County, in late April; at Nezperce, Lewis County, April 30; and at Gooding and Wendell, Gooding County, May 9.

SOYBEANS

Highlights:

Larvae of several NOCTUID MOTHS caused some damage in soybean-growing areas. MEXICAN BEAN BEETLE damaged occasional fields in Indiana and a few fields in Virginia and Alabama. BEAN LEAF BEETLE was heavy in some counties in Alabama. THRIPS caused some injury in Delaware.

Although BEET ARMYWORM (Spodoptera exigua) seldom occurs in ARKANSAS, it infested most soybean fields in the southern half of the State in 1969. Counts became lighter the farther north infestations occurred. The highest count was 63 on 30 row feet September 3 in Lafayette County. Combined with Heliiothis zea (corn earworm) treatments, control for beet armyworm did not add extra costs. Infestations of Pseudoplusia includens were more general and heavier than in many years. Virus and fungus diseases did not prevent buildup. Infestations of FALL ARMYWORM (S. frugiperda) were heavy in Brazos and Burleson Counties, TEXAS, in mid-September. GREEN CLOVERWORM (Plathypena scabra) larvae increased to 136 per 100 sweeps on plots in Nansemond County, VIRGINIA, in September. Mixed larval populations of CABBAGE LOOPER (Trichoplusia ni) and Pseudoplusia includens were moderate to heavy during August on 30 to 60-acre plantings of soybeans in the Levy and Alachua County areas of FLORIDA. In ALABAMA, green cloverworm larvae caused considerable ragging of soybean leaves throughout the State. The extent of damage is questionable. Mixed populations of Cabbage looper and P. includens were observed in the coastal counties and in lesser counts in central and northern areas. P. includens was the predominant species. Beet armyworm larvae were damaging to soybeans in Muskogee and Choctaw Counties, OKLAHOMA; and fall armyworm damaged soybeans in Le Flore and McCurtain Counties during September. Green cloverworm larvae were severe in many southeastern KANSAS soybean fields in late summer. Numerous fields were treated.

VELVETBEAN CATERPILLAR (Anticarsia gemmatalis) larvae caused heavy defoliation of soybeans at Gainesville, Alachua County, FLORIDA, during September. This pest was reported in numerous but isolated fields in coastal ALABAMA, with heavier counts in the extreme southwest area. Infestations were noted north into Dallas, Montgomery, and Lee Counties but were not serious. Larvae were light on late soybeans in many counties of middle and west TENNESSEE. No appreciable damage was observed. Although velvetbean caterpillar rarely occurs in ARKANSAS, it was heavier and more widespread than previously known. It infested soybeans in the southern 60 percent of the State. Infestations became progressively lighter the farther north they occurred. The highest count was 52 on 30 row feet September 3 in Lafayette County. Larvae fed on foliage but were not economic. Drought in Lafayette and Conway Counties reduced yields so drastically that controls were not applied. Velvetbean caterpillar was heavy on soybeans in Wagoner County, OKLAHOMA in mid-September.

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) seriously damaged young soybeans in a few fields in southern ALABAMA, mainly in Covington County. YELLOW WOOLLYBEAR (Diacrisia virginica) damaged occasional fields of soybeans in Hall, Fillmore, Seward, Saunders, Burt, and Colfax Counties, NEBRASKA. Defoliation ranged up to 65 percent in 1 Colfax County field, but was generally less than 5 percent elsewhere in the State.

MEXICAN BEAN BEETLE (Epilachna varivestis) caused the usual heavy damage to scattered fields in south-central and southeast INDIANA. Affected areas did not increase. In MARYLAND, this pest defoliated 20-40 percent of 900 acres of soybeans in Prince Georges, Charles, Worcester, and Somerset Counties. There was less than 10 percent injury. No controls were required in other sections. Economic

damage was observed in only a few fields in Nansemond, Southampton, Isle of Wight, Surry, and Sussex Counties in VIRGINIA. Populations were very light during the summer. Mexican bean beetle was a serious pest in isolated soybean fields in southwestern ALABAMA, but counts were lower elsewhere.

BEAN LEAF BEETLE (*Cerotoma trifurcata*) populations were heavy in several Blackbelt counties in ALABAMA, especially Greene, Sumter, and Marengo where 50 or more percent of leaves were destroyed in some soybean fields. Adults were light throughout MARYLAND, rarely exceeding one per yard. No controls were applied. This pest caused practically no damage in VIRGINIA. Bean leaf beetle was present in soybeans and alfalfa throughout the season in NEBRASKA. Overwintering populations appeared to be heavier than normal. Counts ranged 10-15 per 20 sweeps in 1 Lancaster County alfalfa field on May 24. Feeding damage was observed on soybeans in June. Damage was still well below the economic level. Adults averaged about 4 per 20 sweeps on soybeans in Saunders County in June. In OKLAHOMA this species damaged late maturing soybeans in McCurtain County in late November.

Larvae of a GRAPE COLASPIS (*Colaspis* sp.) caused light damage to roots of soybeans in northeast ARKANSAS for the first report in several years. Larvae of a CERAMBYCID BEETLE (*Dectes* sp.) infested about 500 acres in Dunklin and Pemiscot Counties, MISSOURI, during September. They infested 45-75 (averaged 50) percent of the plants. It was noted feeding in all southeastern counties.

SOUTHERN GREEN STINK BUG (*Nezara viridula*) and BROWN STINK BUG (*Euschistus servus*) continued to be a problem on soybeans in FLORIDA. These two stink bugs infested soybeans after pod development in coastal ALABAMA, but damage was less than in several years. Southern green stink bug approached but did not exceed the economic threshold on soybeans in VIRGINIA until September. Damage to bean quality ranged light to moderate.

THREE-CORNERED ALFALFA HOPPER (*Spissistilus festinus*) was common on soybeans at Gainesville, Alachua County, and moderate on 25 acres of this crop at Freeport, Walton County, FLORIDA. These infestations resulted in withering of stems.

SEED-CORN MAGGOT (*Hylemya platura*) damaged seeds in portions of fields in 2 north-central counties of INDIANA in mid-June. Maggots infested the original and replacement plantings.

GRASSHOPPERS (*Melanoplus* spp.) infested marginal rows in ILLINOIS but damage was slight. The adult survey showed an increase that, with favorable weather, could indicate a serious problem by 1970. This area is south of a line from Rock Island, Rock Island County, to Champaign, Champaign County. Adults in this area ranged from 1.0 to 10.3 per square yard. Most of the populations, although higher than in 1968, indicate a light infestation for 1970.

Several species of THRIPS were very abundant on soybeans during mid to late June in DELAWARE causing much injury. Insecticides were required on some fields. Thrips ranged 5-15 per leaf on 6 to 8-inch plants in Dorchester, Wicomico, Caroline, Prince Georges, and Charles Counties, MARYLAND, in mid-June. Timely controls in late June prevented possible defoliation of large acreages in Dorchester and Wicomico Counties. Most fields had recovered from earlier damage by July 18.

TWO-SPOTTED SPIDER MITE (*Tetranychus urticae*) was generally light on soybeans over NEW JERSEY although several fields required controls. STRAWBERRY SPIDER MITE (*T. turkestanii*) infestations on soybeans in MARYLAND were probably the lightest on record in 1969 due to the unusually wet summer.

PEANUTS

Larvae of several NOCTUIDS were troublesome on peanuts in several States, and control was difficult in some areas. GRANULATE CUTWORM (*Feltia subterranea*) fed heavily on a 29-acre planting in southern Columbia County, FLORIDA, in July. The planting was treated several times. In August, larvae of *Prodenia dolichos* were severe on a 50-acre planting at Lake City, Columbia County, and were common on peanuts at Blountstown, Calhoun County. In southeast ALABAMA, *F. subterranea* was a major pest in many fields. About 25 percent of the 183,000 acres of peanuts in the area was treated. Control was difficult. BEET ARMYWORM (*Spodoptera exigua*) larvae first damaged peanuts in a 100-acre field in Barbour County, ALABAMA, the first week of August. Controls were difficult. This pest was lighter in mixed populations with other leaf feeders in most of the acreage in the 9-county growing area in the southeast part of the State. FALL ARMYWORM (*S. frugiperda*) damaged peanuts in Roosevelt County, NEW MEXICO, from August 15 to first frost in October. About 1,200 acres were treated.

LESSER CORNSTALK BORER (*Elasmopalpus lignosellus*) larvae heavily infested 40 acres of peanuts at Sparr, Marion County, FLORIDA, during late summer. This pest damaged peanuts throughout southeast ALABAMA. Counts were moderate to occasionally heavy in east-central, southeast, and south-central OKLAHOMA in August and September. Lesser cornstalk borer infestations in TEXAS were heavy in wide portions of central, south-central, and the Cross Timber areas. Damage in most areas was particularly heavy, and controls were required.

RED-NECKED PEANUTWORM (*Stegasta bosqueella*) larvae were very light in most areas of OKLAHOMA most of the season. Mostly minor damage occurred in Roosevelt County, NEW MEXICO.

SPOTTED CUCUMBER BEETLE (*Diabrotica undecimpunctata howardi*) damage was widespread and ranged light to medium in Nansemond, Southampton, and Isle of Wight Counties, VIRGINIA.

THRIPS were heavy during spring in VIRGINIA. Foliage was damaged in untreated fields and also in fields treated with systemic insecticides. Lack of control was probably due to dry spring weather. TOBACCO THRIPS (*Frankliniella fusca*) occurred in damaging populations throughout the 9-county peanut-growing area of ALABAMA. Controls were required.

COTTON

Highlights:

BOLL WEEVIL caused serious damage in Arkansas, Mississippi, and Alabama. BOLLWORMS were major pests in Alabama and Arkansas, and caused concern in other States. BEET ARMYWORM was difficult to control in Arkansas and Arizona. CABBAGE LOOPER was a problem to control in Arizona. SPIDER MITES were more serious in Alabama than in 1968.

BOLL WEEVIL (*Anthonomus grandis*) infestations were spotted and heavy in the Coastal Bend, south-central, Blacklands, Rolling Plains, and Trans-Pecos areas of TEXAS during 1969. Several diapause control programs were initiated in the Coastal Bend area with considerable success. Reduction in the number of boll weevils going into diapause was noted at the end of the cotton season. Boll weevil infested cotton from early July through October in OKLAHOMA, and was heavy in several southwest and west-central counties during August and September. This pest ranged light to moderate in most other areas of the State during the same period. Boll weevil populations were very low in MISSOURI again in 1969. The heaviest infestation was located in the extreme southwest corner of Dunklin County.

Lighter infestations occurred along the western edge of Dunklin and Stoddard Counties and scattered areas of Butler County. Controls were applied to 500 acres. Boll weevil is the second most important pest of cotton in ARKANSAS. It infested 71 percent (76 percent in 1968) of the fields by late summer. At the peak of infestation 30 percent (23 percent in 1968) of the fields were above treatment level. Boll weevil, BOLLWORM (*Heliothis zea*), and TOBACCO BUDWORM (*H. virescens*) accounted for 95 percent of the total cotton insect control cost of \$8.5 million in 1969. Boll weevil diapause control programs are now underway in Chicot, Lee, Lafayette, Pulaski, Faulkner, Conway, Pope, and Yell Counties. First boll weevils of the season in MISSISSIPPI were collected on 4 to 5-leaf cotton in Yazoo County in late May. Infestations began increasing steadily in July. Maximum infestations were reached in late August. Boll weevils were collected as late as September 5. The loss to cotton in Mississippi for 1969 is estimated at \$32 million, excluding control costs. Boll weevil was difficult to find in west TENNESSEE by June 20; however, feeding signs in terminal buds were easily detected. Some feeding and egg laying punctures were found in older cotton the week ending June 27. Control for overwintering weevils began about this time. Square counts indicated that about 14 percent of the squares were punctured in the regularly weevil infested range in mid-July. Most infestations were spotty. From mid-July to late July, there was a lull between overwintering and first-generation weevils. First generation peaked about August 1, and short distance migration was noted. Migration to rank cotton continued throughout August, and much damage to small bolls was noted. Conditions were ideal for increase in early September. Migration to uninfested counties to the north was observed. The southern tier of counties in west Tennessee was generally infested by this time. Control was effective, and the only major damage was in fields where no controls were used. Boll weevil was heavy and damaging throughout ALABAMA. Migration from overwintering sites to fields occurred later than in 1968. First adults were reported May 6 in Monroe, Henry, Dallas, and Houston Counties. First boll weevils in the northern area were taken in a wing trap in Limestone County on May 12. The first field occurrence was noted in a nearby field May 13. Adults emerging from hibernation were heavy throughout south and central Alabama. Heavy populations developed northward to Marion, Jefferson, and Randolph Counties in June and July as a result of the first generation. These populations were much lighter in the northern area and most growers did not need to apply insecticides during first field generation "hatchout" in late July and August. Populations thereafter became damaging throughout most of the State. Eighty percent or more of cotton acreage received 8-18 applications of insecticide in the south and central areas and about 2-6 in most of the northern area. Populations entering hibernation in the fall were heavy statewide.

For Boll Weevil in the Texas High Plains and Boll Weevil Complex see CEIR 20(8):85.

BOLLWORM (*Heliothis zea*) and TOBACCO BUDWORM (*H. virescens*) were major pests of cotton throughout ALABAMA following a buildup of 2 or more generations on clover, vetch, and corn. Bollworm and tobacco budworm infested cotton as early as June 20 in the delta and other areas of MISSISSIPPI. Populations began increasing in July and reached 20 percent in some Attala County fields during late August. Moderate to heavy counts were still present on green cotton in Oktibbeha County in early October. Loss was estimated at \$8 million. Larvae were first found in west TENNESSEE the week ending June 6 on seedling cotton. By the first of July, eggs and larvae occurred in all fields. Much damage was observed throughout the western area in July. Damage continued into August, especially in rank cotton. In early September damage was heavy to all stages of fruit growth in rank cotton. Bollworm is the major pest of cotton in ARKANSAS. Populations were the heaviest since 1963. Early moth and larval counts were very light, but by late August, 84 percent of the fields surveyed were infested. Phosphate resistance was exhibited in populations tested from Lafayette and Jackson Counties, and resistance is suspected in other areas. Tobacco budworm was more widespread in 1969 than in 1968. *H. virescens* made up 8.5 percent of the *Heliothis* larval population in the State. In the southwest area it comprised 21.6 percent of the population in 1969 compared with 67 percent in 1968. The percentage of *H. virescens* in the southeastern area was the highest ever observed in this area, with 34-36 percent in Desha

County in late August and early September. These species and BOLL WEEVIL (Anthonomus grandis) accounted for 95 percent of the total cotton insect control cost of \$8.5 million. In MISSOURI, bollworm and tobacco budworm began a slow buildup in mid-July that continued until harvest. By the third week of August, 80 percent of the fields were infested. Controls were applied to 33.7 percent (5,732 acres) of the acreage scouted. This included the acreage requiring more than one application. Bollworm infested cotton from mid-July through October in OKLAHOMA. Infestations ranged light to moderate in most areas during the season. A few heavy infestations occurred in the south-central area in late August and September. Bollworm and tobacco budworm were detected throughout the cotton-growing areas of TEXAS. Generally, infestations were somewhat lighter than during 1968. Infestations in the High Plains were very heavy and damage was reported during 1969. Bollworm populations were heavy in NEW MEXICO, and caused extensive damage to bottom and middle bolls in Hidalgo, Luna, and Dona Ana Counties, as well as in most eastern counties. Treatment of infested fields was required. In ARIZONA, H. zea was light to moderate in some fields during August, September, and October in Maricopa, Pima, and Pinal Counties. Late July infestations damaged a few fields in Yuma County. H. zea caused about normal damage in CALIFORNIA.

BEET ARMYWORM (Spodoptera exigua) larvae were reported light on 2 to 5-leaf cotton May 5 in Henry, Monroe, Dallas, and Autauga Counties, ALABAMA, and in Madison County May 13. Damage to squares, blooms, and bolls became more widespread than previously recorded in the State. This species did not become a major cotton pest and specific controls were not necessary. Seldom a pest of cotton in ARKANSAS, beet armyworm was much heavier than previously. In the southern half of the State, populations increased southward so that counts were highest in the southernmost area. No control costs were added as cotton was treated for other pests. Controls used gave unsatisfactory results for this pest. Problems were encountered in controlling beet armyworm infestations on young squaring cotton in August in Maricopa and Pinal Counties, ARIZONA. Larvae caused much damage to cotton in most areas of CALIFORNIA.

CABBAGE LOOPER (Trichoplusia ni) was heavy in some fields in Pinal and Yuma Counties, ARIZONA, during August and September. Controls were difficult in solid planted cotton. This was probably the most difficult insect to control in 1969. Cabbage looper became a problem in cotton in NEW MEXICO during summer. Populations ranged from light to extremely heavy. Defoliation was almost complete in heavily infested fields when uncontrolled. Larvae caused scattered damage to cotton late in season in OKLAHOMA, especially in the southwest area in late September. Infestations were light in August and caused no major problems in west TENNESSEE. Virus-infected larvae were found in all fields checked from August to mid-September. In ALABAMA, T. ni and Pseudoplusia includens began appearing in cotton about June 15 but were not noticeable on leaves until August 15. Some controls were applied for these pests in the northern areas.

COTTON LEAFWORM (Alabama argillacea) was found infesting cotton in Tuscaloosa and Mobile Counties, ALABAMA. This was the first report of the pest in the State for the past 2-3 years. No economic damage was reported. STALK BORER (Papaipema nebris) larvae infested several fields of cotton in TENNESSEE in late June. Infestations usually occur much later in the season. Larvae were found in 75 percent of the stalks on the outer edge of a field in Dyer County in late June. Heavy damage was isolated throughout the season.

COTTON LEAF PERFORATOR (Bucculatrix thurberiella) was again severe on desert cotton and was very difficult to control in CALIFORNIA. The major trouble area in ARIZONA was Yuma County where sprays were repeated numerous times. Moderate to heavy counts occurred from mid-July through October. Generally, populations were light in other cotton counties. Heavy populations developed in mid-September in a few fields in Maricopa and Pinal Counties but dropped to noneconomic levels when heavy rains occurred. In NEW MEXICO, cotton leaf perforator had been found only occasionally prior to 1969. The pest started to build up and damage cotton foliage

in Dona Ana and Eddy Counties just prior to frost, but damage was not economic. This Lyonetiid was found on cotton in many counties throughout south, central, and east TEXAS, as well as many counties in the Trans-Pecos area in 1969. Infestations were reported from Gaines, Andrew, and Martin Counties in late September and early October. Infestations were also observed in Houston County. The pest was detected in Brazos and Burleson Counties in September and October. Adults of cotton leaf perforator were collected on cotton at Vero Beach, Indian River County, FLORIDA, for a new State record.

EUROPEAN CORN BORER (Ostrinia nubilalis) larvae infested bolls and stalks in MISSOURI. Damage was lighter than in the past 2 or 3 years, due to early cotton harvest.

TARNISHED PLANT BUG (Lygus lineolaris) caused light damage throughout the growing season to pinhead squares in west TENNESSEE. L. lineolaris, Neurocolpus nubilus, and COTTON FLEAHOPPER (Pseudatomoscelis seriatus) are the principal plant bugs infesting cotton in ARKANSAS. L. lineolaris and N. nubilus damaged young bolls during August in the extreme northeastern area the past two years. About 5 percent of the cotton was treated for all plant bugs in early August 1969. P. seriatus, L. lineolaris, and RAPID PLANT BUG (Adelphocoris rapidus) infested as much as 100 percent of the scouted acreage at one time during the growing season in MISSOURI. Plant bugs, although present in most fields throughout the growing season, reached economic levels in very few fields. Control measures were applied to only 449 acres. P. seriatus infested cotton plants from late June through August in OKLAHOMA. Infestations were moderate to heavy on cotton in most south-central, southwest, and west-central counties during July and August. LYGUS BUGS (Lygus spp.) infestations remained light on cotton in NEVADA.

A LARGID BUG (Largus succinotus) infested cotton in TENNESSEE in July. This was the first record of the species in the State.

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) and other SPIDER MITE infestations in ALABAMA were largely confined to the central and northern areas. Although not so severe as from 1957 through 1962, they were more serious pests during this dry season than in 1968 or for the past 4-5 years, especially in the central area. The widespread use of preplant systemic insecticides contributed to early and midseason suppression of infestations. Spider mites began to increase in early July in west TENNESSEE. Most infestations were found in spots on the borders of cotton fields in July. Infestations became more general throughout the area during August, and caused several fields to mature by September. Only spot treatments were applied for spider mites in many cases in ARKANSAS. Less than 1 percent of the fields required treatment. Spider mites, mainly STRAWBERRY SPIDER MITE (T. turkestanii), infested 15.2 percent of the scouted cotton acreage in MISSOURI. Spot and strip treatments were effective and few fieldwide applications were made. Spider mites were a minor problem in NEVADA, and were generally not so damaging as in 1968 in CALIFORNIA.

Early populations of COTTON APHID (Aphis gossypii) on untreated cotton in ALABAMA ranged 1-50 per plant on 2 to 4-leaf cotton throughout the State. Controls were accomplished in 10-20 days by large numbers of Hippodamia convergens (convergent lady beetle) and other predators. Some discoloration of lint occurred in isolated fields late in the season due to sooty mold growing on honeydew residues from aphids feeding on top leaves. Only isolated infestations of cotton aphid occurred on seedling cotton in MISSOURI. Beneficial insects kept all populations under control. Treatment was made to 81 acres.

THRIPS, mainly TOBACCO THRIPS (Frankliniella fusca) and FLOWER THRIPS (F. tritici), infested cotton in ALABAMA. Infestations occurred especially during the 2 to 6-leaf stages. Controls were quite general in the northern area and southward into much of the central area. In MISSOURI, F. fusca, F. tritici, and Sericothrips variabilis were widespread and extremely heavy, but cotton was past the 4-leaf

when greatest pressure was exerted. Controls were applied on 9,102 of the 17,005 acres scouted. The acreage treated included 4,229 acres to which systemic insecticides were applied at planting time. Frankliniella spp. were found in cotton in OKLAHOMA in June and July. Infestations were heavy in a few areas in south-central, southwest, and west-central counties.

TOBACCO

Highlights:

TOBACCO FLEA BEETLE was troublesome in several States. Infestations in Florida were the heaviest on cigar-wrapper tobacco since 1962. CUTWORMS damaged young cigar-wrapper transplants and CABBAGE LOOPER infestations were the heaviest since 1966 in Florida. BUDWORMS were heavy in Maryland, and controls were effective against GREEN PEACH APHID in the State. WIREWORM damage was the worst in several years in Washington County, Virginia.

TOBACCO FLEA BEETLE (Epitrix hirtipennis) was generally light on flue-cured tobacco in FLORIDA. However, local infestations were heavy, with up to 150 adults per leaf. Populations on cigar-wrapper tobacco were the heaviest since 1962. Damage was light due to controls. This flea beetle damaged tobacco in several areas of TENNESSEE during July. In MARYLAND, isolated heavy infestations of tobacco flea beetle were encountered in Charles, Prince Georges, Anne Arundel, and Calvert Counties. Counts ranged 3-8 per plant on newly set tobacco early in the season. Controls were required in several fields. Generally, populations remained light to moderate and were below economic levels. Tobacco flea beetle caused light to medium damage to tobacco in most areas of VIRGINIA.

CUTWORMS, mostly GRANULATE CUTWORM (Feltia subterranea), caused moderate to severe damage to young transplants of cigar-wrapper tobacco in FLORIDA. During midseason, larvae were observed climbing stalks and the crop was severely damaged in some fields. CABBAGE LOOPER (Trichoplusia ni) larvae increased on flue-cured tobacco in the State, and caused moderate damage. Infestations ranged moderate to heavy on cigar-wrapper tobacco, and were the heaviest since 1966. The second brood was more damaging than the first brood. HORNWORMS (Manduca spp.) rarely exceeded 1-3 per 50 tobacco plants in Prince Georges, Charles, Anne Arundel, Calvert, and St. Marys Counties, MARYLAND. The second brood, which infested mature tobacco, showed 10-100 percent parasitism by Apanteles congregatus (a braconid). Controls were not applied. Manduca spp. were light on tobacco in Pittsylvania and Halifax Counties, VIRGINIA. Spray practices allowed very little damage.

BUDWORMS (Heliothis spp.) reached economic levels on tobacco in August and required controls in Prince Georges and Calvert Counties, MARYLAND. About 800 acres of tobacco were sprayed. Most growers were harvesting when the infestations peaked in late August and early September, so most fields were not sprayed. Heavy counts developed on secondary growth after harvest in Charles, Prince Georges, and Calvert Counties and provided a heavy overwintering population in these areas.

POTATO TUBERWORM (Phthorimaea operculella) infestations increased slightly over those of 1968 on tobacco in FLORIDA, but only light damage was noted.

GREEN PEACH APHID (Myzus persicae) was effectively controlled on most of the 33,000 acres in tobacco in MARYLAND by the use of a systemic insecticide. Populations in VIRGINIA steadily increased until August. Then moderate to severe damage occurred in Pittsylvania and Halifax Counties and in other parts of the southern Piedmont.

Several pests were of some concern on tobacco in VIRGINIA. Damage by DIFFERENTIAL GRASSHOPPER (Melanoplus differentialis) ranged moderate to severe in Washington, Scott, Russell, and Lee Counties following drought. TOBACCO THRIPS (Frankliniella fusca) stunted some plants in Pittsylvania and Halifax Counties, but economic damage was minor. Unspecified WIREWORMS caused light damage to tobacco in these counties as well as in other parts of the southern Piedmont, but were locally in the southwest part of the State. Damage in Washington County was the worst reported in several years.

SUGARBEETS

Highlights:

SUGAR-BEET ROOT MAGGOT was widespread in southern Idaho, and sugarbeet losses in Colorado were moderate. Controls were applied to about 15,000 acres in North Dakota. BEET ARMYWORM was a problem in sugarbeets in Oregon, California, and Arizona.

SUGAR-BEET ROOT MAGGOT (Tetanops myopaeformis) was known to be damaging in limited areas of Minidoka and Bingham Counties, IDAHO, prior to 1969. Infestations became more widespread this season in the southern area and were economically important in 12 southern counties. Larvae were collected June 6 and 13 from 3 Pleasant Valley fields where early instars scoured sugarbeet surfaces and cut off the tips of the young roots. This pest was present but apparently normal in UTAH. In COLORADO, sugar-beet root maggot infested sugarbeets in Weld, Larimer, and Boulder Counties and has possibly spread to Morgan County. Populations were moderate to heavy. Damage was heavy in many fields and losses were moderate. This pest increased in WYOMING. Adults were first noted in late May in Hot Springs County. Damage was heaviest in Park and Washakie Counties. Few controls were applied. First adults of the season in NORTH DAKOTA appeared in Pembina and Walsh Counties June 5. Emergence was prolonged for 6 weeks due to cold, cloudy weather. Peak fly emergence occurred about June 27. Maggots were found on June 20. Maggots ranged up to 100 (averaged 20) per root. About 15,000 acres were aerially sprayed 1-6 times with an inorganic phosphate. Most fields had a higher beet yield than last year.

SPINACH LEAF MINER (Pegomya hyoscyami) infested most sugarbeet fields throughout southern IDAHO early in growing season. In one field an average of 5 eggs per plant was recorded at Caldwell, Canyon County, May 13. This pest was common and at normal levels in UTAH. Injury in WYOMING was common but noneconomic. Adults were first noted in late May in Goshen County.

WESTERN YELLOW-STRIPED ARMYWORM (Prodenia praefica) larvae damaged sugarbeets in WASHINGTON, BEET ARMYWORM (Spodoptera exigua) larvae damaged seed plants in OREGON near Central Point, Jackson County. In mid-September larvae infested 10-20 percent of about 100 acres of 1 to 3-inch sugarbeet seedlings. Control was difficult. This species was a major pest of sugarbeets in CALIFORNIA. Larvae of this noctuid damaged young seedlings from late September into mid-October in ARIZONA. Up to 3 treatments were applied in Maricopa and Pinal Counties, PALE WESTERN CUTWORM (Agrotis orthogonia) infestations resulted in retreatment and replanting of some sugarbeet fields in Goshen and Platte Counties, WYOMING.

WEBWORMS (Loxostege spp.) damaged sugarbeets in Scotts Bluff County, NEBRASKA. Egg hatch was observed June 10, but larval development was delayed by cold weather in mid-June. Damage continued into July. BEET WEBWORM (L. sticticalis) larvae were heavy throughout eastern COLORADO. Damage was light, except in a few isolated fields where controls were applied. Loxostege spp. infestations were light in UTAH this season.

A CARRION BEETLE (Silpha bituberosa) larvae and adults damaged some sugarbeets in Hot Springs, Park, and Washakie Counties, WYOMING, in late May. Controls were effective, but some fields had to be replanted.

WESTERN BLACK FLEA BEETLE (Phyllotreta pusilla) was found in damaging populations during early May in Pasadena Basin near Glenns Ferry, Elmore County, IDAHO.

GREEN PEACH APHID (Myzus persicae) winged adults were first found on sugarbeets in IDAHO on May 13 at Marsing, Owyhee County. The incidence of beet yellows was much greater than in 1969. This aphid was common on this crop in UTAH. Green peach aphid was very prevalent on sugarbeets in CALIFORNIA and caused some damage. Beet yellows was not so heavy as in 1968. This aphid required controls in Curry County, NEW MEXICO.

BEAN APHID (Aphis fabae) counts on sugarbeets in Saginaw and Bay Counties, MICHIGAN, were high. Empusa fungus kept populations in check. SUGAR-BEET ROOT APHID (Pemphigus populivivae) infestations were apparently normal in UTAH.

MISCELLANEOUS FIELD CROPS

Larvae of BANDED SUNFLOWER MOTH (Phalonia hospes) and SUNFLOWER MOTH (Homoeosoma electellum) in NORTH DAKOTA ranged up to 47 (averaged 2.4) per head on sunflowers in Cass, Grand Forks, Steele, and Traill Counties. Larvae infested half of the heads in 95 percent of the fields. Banded sunflower moth comprised 95 percent of the larval population. H. electellum moths were detected in most sunflower-growing regions of TEXAS during 1969. Larvae ranged light to heavy throughout the central area, and moderate to heavy on the High Plains in mid-August.

Larvae and pupae of a MINT FLEA BEETLE (Longitarsus waterhousei) in WASHINGTON were noted in a 50-acre field June 16 at Kelso, Cowlitz County. SUNFLOWER BEETLE (Zygogramma exclamationis) in NORTH DAKOTA lightly infested sunflowers in Cass, Steele, Traill, Grand Forks, Walsh, and Pembina Counties. By July 11, up to 7 adults per 100 plants were present. By July 25, up to 5 larvae per plant were present. WIREWORMS damaged sunflowers in Wilkin County, MINNESOTA. Damage ranged from stand reduction to completely destroyed fields. All damaged fields had been in sod or soil bank before 1969. Heavy numbers of CARROT BEETLE (Bothynus gibbosus) damaged sunflowers in Lubbock County, TEXAS, in mid-August.

LYGUS BUGS (Lygus spp.) damaged safflower plantings and were more general than previously in CALIFORNIA. Lygus elisus, L. hesperus and Lygus spp. were unusually numerous on sunflowers in UTAH during late summer.

GRASSHOPPERS caused much damage to 500 acres of peppermint near Longview, Cowlitz County, WASHINGTON, in June. TWO-SPOTTED SPIDER MITE (Tetranychus urticae) severely damaged 80 acres of hops near Satus, Yakima County, on June 6. This is the earliest heavy infestation in 5 years in WASHINGTON.

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Part XXVI

Additional copies of Parts I through XXVI of this bibliography are available from Economic Insect Survey and Detection.

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**ECONOMIC INSECT
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ECONOMIC INSECT SURVEY AND DETECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT**HIGHLIGHTS**Current Conditions

GREENBUG heavy on wheat in southwest Oklahoma and damaging in several areas of Texas. (p. 155).

SPOTTED ALFALFA APHID heavy on alfalfa crowns in limited area of Oklahoma. Controls applied in some areas of Arizona. (p. 155).

GARDEN SYMPHYLAN damaged stored potatoes in Washington. (p. 158).

Detection

An APHID reported for first time in United States is also a new North American record. Little is known of the economic importance. Asparagus is only recorded host. (p. 156).

New State records include APHIDS from New Jersey (p. 156) and Hawaii (p. 159); EUROPEAN GRAIN MOTH from Delaware (p. 158).

For new county records see page 159.

Special Reports

Summary of Insect Conditions in the United States - 1969

Potatoes, Tomatoes, Peppers (pp. 160-162).

Beans and Peas (pp. 162-163).

Cole Crops (pp. 164-165).

Cucurbits (pp. 165-166).

General Vegetables (pp. 166-168).

Gypsy Moth Quarantine. Map. Centerfold.

Some First Occurrences of Season

ARMY CUTWORM larvae, CORN LEAF APHID, and RED HARVESTER ANT in Oklahoma; ALFALFA WEEVIL adults in Nevada and Utah, larvae in Texas; CLOVER LEAF WEEVIL larvae in Missouri; IMPORTED CABBAGEWORM adults in Alabama; PEAR PSYLLA eggs in Washington and Idaho, egg hatch in Oregon; EASTERN SUBTERRANEAN TERMITE swarms in Pennsylvania and Iowa.

Reports in this issue are for week ending March 6 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance.....155

Insects Affecting

Corn, Sorghum, Sugarcane.....155	Deciduous Fruits and Nuts.....157
Small Grains.....155	Citrus.....157
Turf, Pastures, Rangeland.....155	Ornamentals.....157
Forage Legumes.....156	Forest and Shade Trees.....157
Miscellaneous Field Crops.....156	Man and Animals.....157
Beans and Peas.....156	Households and Structures.....158
Cole Crops.....156	Stored Products.....158
General Vegetables.....156	

Beneficial Insects.....158

Federal and State Plant Protection Programs.....159

Hawaii Insect Report.....159

Detection.....159

Light Trap Collections.....159

Summary of Insect Conditions in the United States - 1969

Potatoes, Tomatoes, Peppers.....160
Beans and Peas.....162
Cole Crops.....164
Cucurbits.....165
General Vegetables.....166

Gypsy Moth Quarantine. Map. Centerfold

WEATHER OF THE WEEK ENDING MARCH 9

HIGHLIGHTS: Temperatures continued above normal over the West. Warming over the West. Warming over the East severed the trend that had continued for several weeks. The first thunderstorms of the season occurred in some Central States.

PRECIPITATION: A storm developed in the central Rocky Mountains and moved eastward to the central Great Plains. The storm produced numerous heavy thunderstorms and a few tornadoes as it moved into Kansas. A quasi-stationary front stretched from the storm center eastward to Virginia. Clouds with combinations of rains, drizzle, and fog occurred in the warm moist air south of the front. Mixtures of snow and freezing rain fell in the colder air north of the front. Thunderstorms, some accompanied by wind and hail, occurred along the front and in the warm humid air south of the front. Tornado reports came from Kansas, Texas, Arkansas, Louisiana, Mississippi, and Alabama. Heavy showers caused flooding along some streams in eastern Texas and in Arkansas on Wednesday. About midweek, as the wet weather continued over the eastern half of the Nation, Pacific storms began shaping up in the West. These brought heavy rain to the lower Oregon coast and to California with snow in the high Sierras and the Rockies. Generous rains fell over much of Texas on Friday with 1-day totals exceeding 1 inch at numerous localities. The weekend brought rain to the Pacific Northwest and snow in the Cascades, northern Rockies, and eastward across the northern Great Plains and Great Lakes region to New England. The snow flurries east of the Rockies were, in general, of little importance. Meanwhile, the Texas storm moved eastward bringing rain to the Gulf States with especially heavy rains in the Florida Peninsula. Weekly totals at some Florida localities ranged up to several inches. A tornado at Titusville, Florida, on Thursday caused considerable property damage and a few personal injuries but no deaths were reported.

TEMPERATURE: Temperatures averaged above normal over most of the Nation. The main exceptions were California which averaged 1° to 5° colder than normal and Montana, North Dakota, and northern Minnesota where temperatures averaged 1° to 13° below normal. In much of the West, this was the eighth consecutive warmer-than-normal week. East of the Rocky Mountains, temperatures averaged above normal. Weather continued on page 168.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMY CUTWORM (Chorizagrotis auxiliaris) - OKLAHOMA - Light in scattered southwest area wheatfields, damage insignificant. (Okla. Coop. Sur.).

CORN LEAF APHID (Rhopalosiphum maidis) - OKLAHOMA - Light in scattered wheatfields in southwest area. (Okla. Coop. Sur.).

GREENBUG (Schizaphis graminum) - NEW MEXICO - Generally light, ranged 0-8 per linear foot, on barley in Chaves and Luna Counties. (N.M. Coop. Rpt.). TEXAS - Damage light in Childress, Dickens, and Young Counties, February 22-26. Damage moderate to heavy to small grains in Motley, Hardeman, Foard, and Wilbarger Counties. Some controls applied. Light in Hale and Red River Counties. (Green). Ranged 1-40 per linear foot on wheat in 13 panhandle counties, February 23, 24, and 26. Lowest count 1 per linear foot in 8 counties; highest count 40 per linear foot in Hansford County. (Daniels). OKLAHOMA - Ranged 200-2,000 per linear foot of wheat in Kiowa, Greer, Jackson, Tillman, and Washita Counties. Controls underway in several southwest area counties. Light to moderate in Blaine County; heaviest in Hitchcock area. Ranged 30-70 per linear foot in northwest Payne County and Crescent area of Logan County; ranged 1-15 per linear foot in other areas. (Okla. Coop. Sur.). KANSAS - Surveys negative in central, south-central, and north-central areas. (Martinez, Redding).

POTATO PSYLLID (Paratrioza cockerelli) - CALIFORNIA - Adults medium on Temple orange trees at Thermal, Riverside County. (Cal. Coop. Rpt.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - OKLAHOMA - Ranged 800-1,000 per square foot of crown in alfalfa in Tipton area of Tillman County. Ranged up to 10 per square foot in Payne County. (Okla. Coop. Sur.). ARIZONA - Averaged 100+ per 10 sweeps of Moapa alfalfa in Tolleson area. About 1,000+ acres of alfalfa in area required treatment. Smaller area east of Buckeye also experienced heavy, damaging buildup. Expect problems on Caliverde, Moapa, Sonora, Washoe, African, Chilean, Hairy Peruvian, and Indian varieties. No increase noted in alfalfa on east side of Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - ILLINOIS - Preliminary survey of overwintering larvae indicates overall survival of 68 percent in west-southwest and southwest districts. Survival rate higher, 85 percent, in more northern counties in area surveyed as opposed to 43 percent in southernmost sample collected in Alexander County. (Petty).

SMALL GRAINS

AN APHID (Rhopalosiphum padi) - OKLAHOMA - Light and scattered in wheat in Payne and Logan Counties and in southwest area. Ranged 1-10 per linear foot in Payne and Logan Counties when present. (Okla. Coop. Sur.). CALIFORNIA - Heavy on barley at Durham, Butte County. (Cal. Coop. Rpt.).

ENGLISH GRAIN APHID (Macrosiphum avenae) - OKLAHOMA - Ranged 1-10 per linear foot in occasional wheatfield in Payne and Logan Counties. (Okla. Coop. Sur.).

TURF, PASTURES, RANGELAND

A CYDNID BUG (Sehirus cinctus) - CALIFORNIA - Adults heavy in grass areas at Crescent City, Del Norte County. (Cal. Coop. Rpt.).

RED HARVESTER ANT (Pogonomyrmex barbatus) - OKLAHOMA - Active in several areas of Payne County. (Okla. Coop. Sur.).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - NEVADA - Adults noted in Pershing and southern Washoe Counties February 23-27. (Bechtel, Martinelli). UTAH - Adults numerous in litter at Logan, Cache County. (Knowlton, Feb. 27). MISSISSIPPI - Larvae averaged 8.2 per 20 stems of alfalfa in Pontotoc County. (Pitre). TEXAS - First instars heavy on alfalfa in Wharton and Fort Bend Counties. (Thomas, Smith).

CLOVER LEAF WEEVIL (Hypera punctata) - MISSOURI - Early instars ranged 0-9 per square foot in alfalfa (averaged 0.5) and red clover (averaged 2.0) in south-central area. (Munson).

LYGUS BUGS (Lygus spp.) - ARIZONA - Adults and nymphs averaged 20 per 10 sweeps of alfalfa and weeds in Tolleson area, Maricopa County. (Ariz. Coop. Sur.).

PEA APHID (Acyrtosiphon pisum) - NEW MEXICO - Ranged 1-14 per square foot in alfalfa in Chaves County. (Mathews). Lighter in other alfalfa-growing areas in Luna and Dona Ana Counties. (N.M. Coop. Rpt.).

MISCELLANEOUS FIELD CROPS

EUROPEAN RED MITE (Panonychus ulmi) - WASHINGTON - Infested hops in Benton County September 1969. Determined by E.W. Baker. Apparently first record on hops in State. (Cone, Predki).

BEANS AND PEAS

WESTERN BEAN CUTWORM (Loxagrotis albicosta) - SOUTH DAKOTA - Adult collected from blacklight trap at Brookings, Brookings County, July 17, 1967. Identification not made until February 1970. This collection supercedes previous adult recoveries in 1968 and 1969. No larvae collected to date. (Jones).

COLE CROPS

IMPORTED CABBAGEWORM (Pieris rapae) - ALABAMA - Large numbers of adults, first of season, observed from Talladega County south. Egg laying heavy on cabbage, collards, turnips, and other crops. (Leeper et al.).

GENERAL VEGETABLES

AN APHID (Brachycolus asparagi Mordvilko) - NEW YORK - Single alate collected on reedtop (Agrostis alba) at Orient, Long Island, July 20, 1969, by R. Latham. Determined by F.W. Quednau. This is the first record of B. asparagi in North America. This aphid is native to the Mediterranean area and eastern Europe. Asparagus is the only recorded host. Feeding by B. asparagi causes seedlings to shrivel or die, and is responsible for severe dwarfing of older plants. (Leonard). NEW JERSEY - Aphids first noted on asparagus plants in Rutgers University horticultural greenhouse at New Brunswick, Middlesex County, in August 1969. Specimens collected November 20, 1969, at this location by J.P. Reed determined by F.W. Quednau. This is a new State record and first known infestation of B. asparagi in North America. Aphids found nearby on 2 horticultural farms at East Brunswick in late August and early September 1969. Aphids caused severe rosetting of brush, and damaged young growth, resulting in shortening of internodes. No chlorosis was observed. Aphids fed on cladophylls (modified leaves) and under bracts. Plants in greenhouse and on university farms sprayed during August and September. Last import of asparagus material from Europe (England and Holland) made in 1959. As of February 16, 1970, no B. asparagi or recent injury observed in any of the horticultural greenhouses. (Race).

DECIDUOUS FRUITS AND NUTS

PEAR PSYLLA (*Psylla pyricola*) - WASHINGTON - First mating at Parker Heights, Yakima County, on February 10. First eggs in Parker Heights area February 19, in upper Yakima Valley February 26. Adults heavy with 700+ per tray common. Spraying started February 20 in lower Yakima Valley, February 24 in upper Yakima Valley. Many overwintered adults not in pear orchards by February 27. First eggs in Wenatchee, Chelan County, March 2. On March 3 at Rock Island, Douglas County, adults averaged 266 per tray, no eggs. (Johnson et al.). IDAHO - First eggs of season found in Sunny Slope area, Canyon County, February 27. (Homan). OREGON - Egg hatch began on pears in Medford area, Jackson County, February 27. Sprays applied. (Berry).

PEACH TWIG BORER (*Anarsia lineatella*) - ARIZONA - Larvae on apricot, peach, and plum trees in Tucson area, Pima County. (Ariz. Coop. Sur.).

SAN JOSE SCALE (*Aspidiotus perniciosus*) - WASHINGTON - Generally heavy carryover with high percentage of surviving third stage nymphs observed January 26 in Yakima County. (Johnson).

PECAN WEEVIL (*Curculio caryae*) - ALABAMA - Unusually large number of larvae in nuts on ground in 50-acre pecan orchard in Crenshaw County. (Leeper et al.).

HICKORY SHUCKWORM (*Laspeyresia caryana*) - ALABAMA - Larvae in shucks of nuts under trees in 50-acre pecan orchard in Crenshaw County. (Smith et al.).

CITRUS

CALIFORNIA RED SCALE (*Aonidiella aurantii*) - CALIFORNIA - Heavy in 8-acre citrus grove at Fillmore, Ventura County. (Cal. Coop. Rpt.). ARIZONA - Found 2 additional infestations at Yuma, Yuma County. (Ariz. Coop. Sur.).

ORNAMENTALS

AZALEA LACE BUG (*Stephanitis pyrioides*) - FLORIDA - Nymphs and adults moderate on 90 percent of 8,000 azalea plants in nursery at Plant City, Hillsborough County, February 23. (Pierce, Vaughan).

SOFT SCALES (*Ceroplastes* spp.) - ALABAMA - *C. floridensis* (Florida wax scale) crawlers emerging and heavy throughout 60-acre magnolia planting in Conecuh County. Controls in progress. (Leeper, Huggins). VIRGINIA - *Ceroplastes* sp. heavy on individual plants of holly and euonymus at several locations at Franklin, Southampton County. (Pierce, February 27).

FOREST AND SHADE TREES

AN ERIOPHYID MITE (*Trisetacus alborum*) - CALIFORNIA - Collected on sugar pine at Cobb, Lake County, February 20, 1970. Feeding induces lateral growths with multiple buds bearing primary needles. Not previously reported on sugar pine. (Cal. Coop. Rpt.).

A SCOLYTID (*Poecilips rhizophorae*) - FLORIDA - Adults collected from newly germinated mangrove seeds at Longboat Key, Manatee County, January 21, 1970, by J.R. McFarlin. Determined by R.E. Woodruff. This is a rare species; no previous report of damage. (Mead; Tri-ology).

MAN AND ANIMALS

SCREW-WORM (*Cochliomyia hominivorax*) - No cases reported in U.S. March 1-7. Total of 59 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico February 22-28 as follows: Baja California 1, Sonora 57, Tamaulipas 1. Total of 4 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 1,568,000; Mexico 143,900,000. (Anim. Health Div.).

COMMON CATTLE GRUB (Hypoderma lineatum) - FLORIDA - Larvae averaged 6 per head of untreated beef cattle at Belle Glade, Palm Beach County, February 20. (Janes). TENNESSEE - Larvae averaged 6.3 per head on 12 of 27 head of cattle. (Edwards et al.).

HORN FLY (Haematobia irritans) - FLORIDA - Averaged 60 per head of beef cattle at Belle Glade, Palm Beach County, February 20. (Janes).

MOSQUITOES - FLORIDA - Larvae of Aedes canadensis, A. infirmatus, and A. vexans common in logging road ruts near Lamont, Jefferson County, February 27. (Mead).

A BLACK FLY (Simulium vittatum) - IDAHO - Numerous north of Stone, Oneida County, especially at outlet of Curlew Valley Reservoir. (Knowlton).

CATTLE LICE - OKLAHOMA - Mostly Haematopinus eurysternus (short-nosed cattle louse) very heavy on feedlot cattle in panhandle counties. Heavy in Noble and Mayes Counties. (Okla. Coop. Sur.). FLORIDA - H. quadripertusus (cattle tail louse) slightly less abundant on beef cattle than at same time last year at Belle Glade, Palm Beach County, February 20. (Janes).

NORTHERN FOWL MITE (Ornithonyssus sylviarum) - MISSISSIPPI - Light on caged hens at State College, Oktibbeha County. (Sartor).

HOUSEHOLDS AND STRUCTURES

EASTERN SUBTERRANEAN TERMITE (Reticulitermes flavipes) - PENNSYLVANIA - Swarming at Philadelphia, Delaware County. (Tetrauit, Feb. 26). IOWA - Winged forms reported March 4 from Ottumwa, Wapello County. (Iowa Ins. Sur.).

GERMAN COCKROACH (Blattella germanica) - ARIZONA - Heavy in some areas of Tucson, Pima County. (Ariz. Coop. Sur.).

STORED PRODUCTS

EUROPEAN GRAIN MOTH (Nemapogon granella) - DELAWARE - Larvae collected in shredded coconut in warehouse at Wilmington, New Castle County, November 13, 1969, by B. Nelson. Determined by D.M. Weisman. This is a new State record. (Burbutis).

COWPEA WEEVIL (Callosobruchus maculatus) - IDAHO - Infestation in commercial pea storage at Moscow, Latah County. (Portman).

DERMESTID BEETLES - CALIFORNIA - Trogoderma inclusum, T. simplex, T. variabile, and Anthrenus sp. medium in warehouses at Madera, Madera County; collected on trogotraps. Medium in chicken mash and rolled oats at Kernville, Kern County. Trogotrap collections light in most areas. (Cal. Coop. Rpt.).

GARDEN SYMPHYLAN (Scutigera immaculata) - WASHINGTON - Damaged ground-stored potatoes at Seattle, King County. (Forsell).

BENEFICIAL INSECTS

LADY BEETLES - OKLAHOMA - Hippodamia convergens (convergent lady beetle) averaged 1.5 per square foot of crown of alfalfa in Tillman County. Occasional specimens in wheat in southwest area. (Okla. Coop. Sur.). ALABAMA - Overwintering adults of Psyllobora vigintimaculata emerged and feeding on aphids in Lee County. (McQueen).

A BRACONID (Lysiphlebus testaceipes) - OKLAHOMA - Common in greenbug infested fields in southwest area, especially in Jackson and Tillman Counties; ranged 2-4 per linear foot. Greenbug and Rhopalosiphum padi parasitized in Payne and Logan Counties. (Okla. Coop. Sur.).

AN ICHNEUMON WASP (Bathyplectes curculionis) - MISSOURI - Cocoons of this alfalfa weevil parasite collected in Lincoln, Pike, Montgomery, and Warren Counties by L.R. Hanning. These are new county records. (Munson).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

GRASSHOPPERS - OKLAHOMA - Egg surveys in selected rangeland areas of Beaver, Cimarron, Dewey, Ellis, Harper, Woods, and Woodward Counties show average of 1 viable egg pod per square yard of sod examined. Most eggs in clear to eye-spot stages. Parasite and predator damage light. (Okla. Coop. Sur.).

HAWAII INSECT REPORT

New State Record - An APHID (Nasonovia ribisnigri) collected on flowers of Crepis japonica at Puulau, Hawaii, by B. Hu and G. Fukumura, December 6, 1964. Determined by L.M. Russell. Recorded hosts are Compositae (Cichorium, Hieracium, Crepis, Sonchus, Lactuca, Arnoseris, Lampsona, etc.), Scrophulariaceae (Veronica), Cruciferae (Alliaria), and various species of Ribes and Grossularia reclinata. Distribution of this pest includes Transcaucasia, Soviet Central Asia, and western Europe. (Kawamura). Also occurs in Vermont, California, Montana. (PPD).

General Vegetables - Adults of LEAF MINER FLIES (Liriomyza spp.) moderate to heavy in 2 small plantings of tomato and Italian Squash; mines light at Kahului, Maui. Adults light in 2.5 acres of tomato; mines heavy on older leaves at Kona, Hawaii. (Miyahira, Kobayashi). GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) heavy in 4.5 acres of old tomato planting at Kona, Hawaii; moderate in adjacent 2.5 acres of younger plants. Generally troublesome in tomato and cucumber fields at Kona, Hawaii, despite intensive spray program. (Kobayashi). Eggs and adults of IMPORTED CABBAGEWORM (Pieris rapae) and eggs of CABBAGE LOOPER (Trichoplusia ni) light in small planting of broccoli at Kahului, Maui; no larvae seen. (Miyahira). CARMINE SPIDER MITE (Tetranychus cinnabarinus) heavy in 0.25 acre of eggplant at Kahului, Maui; about 50-75 per square inch on under surface of leaves. (Miyahira). BEAN FLY (Melanagromyza phaseoli) heavy in small planting of snap beans at Mana, Kauai; 98 percent of seedlings seriously affected. (Davis).

Man and Animals - MOSQUITOES - Total collected from 55 light traps on Oahu during February: VEXANS MOSQUITO (Aedes vexans nocturnus) 288 and SOUTHERN HOUSE MOSQUITO (Culex pipiens quinquefasciatus) 1,861. Aedes up to high of 102 per trap and Culex up to high of 278 per trap at Kahaaluu. (Mosq. Contr. Br., Dept. of Health).

Beneficial Insects - Eggs, larvae, and adults of a SCIOMYZID FLY (Sepedon sauteri), a snail predator, numerous in taro plantings at Hanapepe, Kauai. (Davis).

Miscellaneous Pests - Collected and destroyed total of 492 individuals of GIANT AFRICAN SNAIL (Achatina fulica) on Kauai during February: 490 at Poipu, 2 at Wahiawa, none at Nawiliwili. Baiting continues at Poipu and Wahiawa. No live snails detected during February at Kona, Hawaii. (Sugawa, Matayoshi).

DETECTION

New North American Record - An APHID (Brachycolus asparagi) NEW YORK - Orient, Suffolk County (p. 156).

New State Records - An APHID (Brachycolus asparagi) NEW JERSEY - Middlesex County (p. 156). An APHID (Nasonovia ribisnigri) HAWAII - Hawaii Island (p. 159). EUROPEAN GRAIN MOTH (Nemapogon granella) DELAWARE - New Castle County (p. 158).

New County Records - An ICHNEUMON WASP (Bathyplectes curculionis) MISSOURI - Lincoln, Montgomery, Pike, Warren (p. 158).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville, 2/27-3/5, BL - Armyworm (Pseudaletia unipuncta) 2, granulate cutworm (Feltia subterranea) 33, salt-marsh caterpillar (Estigmene acrea) 3.

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1969
(Continued from page 150)

POTATOES, TOMATOES, PEPPERS

Highlights:

COLORADO POTATO BEETLE was heavy in Tennessee, and overwintering populations were heavier than usual on the Virginia Eastern Shore. TOBACCO FLEA BEETLE was widespread and damaging to tomatoes in California. CABBAGE LOOPER required controls on potatoes in Nevada and tomatoes in Arizona. Infestations caused severe damage to tomatoes on the Eastern Shore of Virginia. TOMATO FRUITWORM caused very heavy damage to tomatoes in this same area of Virginia. EUROPEAN CORN BORER was of some concern on potatoes in Maryland and peppers in Delaware.

COLORADO POTATO BEETLE (*Leptinotarsa decemlineata*) adults in IDAHO were numerous on emerging potato plants near Parma, Canyon County, in early May. Controls were needed. Adults and larvae damaged 10 percent of a small planting at Weiser, Washington County, in early May. By July 15 a few egg clusters, 137 larvae, and 3 adults per 5 row feet, and some severely defoliated plants were present at Aberdeen, Bingham County. In UTAH, damage was above normal on potatoes and this pest was common on tomatoes in Weber, Davis, and Cache Counties. Up to 15 larvae per potato plant were found in COLORADO throughout Weld, Larimer, Morgan, and Boulder Counties. Controls checked infestations; where controls were late or not applied, damage was heavy. Losses were light to moderate overall. Colorado potato beetle caused concern in commercial potatoes in Stafford County, KANSAS, in May. Most fields were treated several times. Potatoes were damaged in OKLAHOMA mostly in mid and late May.

Colorado potato beetle was kept under control in the 16,500 acres of commercial potatoes in ALABAMA. Heavy populations occurred throughout TENNESSEE in May and June. While of minor importance in OHIO in recent years, Colorado potato beetle has been increasing in the north-central area for the past year or two. Potatoes were severely damaged at Celeryville, Huron County.

Early overwintering populations of Colorado potato beetle were heavier than in recent years on the Eastern Shore of VIRGINIA. The first brood defoliated all emerging potato shoots in many fields in April. Fall populations were much lighter than in recent years. Systemic insecticides were effective. Heavy numbers in MARYLAND defoliated 80-100 percent of untreated garden potatoes. Timely sprays prevented commercial losses. Controls on commercial potatoes appeared to be effective in most areas of DELAWARE. In NEW JERSEY, Colorado potato beetle was moderate on potatoes, tomatoes, eggplants, and peppers through June. Damage was lighter than usual. Numbers were up from 1968 on potatoes in CONNECTICUT. In RHODE ISLAND, adults, eggs, and first to third instars infested many fields by June 18 in Washington County. Counts were numerous in unsprayed fields by August 7.

POTATO FLEA BEETLE (*Epitrix cucumeris*) adults in RHODE ISLAND were light on potatoes May 26 in Washington County and noted on tomatoes June 19 in Providence County. *E. cucumeris* adults in DELAWARE were common by early May on potatoes along field edges. Subsequent populations appeared to be controlled on potatoes and tomatoes in most areas. In VIRGINIA, *E. cucumeris* caused very little damage to potatoes, but fairly high numbers of TOBACCO FLEA BEETLE (*E. hirtipennis*) on the fall crop of potatoes needed treatment in some areas of Accomack and Northampton Counties. *E. hirtipennis* was widespread and damaging to tomatoes in CALIFORNIA. It was much more prevalent over a long period than previously. TUBER FLEA BEETLE (*E. tuberis*) continued at low levels in OREGON. The most southern occurrence in the State is now known to be Provolt, Jackson County.

GYPSY MOTH

COOPERATIVE FEDERAL, STATE, AND CANADIAN QUARANTINES

U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PROTECTION DIVISION
AND CANADIAN DEPARTMENT OF AGRICULTURE
COOPERATING WITH AFFECTED STATES



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COUNTIES ENTIRELY COLORED ARE COMPLETELY REGULATED;
COUNTIES PARTIALLY COLORED ARE PARTIALLY REGULATED

GENERALLY INFESTED AREA-STATE, FEDERAL, AND CANADIAN REGULATIONS,
(ERADICATION TREATMENTS NOT IN PROGRESS OR PLANNED)

SUPPRESSIVE AREA-STATE, FEDERAL, AND CANADIAN REGULATIONS,
(SUPPRESSIVE TREATMENTS IN PROGRESS OR PLANNED)

STATE REGULATIONS ONLY
(SUPPRESSIVE TREATMENTS PLANNED WHERE NECESSARY)

IN THE UNITED STATES, CONSULT WITH STATE OR FEDERAL PLANT PROTECTION INVECTION INSPECTOR OR YOUR COUNTY AGENT AND IN CANADA CONSULT WITH THE NEAREST QUARANTINE OFFICE FOR REGULATIONS AND REQUIREMENTS FOR MOVING REGULATED ARTICLES.

RESTRICTIONS ARE IMPOSED ON MOVEMENT OF REGULATED ARTICLES FROM A REGULATED AREA AS FOLLOWS:

1. FROM RED INTO OR THROUGH GREEN, BLUE, OR WHITE.
2. FROM GREEN INTO OR THROUGH WHITE OR BLUE.
3. GREEN INTO GREEN.
4. WITHIN GREEN.*
5. FROM BLUE INTO ANY OTHER AREA.**

*IF REQUIRED BY AN AUTHORIZED INSPECTOR.

**IF REQUIRED BY APPROPRIATE STATE QUARANTINE OR BY AN AUTHORIZED INSPECTOR.



THE FOLLOWING CROPS OR ARTICLES MUST BE MOVED UNDER CERTIFICATE OR PERMIT YEAR-ROUND EXCEPT AS INDICATED.

- i. Trees, shrubs with persistent woody stems, and parts thereof, except seeds, fruits, and cones.

Trees and shrubs, and parts thereof, are exempt if grown in a greenhouse

CABBAGE LOOPER (Trichoplusia ni) required controls on potatoes in Lyon County, NEVADA, in mid-July. Controls were required on tomatoes in June at Yuma, Yuma County, ARIZONA. Cabbage looper was probably the most difficult pest to control in the State in 1969. Cabbage looper damaged potatoes in several areas of UTAH, including Emery, Grand, and Salt Lake Counties. Larvae occasionally damaged tomatoes in scattered locations in Utah. Cabbage looper ranged light to heavy on tomatoes and potatoes in COLORADO. Larvae appeared late in July and populations peaked in mid-August. Up to 35 per 100 sweeps were found. Controls were effective, and losses were moderate in Colorado. Cabbage looper and BET ARMYWORM (Spodoptera exigua) were troublesome on tomatoes in the Bradenton area of Manatee County, FLORIDA. T. ni was heavier than usual in Northampton and Accomack Counties, VIRGINIA, in July and August. Damage to tomatoes was severe. Virus diseases reduced these populations in August.

TOMATO FRUITWORM (Heliothis zea) was again the most important pest of tomatoes in ALABAMA in home gardens and in 9,000 acres of commercial plantings. All fields received 15 to 30 applications of insecticides. Severe numbers in VIRGINIA occurred from August through September in Northampton and Accomack Counties. Some fields of tomatoes were entirely lost. Larvae infested 75 percent of untreated late tomatoes over widespread areas. Damage was extremely heavy. Larvae in DELAWARE heavily infested sweet peppers in late August and September. In spite of the heavy numbers in NEW JERSEY, damage by tomato fruitworm was kept to a minimum because of grower awareness. Tomato injury was light to moderate.

GRANULATE CUTWORM (Feltia subterranea) was heavy on most of the 7,500 acres of potatoes in De Kalb and other Sand Mountain counties of ALABAMA in early July and destroyed 5-10 percent of the crop. This was the first damaging infestation in 10 or more years.

EUROPEAN CORN BORER (Ostrinia nubilalis) was light on pimento peppers in 6,000 acres of north ALABAMA. Larvae in MICHIGAN damaged potatoes and peppers. Although numbers were low throughout WEST VIRGINIA, damage was bad on sweet peppers and other vegetable crops. Damage in MARYLAND was heaviest in a 100-acre field of potatoes in Somerset County where 70 percent of the shoots were lost. Timely controls were effective in Worcester and Somerset Counties. Larvae very heavily infested untreated or poorly treated potato vines in Kent County, DELAWARE, in May and June. Infestations in untreated sweet peppers averaged 25 percent in late July and August and increased to 85 percent fruit infestation in September and October. Populations were light to moderate in NEW JERSEY. Injury to peppers, eggplants, and potatoes was insignificant where scheduled insecticide applications were made. Second-generation borers did not cause serious problems to any vegetable crop. European corn borer was a problem in a few potato fields in CONNECTICUT.

TOMATO PINWORM (Keiferia lycopersicella) heavily damaged tomatoes in southern CALIFORNIA. In some potato areas of the State, POTATO TUBERWORM (Phthorimaea operculella) ranged light to medium. P. operculella in UTAH was trace in Washington and Iron Counties. P. operculella was not found in ALABAMA in Baldwin, Mobile, or Escambia Counties due to well-planned survey and control efforts the previous season. During the growing season in MICHIGAN many commercial fields in Monroe and Lenawee Counties were constantly checked for P. operculella. On August 20 a limited infestation was found in an eggplant field in Monroe County; controls were effective. On August 28 a commercial field in this county was infested. Infestations in the county appeared to be widespread but light. Several fields infested at harvest led to infestations in storage. The few P. operculella infestations in OHIO were restricted to the Lorain County area. There were some heavy infestations on potatoes. Greenhouses are prevalent in the area. P. operculella infested potato fields in Cambria County, PENNSYLVANIA.

THE FOLLOWING CROPS OR ARTICLES MUST BE MOVED UNDER CERTIFICATE OR PERMIT YEAR-ROUND EXCEPT AS INDICATED.

1. Trees, shrubs with persistent woody stems, and parts thereof, except seeds, fruits, and cones.
Trees and shrubs, and parts thereof, are exempt if grown in a greenhouse throughout the year and so labeled on the outside of each container.*
Boughs, cuttings, and scions with stems no greater than one-half inch in diameter are exempt.*
Parts of trees and shrubs that have been dried, pressed, waxed, lacquered, varnished, or similarly surface-treated, are exempt.*
2. Timber and timber products, including but not limited to lumber, planks, poles, logs, cordwood, and pulpwood.
Lumber is exempt if dressed or saved four sides with ends clipped and free of surface bark, or if kiln dried, provided such lumber is shipped direct after processing and the waybill or other shipping document is marked to show that the lumber was shipped immediately after processing.*
Manufactured wood products, such as shingles, flooring, furniture, handles, etc., are exempt.*
Shavings, sawdust, wood flour, excelsior, and cedar bedding are exempt.*
3. Stone and quarry products.
Stone and quarry products are exempt if processed by grinding or pulverizing.*
Mined, quarried, or manufactured stone and quarry products are exempt if shipped direct from establishments specifically approved by the Director.**
4. Trailers of all types, including mobile homes, when the person in possession thereof has been so notified by an inspector.

* Exempt if not exposed to infestation after the prescribed handling.

** Information as to approved establishments may be obtained from an inspector.

GREEN PEACH APHID (Myzus persicae) averaged 3-4 winged and wingless forms per 25 leaves on potato plants near Lynden, Whatcom County, WASHINGTON. Damage in OREGON was heavy in several bell pepper fields in Clackamas and Marion Counties. Control was difficult. M. persicae was common on potatoes in UTAH. M. persicae increased rapidly in July in the Arkansas Valley of COLORADO. Controls effectively kept numbers down, but heavy tomato and potato foliage prevented elimination of infestations. Damage was light to moderate; loss was light. In FLORIDA the heaviest population of M. persicae in 3 years killed unprotected potatoes at Hastings, St. Johns County. Numbers were also heavy on bell peppers at Tampa, Hillsborough County, in May. In MARYLAND, systemic insecticides suppressed light to moderate numbers of M. persicae and POTATO APHID (Macrosiphum euphorbiae) on potatoes during harvest in Worcester and Somerset Counties. Controls for M. persicae in DELAWARE on commercial peppers and potatoes were adequate in most areas. In RHODE ISLAND, M. persicae was heavy on some varieties of potatoes on July 30 in Washington County. Predators and disease had reduced aphids on potatoes by August 7.

MIGRATORY GRASSHOPPER (Melanoplus sanguinipes) and TWO-STRIPED GRASSHOPPER (M. bivittatus) caused medium to heavy damage to a small acreage of certified seed potatoes in Eureka County, NEVADA, in August.

VINEGAR FLIES (Drosophila spp.) built up heavily in tomatoes in MARYLAND after heavy rains in late July and early August. Counts ranged as high as 150-200 per row foot in Wicomico, Dorchester, and Worcester Counties. In NEW JERSEY, Drosophila spp. were significantly more abundant than in recent years due to plentiful summer rains. By August 19 at Hammonton, Atlantic County, over 500 eggs were counted per 1.5-inch slit in 24 hours. Grower awareness prevented abundant egg laying from occurring in processing tomatoes.

PEPPER MAGGOT (Zonosemata electa) populations in NEW JERSEY were similar to past years. Injury was insignificant in pepper fields where insecticides were applied on schedule. Counts in CONNECTICUT were heavier than usual.

Damage by SPIDER MITES (Tetranychus spp.) to tomatoes in OKLAHOMA was heaviest in late August. TWO-SPOTTED SPIDER MITE (T. urticae) was light to moderate on potatoes, tomatoes, and peppers in NEW JERSEY. Populations were heavier on eggplant; injury was moderate.

BEANS AND PEAS

Highlights:

MEXICAN BEAN BEETLE damaged beans in the Arkansas Valley and other areas of Colorado, and was serious on beans in Alabama. WESTERN YELLOW-STRIPED ARMYWORM damaged peas in Idaho. CABBAGE LOOPER severely damaged beans on the Eastern Shore of Virginia.

MEXICAN BEAN BEETLE (Epilachna varivestis) was common on beans in all infested areas of UTAH. Injury was above normal. In COLORADO, adults appeared in early June and larvae appeared in late July. Populations ranged up to 30 per bean plant. Damage occurred in the Arkansas Valley and in Morgan, Weld, Larimer, and Boulder Counties. Damage ranged light to heavy. Controls were effective. Damage appeared where controls were applied late or ineffectively. Loss was moderate. Damage in WYOMING decreased. Damage was light; controls were applied in Goshen and Platte Counties. Mexican bean beetle reached a long-time low in MICHIGAN. Droughts did not occur in 1969. Mexican bean beetle was a serious and damaging pest of lima and pole beans, and to a lesser extent, of field peas throughout ALABAMA. Populations were high and about the same as in 1967 and 1968. For Mexican Bean Beetle in Idaho see CEIR 20(8):92.

PEA WEEVIL (Bruchus pisorum) infested peas in many gardens in UTAH; control was needed during spring. BEAN LEAF BEETLE (Cerotoma trifurcata) was the major pest of beans and peas in OKLAHOMA. Damage occurred in the south-central area in early May and in the northeast area in late August. C. trifurcata was a pest mainly of peas and beans in the 2 to 6-leaf stage throughout 1969 in ALABAMA. COWPEA CURCULIO (Chalcodermus aeneus) remained one of the major pests in the 6,000 acres of commercial peas in ALABAMA. Infestations in harvested peas were about the same as in 1967 and 1968 but fewer than in 1966 due to intensified controls.

WESTERN YELLOW-STRIPED ARMYWORM (Prodenia praefica) in WASHINGTON damaged dry peas and lentils. This was the second severe outbreak recorded on lentils. ALFALFA LOOPER (Autographa californica) was a problem on fresh peas in several eastern areas of WASHINGTON, and severe on dry peas and many crops particularly in Whitman, Columbia, and Walla Walla Counties. In IDAHO, P. praefica severely defoliated peafields at Lewiston, Nez Perce County, in late May. By early July, third instars to fully grown larvae ranged up to 2 per square yard at Lewiston. By early August in Latah County, second instars to fully grown larvae ranged up to 8 per square yard on peas and lentils in localized areas. Controls were necessary in some fields. A. californica was spotty in peafields and along fence rows in early June in Latah County, IDAHO. Counts numbered 2 per sweep or 6-8 per square yard. Most larvae were fourth stage. Many fields were treated.

GREEN CLOVERWORM (Plathypena scabra) populations returned to normal after the outbreaks of 1968 in MINNESOTA. To control "loopers" on peas in southern counties, a total of 3,753 acres was sprayed. Green cloverworm was common by mid-August on lima beans in DELAWARE. Peak flights averaged 150 per night August 15-20 and averaged over 25 per night into September. Heavier than usual numbers of CABBAGE LOOPER (Trichoplusia ni) in Northampton and Accomack Counties, VIRGINIA, in July and August severely damaged snap beans. In August, virus diseases reduced populations.

VELVETBEAN CATERPILLAR (Anticarsia gemmatilis) was moderate to severe on 40+ acres of pigeonpeas at Gainesville, Alachua County, FLORIDA, during August and September. During October and November, larvae of a NOCTUID MOTH (Pseudoplusia includens) caused heavy damage to beans on the lower east coast of FLORIDA and to a lesser extent in the Everglades area. Control was very difficult to obtain.

EUROPEAN CORN BORER (Ostrinia nubilalis) damaged snap beans in MICHIGAN. In one county 250 acres of snap beans were not harvested because of pod damage. ALFALFA CATERPILLAR (Colias eurytheme) in IDAHO damaged processing peas at Lewiston, Nez Perce County. Controls were required the first of June.

PEA APHID (Acyrtosiphon pisum) migrations into peafields at Lewiston, Nez Perce County, IDAHO, during spring were somewhat lighter and later than those recorded in previous years. Light to moderate numbers infested canning peas and home gardens in northern UTAH. The maximum count in peas in WISCONSIN was 3 per 10 sweeps. Populations in peas did not justify treatment. In DELAWARE, counts on peas averaged 1 per sweep in mid-May and about 3 per sweep in late May.

MELON APHID (Aphis gossypii) in IDAHO was unusually abundant in a lima bean field at Caldwell, Canyon County, July 10. Controls were required. COWPEA APHID (A. craccivora) was widespread in ALABAMA. Heavy numbers occurred in home and commercial plantings. This species was probably the vector of a widely distributed and damaging cowpea mosaic throughout the State. BEAN APHID (A. fabae) was common in DELAWARE only during mid-July on lima beans in eastern Sussex County.

COLE CROPS

Highlights:

CABBAGE LOOPER damaged cole crops in California and Utah. Infestations were heavy in eastern Colorado. Control of cabbage looper was a major problem in Arkansas. This pest was damaging throughout Alabama. IMPORTED CABBAGEWORM and DIAMONDBACK MOTH were damaging to cole crops in Alabama.

CABBAGE LOOPER (Trichoplusia ni) larvae contaminated several lots of processing broccoli in OREGON. Weather during August 1969 was more normal than the wet, cold conditions during the same period in 1968, and larval populations approached the levels of 1966 and 1967. Cabbage looper caused widespread damage to all cole crops in CALIFORNIA, and was damaging in UTAH. Larvae ranged moderate to heavy in eastern COLORADO. Damage was moderate where controls were adequate. Losses to cabbage in Colorado ranged moderate to heavy.

Cabbage looper had damaged cabbage in Racine County, WISCONSIN, by August 1. In Columbia County, less than one percent of the cabbage was infested by August 8. Populations increased statewide in noncommercial plantings in late August. Larval feeding was light on cole crops in Waushara County by September 19. Damage to commercial plantings was insignificant due to controls. Cabbage looper populations were low in MICHIGAN. The most striking situation was the repeated seeding of a cauliflower field due to poor control of this pest in parts of the planting. In ILLINOIS most control programs were too late to control young larvae on cabbage and related crops.

Cabbage looper is the principal pest of greens crops in ARKANSAS. Control of this pest was a major problem in 1969. Mixed larval populations of cabbage looper and a NOCTUID MOTH (Pseudoplusia includens) damaged cabbage, collards, and other cole crops throughout ALABAMA. Cabbage looper in FLORIDA was very light on cabbage at Sanford, Seminole County, January to March compared to the light numbers in previous years. Larvae ranged 6-8 per plant in May. Fall numbers were much lighter than in previous years. Counts at Hastings, St. Johns County, were heavy in April and May. By early April this pest caused much damage to cabbage at Belle Glade, Palm Beach County, with peak damage in late April and early May. Counts were heavy, 4 larvae per plant, on unsprayed cabbage at Bradenton, Manatee County, during late winter.

Cabbage looper populations on broccoli in VIRGINIA were not reduced as much as expected by virus diseases in August. Larvae were troublesome throughout the season. Populations built up less rapidly than normal throughout NEW JERSEY until mid-September when they leveled off. Heavy late summer and early fall populations did not occur, due mainly to a naturally occurring polyhedrosis virus. Cabbage looper populations in CONNECTICUT were lower than normal.

BEE T ARMYWORM (Spodoptera exigua) heavily damaged some cabbage at Belle Glade, Palm Beach County, FLORIDA, from October to December. One 100-acre field was abandoned.

IMPORTED CABBAGEWORM (Pieris rapae) was heavy locally in CALIFORNIA on all cole crops and required repeated treatments. Larvae were damaging in UTAH. Imported cabbageworm was one of the most destructive pests on commercial and home plantings of cabbage, collards, and other cole crops in ALABAMA. Larvae in WISCONSIN infested cabbage in Waushara, Richland, Calumet, and Price Counties in mid-July. By early August less than 2 percent of the plants had live larvae due to controls. Insecticide treatments prevented significant damage. Although the spring brood emerged in a normal pattern in MICHIGAN, the succeeding summer population was about 30 percent below that of the past 2-3 years. Populations in NEW JERSEY were typically abundant. Injury ranged light to moderate on cabbage and related crops.

DIAMONDBACK MOTH (Plutella xylostella) occurred in damaging numbers in isolated areas throughout ALABAMA on all cole crops, mainly on turnips, mustard, cabbage, and collards. In August, 300-600 acres of commercial collards were heavily damaged in Cullman County. Control was difficult. In FLORIDA, larvae were heavy on cabbage throughout the season at Hastings, St. Johns County. Counts were heavy during winter and very heavy during spring on untreated or poorly treated crucifers at Belle Glade, Palm Beach County. Damage was moderate on untreated cabbage and very light on commercial cabbage during February at Sanford, Seminole County. Larvae were very severe on broccoli and cauliflower at Bradenton, Manatee County, in late February and early March. Diamondback moth larvae were typically abundant on crucifers during 1969 in NEW JERSEY but were not too difficult to control.

Numerous adults of a FLEA BEETLE (Phyllotreta cruciferae) caused noticeable injury to crucifers in July in New Castle County, DELAWARE. YELLOW-MARGINED LEAF BEETLE (Microtheca ochroloma) was serious in Mobile and Baldwin Counties, ALABAMA. It was reported as far north as Lee County. CABBAGE SEEDPOD WEEVIL (Ceutorhynchus assimilis) populations in IDAHO were 60 percent below those recorded in 1968 at Lewiston in Nez Perce County. Counts averaged 1 per sweep in rape fields in late May; only one field required control. Adults ranged from 2-3 per sweep along margins to less than 1 per 5 sweeps toward the centers of the fields May 26 at Troy, Latah County. VETCH BRUCHID (Bruchus brachialis) adults ranged 3-4 per sweep along margins of rape seed fields and about 1 per sweep toward the centers of these fields in late May at Lewiston, Nez Perce County, IDAHO.

CABBAGE APHID (Brevicoryne brassicae) was light and easy to control in NEW JERSEY during spring. B. brassicae in FLORIDA was heavy throughout the season on cabbage at Hastings, St. Johns County. Damage was moderate to untreated cabbage at Sanford, Seminole County; commercial fields usually escaped damage. In ALABAMA, B. brassicae was a serious pest of cabbage and collards in all counties. TURNIP APHID (Hyadaphis pseudobrassicae) was damaging all summer and winter on turnips and mustard in ALABAMA. B. brassicae populations were normal in UTAH.

SEED-CORN MAGGOT (Hylemya platura) and CABBAGE MAGGOT (H. brassicae) were heavy in PENNSYLVANIA. Injury was extensive on many vegetables. Seed-corn maggots infested cabbage heads in a 30-acre field in Schuylkill County. The field was not harvested. H. brassicae in NEW JERSEY ranged light to moderate and very much lower than the record maggot year of 1968. Injury was light. In CONNECTICUT, H. brassicae was very serious in fields and greenhouse flats.

CUCURBITS

Highlights:

CABBAGE LOOPER was the most difficult insect to control on cucurbits in Arizona, and was damaging in Virginia. STRIPED CUCUMBER BEETLE was troublesome early in the season in Colorado and Maryland. SEED-CORN MAGGOT destroyed several cucumber plantings in New Jersey.

CABBAGE LOOPER (Trichoplusia ni) infested cantaloups in April and May at Yuma, Yuma County, ARIZONA. Controls were required. This was probably the most difficult insect to control in 1969. Cabbage looper larvae were moderate on watermelons for the second consecutive year in central FLORIDA. Cabbage looper populations in Northampton and Accomack Counties, VIRGINIA, were much higher than usual in July and August. Cucurbits were severely damaged. In August virus diseases reduced populations.

BEET ARMYWORM (Spodoptera exigua) and WESTERN YELLOW-STRIPED ARMYWORM (Prodenia praefica) were major pests of watermelons in CALIFORNIA. Larvae of a LEAF ROLLER MOTH (Platynota stultana) caused severe damage to melons locally in Stanislaus County, CALIFORNIA.

SQUASH VINE BORER (Melittia cucurbitae) was troublesome in home vegetable gardens in NEW JERSEY during 1969. This pest was not a problem to commercial growers in the State. Squash vine borer was a pest of cucumbers and cantaloups in central and south ALABAMA.

STRIPED CUCUMBER BEETLE (Acalymma vittatum) caused damage in the Arkansas Valley of COLORADO in late June. Counts ranged 0-6 per cantaloup with considerable damage in some fields. Infestations were under control by mid-July and losses were moderate. This pest was found on cucumbers in OKLAHOMA mostly during July. Striped cucumber beetle was the most serious pest of commercial and home-grown cucumbers throughout ALABAMA. In MARYLAND early controls were required when seedlings emerged. After the seedlings became established, damage subsided and remained light throughout the season. Controls for striped cucumber beetle were applied to several hundred acres on the lower Eastern Shore to protect seedlings.

SPOTTED CUCUMBER BEETLE (Diabrotica undecimpunctata howardi) caused isolated damage to cucurbits but was not a major pest in ALABAMA. This pest caused damage to squash, cucumbers, cantaloup, and honeydew melons from mid-June to mid-September in OKLAHOMA. This leaf beetle was light in NEW JERSEY during the 1969 season. Feeding injury and wilt incidence were insignificant.

SEED-CORN MAGGOT (Hylemya platura) was abundant in southern NEW JERSEY counties during May. Several cucumber plantings were destroyed in Cumberland County, making replanting necessary. Possible resistance to a chlorinated hydrocarbon was indicated.

SQUASH BUG (Anasa tristis) was more prevalent in CALIFORNIA than in several years. Damage was scattered and heavy to squash. Squash bug populations were normal in UTAH, except in Iron, Davis, Washington, Salt Lake, and Morgan Counties. Squash bug was noted during June, July, and August in many areas of OKLAHOMA. The heaviest infestations occurred from mid-July to mid-August.

A LEAFHOPPER (Empoasca filamenta) averaged 10 per sweep in some watermelon fields east of Hermiston, Umatilla County, OREGON. However, harvestable watermelon tonnage did appear to be higher than normal.

MELON APHID (Aphis gossypii) was light to moderate in MARYLAND on melons and cantaloup. Infestations were spotty throughout Dorchester, Caroline, Wicomico, and Worcester Counties. Melon aphid was numerous on cantaloup foliage in central and southern UTAH.

SPIDER MITES (Tetranychus spp.) started to increase on watermelon, cantaloup, and cucumber in Wicomico, Worcester, and Somerset Counties, MARYLAND, but were quickly depressed by the unseasonably wet weather during July and August. Damage was not economic. TWO-SPOTTED SPIDER MITE (Tetranychus urticae) was light to moderate on vine crops in NEW JERSEY.

GENERAL VEGETABLES

Highlights:

CABBAGE LOOPER was troublesome on lettuce in several western States, and controls were required in all areas. ALFALFA LOOPER was damaging to carrots in Washington. BEET ARMYWORM caused damage to lettuce in Arizona and to celery in Florida.

CABBAGE LOOPER (Trichoplusia ni) was very prevalent on many vegetables in CALIFORNIA and required repeated treatments. The last instars of cabbage looper were the main problem in major lettuce areas of ARIZONA. Controls were difficult on larger heads of lettuce due to the protection offered by the outer leaves. Larvae were heavy in an okra field in mid-June in Yuma County. This was probably the most difficult insect to control in 1969. Cabbage looper was a major pest of lettuce in NEW MEXICO, and required treatments throughout the growing season. Larvae ranged moderate to heavy in eastern COLORADO. Damage was moderate where adequate controls were used. Losses ranged from moderate to heavy on lettuce.

ALFALFA LOOPER (Autographa californica) larvae heavily damaged carrots after moving from herbicide sprayed weeds in Whatcom County, WASHINGTON. Spinach was also damaged in Walla Walla County. BEET ARMYWORM (Spodoptera exigua) larvae infested lettuce in October in Yuma County, ARIZONA. Controls were required. Beet armyworm caused heavy damage to some celery plantings from October to December, and GRANULATE CUTWORM (Feltia subterranea) was the cause of fairly heavy damage throughout the winter and spring on a wide variety of vegetables at Belle Glade, Palm Beach County, FLORIDA. VARIEGATED CUTWORM (Peridroma saucia) and SPOTTED CUTWORM (Amathes c-nigrum) counts were below the previous 2-year averages in the field and blacklight trap catches in MICHIGAN.

ARTICHOKE PLUME MOTH (Platyptilia carduidactyla) was severe on artichokes all season in CALIFORNIA.

ASPARAGUS BEETLE (Crioceris asparagi) and SPOTTED ASPARAGUS BEETLE (C. duodecimpunctata) ranged light to moderate during May in NEW JERSEY. Some controls were required in fields next to wooded areas to prevent egg laying on asparagus spears. Asparagus beetle adults in DELAWARE were common on asparagus spears from mid to late April. Asparagus beetle populations in northeastern and eastern ILLINOIS were unusually high. Egg laying on newly emerging asparagus was common early in the harvest season. Adults and eggs were reduced by chemical treatments. Spotted asparagus beetle and asparagus beetle populations were normal in UTAH.

ASIATIC GARDEN BEETLE (Maladera castanea) was unusually heavy in Wicomico and Worcester Counties, MARYLAND, during the first half of July. Adults ranged 6-15 per row foot in 80 acres of sweetpotatoes near Snow Hill, Worcester County, and controls were required. GOLDEN TORTOISE BEETLE (Metriona bicolor) was economic in 40 acres of sweetpotatoes near Salisbury, Wicomico County, MARYLAND. Damage was light in other fields in the county and required no controls.

TARNISHED PLANT BUG (Lygus lineolaris) was light and caused no particular problem on celery in NEW JERSEY. This pest caused light but significant injury to an experimental planting of fall lettuce near Seabrook in September. The injury assumed the appearance of small brownish spots on leaves within the heads.

ASPARAGUS MINER (Melanagromyza simplex) was more noticeable and widespread in MICHIGAN this year. Damage was limited to the fern growth. The area most affected was Oceana County, especially first-year field-seeded asparagus stands.

ONION MAGGOT (Hylemya antiqua) damage to onions was scattered in COLORADO, with up to 15 percent being reported from Pueblo County. This pest caused normal damage to onions in UTAH. Onion maggot populations were moderate in NEW JERSEY but of little concern in commercial fields. Following the serious infestations of 1968, widespread use was made of in-furrow insecticides.

GREEN PEACH APHID (Myzus persicae) started to build up on all vegetable crops in NEW JERSEY during late spring and early summer. Midsummer rains and a fungus disease kept this pest in check the rest of the season. Generally, populations and damage were much lighter than in previous years. Incidence of mosaic type viruses transmitted by this species was generally much lighter than in past years.

BROWN WHEAT MITE (Petrobia latens) infested garlic in Lyon County, NEVADA, in early May. Controls were required. This spider mite caused light damage to some green onions in Washington County, UTAH, in spring. TWO-SPOTTED SPIDER MITE (Tetranychus urticae) was heavy on carrots in NEW JERSEY and leaf damage was moderate.

An ACARID MITE (Tyrophagus dimidiatus) caused severe damage to spinach in Monterey County, CALIFORNIA.

ONION THRIPS (Thrips tabaci) ranged 0-100 per onion plant with damage light to moderate in COLORADO. This pest was normal to moderate on onions in UTAH. Unspecified THRIPS were moderate on asparagus throughout south NEW JERSEY during spring. Damage was not enough to reduce the quality at food processing plants.

GRAY GARDEN SLUG (Deroceras reticulatum) populations were very low in spring 1969 and lower than usual in fall in the Willamette Valley of OREGON. This is in contrast to the heavy populations present in fall 1968.

Weather of the week continued from page 154. after several weeks of subnormal temperatures. A large area from the central Great Plains to the middle Appalachians averaged 6° to 12° warmer than normal. Some eastern areas averaged 8° to 15° warmer than the previous week. In general this was the warmest week in several months at most locations in the eastern half of the Nation. Early in the week, a quasi-stationary front stretched from the central Great Plains to the middle Atlantic coast. Cold air pushed southward north of the front and subfreezing minimums were common over the northern tier of States. South of the front, warm moist air pushed northward. Minimums were generally in the 40's and 50's; maximums ranged from the 50's from Kansas to Virginia to the 70's along the gulf coast. About midweek, subzero weather pushed into Montana and northern North Dakota. Havre, Montana, registered 20° below on Saturday, another blast of arctic air invaded the northern Great Plains. Roseau, Minnesota, registered 21° below zero on Saturday morning. A quick warmup pushed temperatures in the central Great Plains into the 70's on Sunday when Kirksville, Missouri, registered 73°. (Summary supplied by Environmental Data Service, ESSA.)

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March 20, 1970



Cooperative
**ECONOMIC INSECT
REPORT**

Issued by

PLANT PROTECTION DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE



AGRICULTURAL RESEARCH SERVICE

PLANT PROTECTION DIVISION

ECONOMIC INSECT SURVEY AND DETECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

All reports and inquiries pertaining to this release, including the mailing list, should be sent to:

Economic Insect Survey and Detection
Plant Protection Division
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United States Department of Agriculture
Federal Center Building
Hyattsville, Maryland 20782

COOPERATIVE ECONOMIC INSECT REPORT**HIGHLIGHTS**Current Conditions

PEA APHID heavy on alfalfa in Arizona and Oklahoma; controls applied in 3 New Mexico counties. (p. 171).

MEXICAN FRUIT FLY male trapped in California, first since 1965. (p. 174).

Detection

New State records include BROWN COCKROACH from California (p. 174) and a LEAF-CUTTING BEE from UTAH (p. 186).

For new county records see page 174.

Special Reports

Summary of Insect Conditions in the United States - 1969

Man and Animals (pp. 176-182).

Households and Structures (pp. 182-183).

Stored Products (pp. 184).

Beneficial Insects (pp. 185-188).

Some First Occurrences of Season

ARMY CUTWORM larvae in Colorado; WESTERN YELLOW-STRIPED ARMYWORM moths in California; BROWN WHEAT MITE in Kansas; ALFALFA WEEVIL larvae in Tennessee; GREEN CLOVERWORM moths in Alabama; NANTUCKET PINE TIP MOTH larvae in Oklahoma; CURRANT BORER larvae in Oregon; and BROWN LACEWING adults in Washington.

Reports in this issue are for week ending March 13 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance.....171

Insects Affecting

Small Grains.....171	Small Fruits.....173
Turf, Pastures, Rangeland.....171	Ornamentals.....173
Forage Legumes.....171	Forest and Shade Trees.....173
Deciduous Fruits and Nuts.....172	Man and Animals.....173
Citrus.....172	Households and Structures.....174

Beneficial Insects.....174

Federal and State Plant Protection Programs.....174

Detection.....174

Light Trap Collections.....174

Corrections.....174

Hawaii Insect Report.....175

Summary of Insect Conditions in the United States - 1969

Man and Animals.....176
Households and Structures.....182
Stored Products.....184
Beneficial Insects.....185

WEATHER BUREAU'S 30-DAY OUTLOOK

MID-MARCH TO MID-APRIL 1970

The Weather Bureau's 30-day outlook for mid-March to mid-April is for temperatures to average below seasonal normals over central and southern portions of the Plateau region and the Great Plains. Above normal temperatures are indicated for the California coast as well as the Great Lakes region and the Southeast. Elsewhere near normal temperatures are in prospect. Precipitation is expected to exceed normal along the north Pacific coast, the central Plateau and eastern half of the Nation except for near to below normal totals in Florida. Subnormal amounts are in prospect in the Rio Grande Valley as well as the southern half of California. In unspecified areas near normal precipitation is indicated.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price \$5.00 a year.

WEATHER OF THE WEEK ENDING MARCH 16

HIGHLIGHTS: The Far West continued mild. Cold weather predominated over the Central and East. Heavy snow fell in parts of the central Great Plains.

PRECIPITATION: Late winter storms dumped heavy snow to several parts of the Nation last week. Parts of the northern and central Rocky Mountains and the nearby Great Plains received heavy snow early in the week. By noon Monday, 18 inches of new snow had fallen at Hill City in the Black Hills of South Dakota. West Yellowstone, Montana, received 15 inches of new snow bringing the total depth to 48 inches. A foot of new snow fell at Ord, Nebraska, and Norfolk, Nebraska, received 9 inches Monday afternoon. This storm dumped 6 to 10 inches in southern South Dakota, northern Nebraska, and northwestern Iowa before spreading eastward to the Great Lakes. Freezing rain, freezing drizzle, and sleet along the southern edge of the snow belt slicked the highways in spots and made travel hazardous. A midweek storm produced snow in Arizona, New Mexico, Colorado, Oklahoma, and Kansas. Six to 10 inches fell in eastern New Mexico and Colorado. By noon, Thursday, 8 inches had fallen in the Missouri Ozarks and 5 inches in the Weather of the week continued on page 175.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMY CUTWORM (*Chorizagrotis auxiliaris*) - COLORADO - Second and third instars feeding on alfalfa in Larimer County. (Cross). KANSAS - Survey negative on wheat and alfalfa in Comanche County. (Brooks).

GREENBUG (*Schizaphis graminum*) - KANSAS - Surveys negative in Reno and Kingman Counties. Mostly light in Comanche County; increasing in some fields, ranged 25-50 per linear foot of wheat. No damage. (Brooks). Surveys negative in 1 south-west, 2 central, 3 north-central, and 4 south-central, counties. Ranged 1-3 per linear foot in Saline and Ottawa Counties. (Redding, Martinez). OKLAHOMA - Heavy in scattered wheatfields in Woods County; ranged 50-500 per linear foot in Ellis County. Ranged 2-40 per linear foot in few fields in Blaine, Woodward, Texas, and Beaver Counties. Ranged up to 400 per linear foot in Noble County; 50-75 per linear foot common in Garfield County. Moderate to heavy in Kingfisher County and moderate in Canadian County. Ranged 0-5 per linear foot in Le Flore, McCurtain, and Bryan Counties. (Okla. Coop. Sur.). ARIZONA - Highest count 25 per row foot on 10-inch barley on Salt River Indian Reservation, Maricopa County. Very light on barley in Yuma Valley, Yuma County. (Ariz. Coop. Sur.). COLORADO - Surveys negative on wheat in Larimer, Boulder, and Weld Counties. (Johnson).

SPOTTED ALFALFA APHID (*Therioaphis maculata*) - FLORIDA - Nymphs and adults totaled 40 in 100 sweeps of alfalfa at Gainesville, Alachua County. (Mead). ARIZONA - Ranged 800-1,200 per 100 sweeps of alfalfa in Gila Valley, Yuma County. (Ariz. Coop. Sur.).

SMALL GRAINS

WESTERN YELLOW-STRIPED ARMYWORM (*Prodenia praefica*) - CALIFORNIA - Adults collected in light traps in Yolo County. Some females gravid. (Cal. Coop. Rpt.).

WINTER GRAIN MITE (*Penthaleus major*) - OKLAHOMA - Averaged 8 per linear foot in wheat in Blaine County. Common in Noble County, moderate to heavy in Kingfisher County, and light in Canadian County. (Okla. Coop. Sur.).

BROWN WHEAT MITE (*Petrobia latens*) - KANSAS - Light on wheat in McPherson, Saline, Ottawa, Cloud, Republic, Washington, and Clay Counties. (Redding).

AN APHID (*Rhopalosiphum padi*) - OKLAHOMA - Ranged 10-100 per linear foot on small grain in McCurtain, Le Flore, and Bryan Counties. (Okla. Coop. Sur.).

A THRIPS (*Rhipidothrips brunneus*) - CALIFORNIA - Adults medium on barley at Zamora, Yolo County. (Cal. Coop. Rpt.).

TURF, PASTURES, RANGELAND

CHINCH BUG (*Blissus leucopterus*) - KANSAS - Bunch grass samples for spring survey collected late February from a total of 51 counties in central and eastern districts. Total of 145 samples collected. Average number per square foot by district as follows: North-central 63, central 158, south-central 212, northeast 3, east-central 10, and southeast 155. (Martinez, Redding, Guldner).

FORAGE LEGUMES

PEA APHID (*Acyrtosiphon pisum*) - ARIZONA - Counts per 100 sweeps of alfalfa ranged 2,500-3,000 in Gila and Yuma Valleys and 200-500 on Yuma Mesa, Yuma County. (Ariz. Coop. Sur.). NEW MEXICO - About 5,000 acres of alfalfa treated in De Baca, Eddy, and Chaves Counties. (Peabody et al.). OKLAHOMA - Heavy to very heavy in alfalfa in Kay and Alfalfa Counties. Some fields sprayed. Ranged up to 100 per square foot of crown in Payne County and light in Garvin County. (Okla. Coop. Sur.). KANSAS - Light on new alfalfa growth in Comanche County. (Brooks). FLORIDA - Nymphs and adults 175 in 100 sweeps of alfalfa at Gainesville, Alachua County. Increase over previous samples. (Mead).

NOCTUID MOTHS - ARIZONA - *Colias eurytheme* (alfalfa caterpillar) larvae ranged 0-5 and *Trichoplusia ni* (cabbage looper) larvae ranged 500-800 per 100 sweeps of alfalfa at Yuma Valley, Yuma County. (Ariz. Coop. Sur.). FLORIDA - *Plathypena scabra* (green cloverworm) larvae 21 in 100 sweeps of alfalfa at Gainesville, Alachua County. (Mead). ALABAMA - *P. scabra* moth flights occurred throughout south and central areas. Numbers normal. (McQueen).

ALFALFA WEEVIL (*Hypera postica*) - VIRGINIA - Overwintering adults less abundant than 1969 throughout State. Anticipated spring populations will be less damaging. (W.A. Allen et al.). TENNESSEE - First and second instars present in most alfalfa fields; eggs hatching. No damage reported in Giles and Hardeman Counties. (Edwards et al.).

WEEVILS (*Hypera* spp.) - ARIZONA - *H. brunneipennis* (Egyptian alfalfa weevil) counts per 100 sweeps of alfalfa in Yuma County as follows: Larvae and adults 80-100 in Yuma Valley; larvae 6-8 and adults 3-5 on Yuma Mesa. (Ariz. Coop. Sur.). OKLAHOMA - *H. punctata* (clover leaf weevil) larvae causing some damage to alfalfa in scattered areas of Pontotoc County. (Okla. Coop. Sur.).

LYGUS BUGS (*Lygus* spp.) - ARIZONA - Heavy, ranged 300-400 per 100 sweeps of alfalfa at Yuma Valley; 20-30 on Yuma Mesa, 5-10 in Gila Valley, Yuma County. (Ariz. Coop. Sur.). FLORIDA - *L. lineolaris* (tarnished plant bug) adults 15 in 100 sweeps of alfalfa at Gainesville, Alachua County. (Mead).

DECIDUOUS FRUITS AND NUTS

A LYGUS BUG (*Lygus hesperus*) - WASHINGTON - Heavy in untreated pear orchards at Wapato, Yakima County, March 8. (Gregorich).

CITRUS

Citrus Insect Situation in Florida - End of February - CITRUS RUST MITE (*Phyllocoptura oleivora*) infested 70 (norm 62) percent of groves; economic in 43 (norm 41) percent. Population dropped out of high range in 3 districts, but expected to increase. Will continue above normal for this time of year. Highest districts west and east. CITRUS RED MITE (*Panonychus citri*) in 48 (norm 37) percent of groves; economic in 16 (norm 14) percent. Population increased and is slightly above normal. Increase to moderate level expected. A few groves in all districts may develop heavy infestations. Highest district west. TEXAS CITRUS MITE (*Eutetranychus banksi*) in 22 (norm 31) percent of groves; economic in 4 (norm 11) percent. Decreased to very low level and is much below normal. Little change expected. Highest district west. SIX-SPOTTED MITE (*Eotetranychus sexmaculatus*) infested 2 percent of groves; none economic. Gradual increase expected. GLOVER SCALE (*Lepidosaphes gloverii*) in 78 (norm 78) percent of groves; economic in 9 (norm 17) percent. Population below normal and in moderate range; increase expected. Highest district east. PURPLE SCALE (*L. beckii*) in 69 (norm 77) percent of groves; economic in 5 (norm 9) percent. Below normal; at low level. Little change expected. Highest district north. CHAFF SCALE (*Parlatoria pergandii*) in 46 (norm 61) percent of groves; economic in 1 (norm 9) percent. Population much below normal and in low range. Slight increase expected. Highest district north. BLACK SCALE (*Saissetia oleae*) in 14 (norm 33) percent of groves; economic in 3 (norm 14) percent. Population at lowest February level since 1963 due to sub-freezing temperatures in early January. Little change expected. YELLOW SCALE (*Aonidiella citrina*) in 58 (norm 63) percent of groves; economic in 9 (norm 13) percent. Population expected to remain near normal moderate level for March. Scattered groves will harbor important infestations. Highest district north. AN ARMORED SCALE (*Unaspis citri*) in 25 percent of groves; moderate in 8 percent. Population low statewide. This species heavier than in previous years in February. Increase expected. APHIDS scarce, will increase in March and early April. WHITEFLIES in 59 (norm 55) percent of groves; economic in 32 (norm 22) percent. Population much above normal and in moderate range. Little change expected. (W.A. Simanton (Citrus Expt. Sta., Lake Alfred)).

CITRUS RED MITE (Panonychus citri) - ARIZONA - Few groves treated at Yuma, previously infested groves watched in Yuma County. (Ariz. Coop. Sur.).

AN ARMORED SCALE (Unaspis citri) - FLORIDA - All stages moderate on 90 percent of 1,600 citrus plants at Plymouth, Orange County. (Speaker).

OMNIVOROUS LOOPER (Sabulodes caberata) - CALIFORNIA - Larvae heavy on tangelo trees at Camarillo, Ventura County. (Cal. Coop. Rpt.).

SMALL FRUITS

CURRENT BORER (Ramosia tipuliformis) - OREGON - Larvae light in 3-year-old currant field near Oregon City, Clackamas County. (Rosenstiel).

ORNAMENTALS

WEEVILS (Brachyrhinus spp.) - OREGON - Late instars of B. ovatus (strawberry root weevil) ranged up to 15 per plant on roots of arborvitae in field nursery at Gresham. B. rugosostriatus larvae ranged up to 10 per plant on yew in several Multnomah County field nurseries. (Larson, Rosenstiel).

FLORIDA WAX SCALE (Ceroplastes floridensis) - ALABAMA - Overwintered scales light on many magnolia trees in Lee County. Some on camellia shrubs and old dahlia stalks. Importance minor in central and northern areas; importance economic in southern areas. (McQueen).

AN ARMORED SCALE (Abgrallaspis cyanophylli) - CALIFORNIA - Heavy on euphorbia nursery stock at Lompoc, Santa Barbara County. (Cal. Coop. Rpt.).

FOREST AND SHADE TREES

NANTUCKET PINE TIP MOTH (Rhyacionia frustrana) - OKLAHOMA - Small larvae present in about 10 percent of terminals of young pine trees in McCurtain, Le Flore, and Bryan Counties. (Okla. Coop. Sur.).

MAN AND ANIMALS

SCREW-WORM (Cochliomyia hominivorax) - No cases reported in U.S. March 8-14. Total of 56 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico March 1-7 as follows: Sonora 39, Chihuahua 8, Tamaulipas 9. Total of 2 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 4,128,000; Mexico 130,620,000. (Anim. Health Div.).

SHORT-NOSED CATTLE LOUSE (Haematopinus eurysternus) - OKLAHOMA - Cattle lice, mostly this species, heavy in several northwest, north-central, and northeast counties. Scattered and moderate to heavy in Garvin and Bryan Counties. (Okla. Coop. Sur.).

SOUTHERN HOUSE MOSQUITO (Culex pipiens quinquefasciatus) - ALABAMA - First larvae of season in Lee County. Few adults observed. (McQueen).

COMMON CATTLE GRUB (Hypoderma lineatum) - OKLAHOMA - Light in backs of cattle in Payne County; ranged 1-4 per head in 3 of 18 animals. Light to moderate in Garvin County. (Okla. Coop. Sur.). TENNESSEE - Averaged 4.7 per animal in 41 of 125 head of cattle in Giles County. (Edwards et al.).

HOG LOUSE (Haematopinus suis) - MISSISSIPPI - Averaged 1.5 behind ears on 30 head of hogs at State College, Oktibbeha County. (Sartor).

LONE STAR TICK (Amblyomma americanum) - OKLAHOMA - Adults and few nymphs in forest floor duff in eastern areas during warm days. (Okla. Coop. Sur.).

NORTHERN FOWL MITE (Ornithonyssus sylviarum) - MISSISSIPPI - Light on caged hens at State College, Oktibbeha County. (Sartor).

BROWN RECLUSE SPIDER (Loxosceles reclusa) - ARKANSAS - Specimen collected from Arkansas County. (Lincoln, Rouse). This is a new county record. (Boyer).

HOUSEHOLDS AND STRUCTURES

BROWN COCKROACH (Periplaneta brunnea) - CALIFORNIA - Infestation detected in apartment at Inglewood, Los Angeles County, October 1968 by D. Reierson. Determined by G. Buxton, confirmed by A.B. Gurney. This is a new State record. Tenants moving from out of State may have introduced this pest. (Cal. Coop. Rpt.).

A CARPENTER ANT (Camponotus caryae) - OKLAHOMA - Swarming and entering home at Stillwater, Payne County. (Okla. Coop. Sur.).

OLD-HOUSE BORER (Hylotrupes bajulus) - TENNESSEE - Reported for the first time in Johnson County. This is a new county record. (Walker).

BENEFICIAL INSECTS

A BRACONID (Lysiphlebus testaceipes) - OKLAHOMA - Parasitized greenbugs in Woodward, Blaine, and Noble Counties. (Okla. Coop. Sur.).

BROWN LACEWINGS - WASHINGTON - Adults found March 5 on apples at Cowiche, Yakima County. (Gregorich).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - ALABAMA - Infestations in east-central area remain about same as 1969. Spring mound building occurring. Estimated winter mortality of total average colony 4 percent. Expect little effect on population and new colony development in 1970. (Barwood).

MEXICAN FRUIT FLY (Anastrepha ludens) - CALIFORNIA - One wild male fly trapped March 3 at San Diego, San Diego County; last wild fly trapped October 7, 1965, one mile west and a little north of main gate at Tijuana. (PPD).

DETECTION

New State Records - BROWN COCKROACH (Periplaneta brunnea) CALIFORNIA - Los Angeles County (p. 174). A LEAFCUTTING BEE (Megachile concinna) UTAH - Salt Lake County (p. 186).

New County Records - BROWN RECLUSE SPIDER (Loxosceles reclusa) ARKANSAS - Arkansas (p. 174); NEBRASKA - Gage (p. 182); OLD-HOUSE BORER (Hylotrupes bajulus) TENNESSEE - Johnson (p. 174).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville, 3/6-12, BL - Black cutworm (Agrotis ipsilon) 1, granulate cutworm (Feltia subterranea) 28, salt-marsh caterpillar (Estigmene acrea) 7. TEXAS - Waco, 3/5-12, BL - Armyworm (Pseudaletia unipuncta) 23, granulate cutworm 3, variegated cutworm (Peridroma saucia) 36, yellow-striped armyworm (Prodenia ornithogalli) 19.

CORRECTIONS

CEIR 20(10):147 - A LARGID BUG (Largus succinotus) should read A LARGID BUG (Largus succinctus).

HAWAII INSECT REPORT

Pasture - ARMYWORM (*Pseudaletia unipuncta*) larvae light, average 2 per square foot, in Kikuyu grass pastures, no damage, at Waihee and Haiku, Maui. (Ah Sam, Miyahira).

General Vegetables - All stages of GREENHOUSE WHITEFLY (*Trialeurodes vaporariorum*) trace to light in snap beans at Pupukea and Waimea, Oahu. Trace in 0.25 acre of cucumber seedlings at Pupukea. Adults of LEAF MINER FLIES (*Liriomyza* spp.) moderate in 0.30 acre of zucchini at Waimea, mines light. All stages heavy in 1.5 acres of tomato at Hauula, Oahu. Adults up to 8 per leaf on 3-inch high seedlings. WATERLILY APHID (*Rhopalosiphum nymphaeae*) moderate (heavy in spots, up to 100-150 per leaf) in 2 acres of taro at Waihee; Maui. TARO LEAFHOPPER (*Tarophagus proserpina*) trace at same location and in 2 acres of taro at Wailua, Maui. (Miyahira).

Fruits - MANGO FLOWER BEETLE (*Protaetia fusca*) adults heavy, up to 29 per fruit, on backyard peach tree at Waimanalo, Oahu. (Suzukawa).

Ornamentals - A SPIDER MITE (*Eotetranychus lewisi*) light to heavy on poinsettia, caused discoloration of leaves throughout Kona, Hawaii. (Funasaki). All stages of CRESCENT-MARKED LILY APHID (*Neomyzus circumflexus*) moderate in 0.25 acre of easter lily at Kilauea, Kauai. (Sugawa).

Beneficial Insects - SOUTH AFRICAN EMEX WEEVIL (*Apion antiquum*) larvae heavy on emex stems and adult damage moderate to leaves in pasture at Pukalani, Maui. (Miyahira).

Miscellaneous Insects - Male VAGRANT GRASSHOPPER (*Schistocerca vaga*) noted in wild vegetation at Keawakapu, Maui, is third specimen to date. (Ah Sam).

Weather continued from page 170.

Boston Mountains in northwestern Arkansas. By Friday the snow area had spread northeastward to southwestern New York and to the middle Atlantic coast. Thunder-showers some accompanied by hail fell from the lower Mississippi River Valley. A weekend storm dumped more snow in Kansas, Oklahoma, Missouri, and Arkansas.

TEMPERATURE: Arctic air plunged southward across mid-America early Monday morning, March 9, bringing sharply colder temperatures. Concordia, Kansas, registered 32° Monday afternoon in contrast to the balmy 74° recorded the previous day. Maximums in the 70's were common from Oklahoma to the Gulf of Mexico on Monday but, on Thursday, after the cold air reached the gulf temperature at Houston, Texas, climbed only to 45°. Minimums in the northern Great Plains dropped to below zero on Tuesday and Wednesday. Chadron, Nebraska, registered 20° below zero on Wednesday morning. The weekend brought continued cold weather over the eastern half of the Nation. Subzero temperatures occurred in the Red River of the North Valley on Sunday and Monday mornings and in northern Maine, Monday morning. Weekly temperatures averaged slightly above normal in the Far West and the Great Basin and below normal from the Rocky Mountains to the Atlantic Ocean. Most of the Missouri, Mississippi, and Ohio River Valleys averaged 6° to 12° below normal. Parts of the Dakotas and Nebraska averaged more than 12° below normal. (Summary supplied by Environmental Data Service, ESSA.)

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1969
(Continued from page 168)

MAN AND ANIMALS

Highlights:

SCREW-WORM cases in 1969 were the lowest since the beginning of the eradication program in the Southwest. HORN FLY was heavy in Texas, caused weight loss in beef cattle in Mississippi, and was the most important fly pest of cattle in Florida. FACE FLY was found for the first time in Arkansas and Oklahoma, and continued to spread in California. This fly annoyed livestock in many areas. HOUSE FLY was a problem around livestock and poultry operations in several areas. MOSQUITOES were annoying in many sections of the Nation. TICKS were of some concern to man and livestock.

The lowest number of SCREW-WORM (Cochliomyia hominivorax) cases in history was reported in 1969. This was a new record for the Southwest Screw-worm Eradication Program, but officials fear relaxed vigilance could weaken the program.

Veterinarians of the Agricultural Research Service, U.S. Department of Agriculture, reported only 219 confirmed cases of screw-worm in the United States in 1969, the best record ever achieved. TEXAS had 161 cases, ARIZONA 32, NEW MEXICO 18, and CALIFORNIA 8. The best previous year was 1964 with 403 cases. The worst year since 1962, when the program began, was the 1968 outbreak with 9,878 cases. Efforts to reduce the screw-worm threat in northern Mexico also showed outstanding progress. Only 7,453 cases had been reported in neighboring Mexican States by December 27, compared with 19,452 for the same period in 1968. Program officials tempered their optimism with concern that ranchers were not inspecting livestock regularly for screw-worms which may permit some cases to go unreported. As an indication they cited a sharp decline in the collection of nonscrew-worm larval samples. Even when there are few screw-worms, if there is a high level of inspection, ranchers will find numerous blow fly larvae and send them in for identification. In 1969, nonscrew-worm cases totaled 3,101, compared with an average of 4,700 annually for the preceding 5 years. The decline was most noticeable in the last 6 months when only 944 nonscrew-worm samples were received, compared with 2,157 for the first half of the year. Eradication officials have been especially concerned since screw-worm was reported in Comal County, Texas, on December 15. Before then no other cases had been found east of the Pecos River since another case in Comal County on July 14. The nearest recent outbreak in Mexico was in mid-November near Piedras Negras, more than 160 miles away.

Screw-worm flies can travel more than 180 miles to lay eggs. Veterinarians say, however, that the pest usually does not spread that far without other cases appearing, spaced at shorter distances. During the year, the eradication program produced and distributed some 6.71 billion sexually sterile screw-worm flies over the Southwestern States and northern Mexico. A new "thin film" distribution pattern enabled officials to drop sterile flies in advance of known outbreaks, as well as over infested areas. The planning of sterile fly drops was improved by more comprehensive analysis of screw-worm spread. In northern Mexico, program workers were trained to identify larvae in the field, permitting quicker reporting and treatment of all outbreaks.

Current screw-worm infestations in the United States arise from fertile flies moving northward to the Mexican border and into the United States. Self-perpetuating populations of the pest were eradicated in the Southeast by a 1958-1959 program and in the Southwest by the present program from 1962-1966. Efforts are now directed toward maintaining a barrier zone along the border, in which billions of sterile flies are released, to prevent reestablishment of screw-worm in the United States. Screw-worm continues to be found in Puerto Rico, and was reported for the first time last summer in the U.S. Virgin Islands.

HORN FLY (*Haematobia irritans*) generally ranged 5-75 (averaged less than 50) per side of pastured cattle in Latah and Benewah Counties, IDAHO, during summer. Annoyance was minor. Horn fly was an important cattle pest in UTAH. It annoyed untreated cattle in WYOMING. Counts averaged up to 250 per head in August.

Horn fly populations of 50 or more per head infested cattle in NORTH DAKOTA by June 1. Counts on untreated animals increased to over 600 flies per head. An organic phosphate was aerially applied to 10,000 range cattle in Richland and Ransom Counties. In SOUTH DAKOTA counts of 200+ per side on untreated cows were common from July through August. Mid-July counts ranged 200-500 per side on Hereford and Angus cows and calves in southern Brule and northern Tripp Counties. Early July counts were lighter than usual, averaging 35 per side on untreated cows at Highmore, Hyde County. Aerial spraying of beef cattle is increasing in South Dakota. Counts in NEBRASKA increased from 10 per animal in mid-May to 500-600 per side in July in Saunders and Lancaster Counties. Populations peaked in August and were active into October. Horn fly was active on cattle in OKLAHOMA from late March to mid-November. Counts were heaviest in late May to early June, in early July, and in September. This pest was heavy on cattle in TEXAS. The heaviest infestations still occur in the Trans-Pecos area.

Horn fly in ARKANSAS was lighter than normal due probably to dry weather. Adults in MISSISSIPPI emerged early in April. Infestations increased to 100-300 flies per head of cattle in May and June, dropped to 25 per head in July, and reached 2,000 per head in August and September. As many as 25 flies per head were still present on treated cattle in Clay County in late November. Weight loss of beef cattle was estimated at \$12,474,000. Horn fly was annoying throughout the season beginning in late March in south ALABAMA. Infestations were limited mainly to beef herds where proper control was not applied. In Alachua County, FLORIDA, it was the most important fly on livestock. Economic levels were reached May 7. Counts were as high as 1,000 per animal by May 24 on some beef herds. Peaks occurred in mid-June and late August. Numbers were probably about average. In the Everglades area, numbers peaked at 518 per animal June 9 on beef cattle. Counts were slightly lower during summer, reached peaks of 570 on October 15 and of 617 on October 30, and then declined to 125 on December 1.

Horn fly in ILLINOIS averaged 135 per animal, similar to that of 1968, from May through September on pastured cattle. However, counts persisted at higher levels and longer, well into September, in 1969 than in 1968. Adults over most of WISCONSIN slowly increased until late in June when reproduction and development accelerated due to warm weather. Annoyance was moderate in all areas by August 15. Counts averaged 100 flies per cow on Holsteins in Waushara County in August. This muscid fly was a major pest in MICHIGAN. Counts in NEW JERSEY were slightly less abundant than in recent years. Annoyance was spotty.

FACE FLY (*Musca autumnalis*) continued to spread in northern CALIFORNIA. Twelve counties are now infested. Annoyance in summer and movement into buildings in winter were severe. Several thousand parasites and predators were released for control of this pest in California. In OREGON it was particularly annoying in Jackson and Josephine Counties. An average of 10 per cow occurred in Washington County in early June. Face fly occurred in light numbers on WASHINGTON livestock and caused little annoyance. In IDAHO face fly ranged up to 4 (average 1) per face on beef and dairy herds at Kendrick, Moscow, and Potlatch in Latah County June 11. Counts ranged 1-15 (averaged 8 or less) per face on some pastured cattle in Latah and Benewah Counties in early July and ranged up to 40 per face in early August. Face fly in UTAH was an important cattle pest and a great annoyance to horses. In MONTANA counts were near the alltime high of 1967 in Gallatin and Ravalli Counties. This pest is not found or is below detection levels in many areas.

Face fly in NORTH DAKOTA reached 25 per face on range cattle by mid-June in Richland and Ransom Counties. Economic infestations only occurred in the sand-hills area in these counties. Counts in SOUTH DAKOTA were about the same overall as in 1968. In northern Tripp County there were 1-5 per face on untreated stock in mid-July. Aerial spraying of beef cattle is increasing in the State. Counts in NEBRASKA were generally low statewide; 2-3 flies per animal infested 2 herds in Nemaha and Saunders Counties in mid-July. Face fly was found in Cherokee County, OKLAHOMA, for a new State record. Several herds were infested in June and July. This fly was also found in Benton County, ARKANSAS, for a new State record and in Washington County for a new county record.

Face fly annoyed cattle in some areas of east and central TENNESSEE. Warren County was a new county record. Face fly is known in 23 counties in the State. In ILLINOIS, counts of 11 per face on pastured cattle from May through September were almost identical to those of 1968. However, it persisted at higher levels and longer, well into September, in 1969 than in 1968. Face fly was a major pest in MICHIGAN. Populations in OHIO in 1969 were similar to or a little lighter than those in 1968. Economic losses only occur between a line through Paulding, Seneca, and Medina Counties and a line through Butler, Ross, and Athens Counties. In NEW JERSEY, face fly was more numerous and troublesome than in the previous 2 years.

LITTLE HOUSE FLY (Fannia canicularis) adults were heavier than usual during June at Caldwell, Canyon County, IDAHO, and were very annoying to homeowners. HOUSE FLY (Musca domestica) was a serious problem in many UTAH communities. Problems occurred about farms and communities, corrals, hog pens, and chicken coops. It greatly annoyed horses. M. domestica in OKLAHOMA was annoying to cattle and around barns from late April to late October. M. domestica problems in ARKANSAS are increasing in poultry houses. Controls were applied from February into November. M. domestica adults in ALABAMA were annoying around swine and poultry operations. It was a serious health hazard throughout the State. Large numbers entered poorly screened homes near dairy barns and poultry houses. M. domestica in FLORIDA was unusually heavy over a wide area of the Everglades on June 1, in and around livestock barns, pens, and in pastures at watering and feeding areas. Counts sharply increased near Gainesville, Alachua County, in dairy barns the last week of May and first week of June. House fly larvae heavily infested droppings of 30,000 birds in caged poultry operations in Baker County in early September. M. domestica was somewhat more numerous than normal in barns in ILLINOIS. Although not much higher than average, numbers remained abundant longer, well into September. Spraying for M. domestica began about June in WISCONSIN. House fly became a general nuisance in late July and much treatment on farms and in homes was necessary. M. domestica in NEW JERSEY was definitely more abundant around livestock earlier in 1969 than in 1968 due to plentiful rainfall. But by late July heavy rainfall had drowned many field populations. Fly control still is difficult due to increasing resistance to many residual-type sprays. F. canicularis in NEW JERSEY was typically abundant and troublesome to poultry due to plentiful rainfall during midsummer.

STABLE FLY (Stomoxys calcitrans) was an important cattle pest in UTAH. Occurring from late April to late November in OKLAHOMA, counts were heavy only in early September. Counts in NEBRASKA were slightly higher in 1969 than in 1968. Numbers built up rapidly by mid-June. Averages ranged 7-10 per leg June 17 on feedlot and dairy animals in Lancaster and Saunders Counties, and 20-25 per leg July 11 in untreated Lancaster County feedlots. Populations ranged 30-35 per leg the first half of August, and 10-15 flies per leg by August 22 in Lancaster County.

Stable fly counts of 9 per animal in ILLINOIS from May through September on pastured cattle were about the same as those of 1968. However, populations persisted at higher levels and longer, well into September, in 1969 than in 1968. It was somewhat more numerous than normal in barns. Stable fly was the most troublesome fly on cattle in most of WISCONSIN in 1969. Small numbers of adults were active in all areas by May 16, and control was underway by May 30 in

Calumet County. Annoyance increased late in June. Annoyance was moderate to severe in late July and August in Jefferson, Clark, Bayfield, Portage, Columbia, Richland, Chippewa, Calumet, Grant, Walworth, Rock, Price, Wood, Trempealeau, Jackson, and Winnebago Counties. Populations were high until October, but annoyance subsided due to cool weather.

Stable fly was much more abundant in NEW JERSEY than during recent years due to favorable breeding conditions in pastures in early July. It was very annoying to man and animals. Numbers were higher in west FLORIDA in 1969 than in any year since 1964, due primarily to the effects of Hurricane Camille. On the average, counts were probably lighter than usual on livestock in Alachua County. Counts peaked at 6-7 per animal in late June. Maximum numbers of flies per animal reached 130 near Hague, Alachua County, in late June. High populations probably resulted from spillage by bunker feeding of green chop.

MOSQUITOES were heavy due to winter and spring moisture in NEVADA. Aedes dorsalis, A. melanonotus, A. nigromaculis, Anopheles freeborni, Culex tarsalis, and Culiseta inornata predominated. Mosquitoes in UTAH were serious in parts of Cache, Box Elder, Davis, Utah, Sanpete, Millard, Duchesne, Uintah, Piute, Rich, and other counties following storms. They were important cattle pests and greatly annoyed horses. Populations in WYOMING were generally lighter than in 1968. The heaviest counts occurred in Fremont, Hot Springs, Washakie, and Big Horn Counties. Mosquitoes annoyed man and animals throughout NEW MEXICO following summer rains.

Mosquito-borne encephalitis was not nearly so prominent as in past years in KANSAS. One case of St. Louis encephalitis was confirmed. A total of 36 cases in horses, about half the usual number, was reported. Annoying numbers of mosquitoes, mostly Psorophora spp., were found in scattered OKLAHOMA areas in late August and September. P. confinnis is a major nuisance to man and animals in ARKANSAS. Its numbers were in the millions in all low, level areas in late May, June, and into July or August. SALT-MARSH MOSQUITO (Aedes sollicitans), SOUTHERN HOUSE MOSQUITO (Culex pipiens quinquefasciatus), and other species in ALABAMA were annoying around homes, outdoor living quarters, and recreational areas, especially along the coastal areas and lakes. A wet year contributed to the low levels of floodwater mosquitoes over most of FLORIDA, except in the northwest area, the Keys, and possibly the extreme southwest coastal counties. South Walton County frequently reported the largest numbers of Aedes taeniorhynchus and A. sollicitans. Equine encephalitis was found in 272 animals in 11 months of 1969 compared with 41 animals in all of 1968. Heartworm was found in 913 animals in 11 months of 1969 compared with 989 in all of 1968.

Mosquitoes were heavy statewide in MINNESOTA by mid-July due to heavy rains in late June and early July. Aedes vexans was predominant. Severe biting in WISCONSIN started May 15 near woods and flood pools. The most prevalent species biting humans in May was FLOODWATER MOSQUITO (A. sticticus). Cattle were annoyed in many localities in late May and in June. Heavy rains early in June created favorable breeding conditions over most of the State except in several northwestern counties. Severe biting of humans occurred over most of the State from July 4 to August 1 and then subsided except in wooded lowlands. The predominant biters in Dane County were A. trivittatus, A. vexans, A. excrucians, Culex pipiens, and PITCHERPLANT MOSQUITO (Wyeomyia smithii). In MICHIGAN, Aedes stimulans, Anopheles walkeri, COMMON MALARIA MOSQUITO (Anopheles quadrimaculatus), C. pipiens, and C. salinarius were plentiful. C. pipiens was heaviest in State park sewage lagoons. Larval counts ranged as high as 3,000-4,000 per dip at two locations. Already troublesome by May 15 in Franklin and Ottawa Counties, OHIO, mosquitoes were heavier at the end of May than they have been for the past several years. At this time counts were moderate to high in Lucas County and high in Richland County. An extremely heavy rain July 4-5 fell north of a line from Ottawa County through Guernsey County. Within a week, biting was intolerable in Ottawa and Wayne Counties. By the end of July, northeastern Ohio had a serious public health problem. During August 13-26 some 3 million acres were sprayed in Huron, Ashland,

Wayne, Holmes, Stark, Tuscarawas, Coshocton, Muskingum, and Harrison Counties. Seven to ten days later, adults had decreased by 97 percent. Dry weather from August 15 to September 15 reduced numbers.

Many mosquito species were abundant in VIRGINIA east of Montgomery County. Populations built up in July and remained in annoying numbers through September in some sections. In MARYLAND, female catches in 15 counties increased 16.4 percent over 1968 catches. The floodwater species increased the most significantly. Aedes vexans females doubled over last year's counts. Of 165,348 females trapped, 31,433 were Anopheles crucians and A. bradleyi; 37,329 Aedes sollicitans; 49,204 Culex sp.; 10,448 Psorophora confinnis, and 17,159 A. vexans. In DELAWARE, Culex spp., floodwater Aedes spp., and Psorophora spp. predominated. They were much more annoying than the usual salt-marsh species. Mosquitoes in NEW JERSEY were more abundant due to plentiful midsummer rainfall. The biting pressure was constant mostly by Aedes spp. throughout RHODE ISLAND during summer. Counts appeared heavier than in 1968.

COMMON CATTLE GRUB (Hypoderma lineatum) and NORTHERN CATTLE GRUB (H. bovis) appeared early in 1969 in CALIFORNIA. Imported cattle are partially responsible for the infestations in the State. In UTAH, H. lineatum and H. bovis were important cattle pests. In MONTANA many cattlemen applied systemic insecticides externally. H. lineatum and H. bovis adults were scarce. In NORTH DAKOTA 6.7 Hypoderma spp. grubs per head infested up to 41 (average 11) percent of the cattle in Morton, Stark, Williams, Ward, and Ramsey Counties. One to 10 grubs infested 82 percent, 11-20 infested 11 percent, and 20+ infested 7 percent of the infested animals. H. bovis grubs in WISCONSIN were trace in southeast counties, heavy in west counties, and moderate elsewhere, except in the far north tier of counties. A cattle grub survey was conducted in ILLINOIS on cattle that had been on pasture during spring and summer. These cattle ranged from 11 to 30 months of age. Collections also were made only from native cattle coming to packing houses from their respective areas. A total of 828 animals was checked for cattle grubs, with a State average infestation of 1.9 grubs per animal. Grubs averaged 3.5 per head for beef animals and 0.5 per head for dairy cattle. H. lineatum was more prevalent than H. bovis, especially in the southern one-half to two-thirds of the State. H. lineatum encysted in backs sooner (February and March) than H. bovis (March and April). In OKLAHOMA, H. lineatum was found in backs of cattle through late March. Adults occurred from late March to mid-May. Larvae were again found in mid-October. H. lineatum in ARKANSAS was later than usual in 1968-1969. Normally appearing in December, grubs did not appear in the backs of cattle until mid-January. This is not so severe a pest as it once was due to effective, widespread control. The highest numbers ranged up to 10 per head in untreated cattle, but averaged less than one per head in treated cattle. H. lineatum occurs statewide in ALABAMA. Populations and damage were about the same as in 1968, light to medium, probably due to better controls. H. lineatum infested cattle in the Everglades area of FLORIDA. Grubs peaked at 5 per animal in January. Infestations were about the same as in 1968 in Alachua County. A maximum number of 80.5 percent of beef cattle was infested in mid-January. Grubs averaged 7-8 per animal.

TABANID FLIES were important cattle pests and very annoying to horses in UTAH. Generally lighter than in 1968 in WYOMING, the heaviest numbers of HORSE and DEER FLIES occurred in Teton and Washakie Counties. Chrysops spp. and Tabanus spp. were very numerous in wooded areas by mid-July in MINNESOTA. Tabanid flies were active from mid-April to mid-September in OKLAHOMA. Hybomitra nigricans was heavy in the southeast area in late April and Tabanus sulcifrons, T. lineola complex, and BLACK HORSE FLY (T. atratus) were common for the rest of the season. Diachlorus ferrugatus, still the worst horse fly in most areas of FLORIDA, annoyed people and range cattle in late spring.

Adults of a BLACK FLY (Simulium venustum) appeared along eastern river areas in NORTH DAKOTA the first week of May. By mid-May, 5,000 flies per head annoyed livestock. Annoyance persisted into the first week of July in spite of a population decline. Black flies in MINNESOTA were numerous in Minneapolis and St. Paul the first half of June. Simulium spp. females were biting throughout RHODE ISLAND by May 4, particularly near streams. Heavy biting continued through May 25.

SHEEP KED (Melophagus ovinus) was common and numerous on sheep in UTAH. Controls were not applied to many flocks.

Several other Diptera were annoying. An EPHYDRID FLY (Ephydra gracilis) occurred in very heavy numbers in areas of UTAH. Large numbers of dead adults and puparia washed up on the beaches of the Great Salt Lake. The accompanying stench was annoying at lakeside resorts and at Antelope Island State Park. A BITING MIDGE (Leptoconops kerteszi) was annoying in these same areas of UTAH, as well as in parts of Millard, Juab, and a few other counties. Thousands of adults of a SPAEROCERID FLY (Leptocera sp.) were annoying in the feed room and around windows in a large poultry house in Huntingdon County, PENNSYLVANIA, in late December 1968 and early January 1969. This fly was also annoying in November in a building housing earthworm beds in Crawford County. A SOLDIER FLY (Hermetia illucens) was severe during summer in caged poultry operations at several locations in Polk, Okeechobee, and Palm Beach Counties, FLORIDA. Larvae broke down droppings, creating a bad odor. Extensive flights of a MARCH FLY (Plecia nearctica) occurred in north-central FLORIDA in May and September for the fourth consecutive year. The September flight involved one-fourth to one-third of the land area in the State. Adults were also reported over the open waters of the Gulf of Mexico and the Atlantic Ocean.

BROWN DOG TICK (Rhipicephalus sanguineus) was more prevalent than usual in CALIFORNIA. R. sanguineus, LONE STAR TICK (Amblyomma americanum), and WINTER TICK (Dermacentor albipictus) caused problems in TEXAS. In OKLAHOMA A. americanum was common in east and central areas from late February through mid-September and GULF COAST TICK (A. maculatum) was heavy on cattle in Johnston County in late May. D. albipictus occurred in scattered areas of OKLAHOMA in January and early February and again from late September through December. In FLORIDA, Anocentor nitens transmitted 138 cases of equine piroplasmiasis in 11 months of 1969 compared with 101 cases in all of 1968. Moderately heavy numbers of R. sanguineus in PENNSYLVANIA infested several hundred homes at Allentown, Lehigh County, during early spring. A resident of Centre County collected 55 specimens from his bedroom one night in July.

ROCKY MOUNTAIN WOOD TICK (Dermacentor andersoni) was heavier than usual in western WASHINGTON. In IDAHO, counts ranged 35-100 per head on 100 yearling steers at Spalding, Nez Perce County, April 3-4. A severe outbreak of tick paralysis caused about half of the herd to go down. The steers were able to get to their feet shortly after chemical applications. One steer died.

AMERICAN DOG TICK (Dermacentor variabilis) in IDAHO was more numerous than normal in Clearwater, Idaho, Nez Perce, and Owyhee Counties indicating establishment in these counties. In MINNESOTA it was numerous by late May and still active in the southeast area as late as July 25. Populations were heavier than usual throughout TENNESSEE. American dog tick was especially abundant and persisted from late April through June in most of DELAWARE. Populations in PENNSYLVANIA were fairly abundant in April and May in Perry, Cumberland, and York Counties. It was reported frequently from man and dogs. American dog tick was numerous throughout RHODE ISLAND May 12; it was more numerous than in 1968.

EAR TICK (Otobius megnini) in IDAHO was collected from a dog at Caldwell, Canyon County, August 16. Previous collections were made from Cassia, Elmore, Gem, Twin Falls, Valley, and Washington Counties. Ear tick infested cattle in several east-central counties of OKLAHOMA from early March through late September.

NORTHERN FOWL MITE (Ornithonyssus sylviarum) is still an important pest in heavy poultry-producing counties in ARKANSAS. Moderate infestations occurred in Augusta County, VIRGINIA, with the approach of fall. Damage was considered minor, but control measures were recommended. This mite was a serious pest in many flocks throughout PENNSYLVANIA. Egg production at several large poultry operations was reported to be down by 20 percent. Controls were difficult. Counts in NEW JERSEY were generally low and of little economic concern.

HOG LOUSE (Haematopinus suis) occurred in scattered areas of OKLAHOMA from late January to early May. In ALABAMA it was not a serious pest of most swine produced under well-managed conditions. Hog louse was heavy in Alachua and Suwannee Counties, FLORIDA, during spring. Infestation rates were about the same as in 1968.

SHORT-NOSED CATTLE LOUSE (Haematopinus eurysternus) was controlled with dips by some stockmen in MONTANA. Cattle lice, mainly H. eurysternus, were moderate to heavy on cattle in OKLAHOMA through mid-May. H. eurysternus was a serious external pest of cattle, especially range beef cattle, throughout ALABAMA and caused considerable loss of weight and vitality during late winter. CATTLE TAIL LOUSE (H. quadripertusus) in FLORIDA was common on untreated herds, probably heavier than in 1968, in Alachua County. Infestations ranged up to more than 400 adults on the tail brush until late December. In MICHIGAN, cattle lice, mainly H. eurysternus, were especially heavy during winter. In NEW JERSEY, only one large herd required control for H. eurysternus in Hunterdon County.

LONG-NOSED CATTLE LOUSE (Linognathus vituli) was a serious external pest of cattle, especially range beef cattle, throughout ALABAMA. A lot of weight and vitality was lost during late winter. In FLORIDA, this louse was heavy on dairy calves in November in Alachua County. Populations apparently were heavier than in 1968. It is controlled with dips by some stockmen in MONTANA.

CATTLE BITING LOUSE (Bovicola bovis) was controlled with dips by some stockmen in MONTANA. Cattle biting louse was a serious pest of cattle, especially range beef cattle, throughout ALABAMA. During late winter, infestations caused much loss of weight and vitality of infested animals. B. bovis and HORSE BITING LOUSE (B. equi) were heavy in Alachua County, FLORIDA, in March.

YELLOW JACKETS, mostly Vespula pensylvanica, were unusually heavy and troubled pickers in a peach orchard near The Dalles, Wasco County, OREGON. Some feeding damage to ripe peaches occurred. Unspecified YELLOW JACKETS were frequently troublesome about parks, canyon recreation areas, farms, and in cities in UTAH. Several VESPID WASPS (Vespula spp.) were extremely abundant throughout PENNSYLVANIA from August through October. Hospitals and health authorities reported twice the usual number of "bee sting" patients. V. maculifrons was much more abundant and annoying than last season in DELAWARE, especially in late July and August.

A SCYTODID SPIDER (Loxosceles laeta) occurred in a limited infestation at Sierra Madre and Alhambra, Los Angeles County, for a new State record in CALIFORNIA.

BROWN RECLUSE SPIDER (L. reclusa) has now been found in 14 NEBRASKA counties. A specimen was collected at Beatrice, Gage County, by V.B. McClure on June 4, 1969, and identified by R.E. Roselle. This is a new county record. L. reclusa was reported as a new State record in OHIO from a collection made in Huron County. It has also been collected in Athens, Clermont, Delaware, and Medina Counties. L. rufescens was reported as a new State record in OHIO. L. reclusa caused concern to many persons in TENNESSEE. It has been found in 39 counties. Decatur, Coffee, Hamilton, and Bradley Counties were new county records in 1969.

BLACK WIDOW SPIDER (Latrodectus mactans) was heavy in Douglas, Ormsby, Pershing, and Washoe Counties, NEVADA. Large numbers entered homes, garages, and warehouses in late September and October 1969, as in 1967.

HOUSEHOLDS AND STRUCTURES

Highlights:

SUBTERRANEAN TERMITES remained the chief structural pests in California, Alabama, Maryland, and Virginia. COCKROACHES were troublesome in homes in several areas.

GERMAN COCKROACH (Blattella germanica) was the more important of the several cockroaches that were widespread in ALABAMA. German cockroach was the most abundant and persistent household pest encountered in MARYLAND. An increase in the number of infestations of BROWN-BANDED COCKROACH (Supella supellectilium) over those of 1968 was noted in MARYLAND. B. germanica was the only cockroach reported in INDIANA during the 1969 season. In UTAH, S. supellectilium and ORIENTAL COCKROACH (Blatta orientalis) were the most common species in homes, apartments, and commercial buildings.

WESTERN SUBTERRANEAN TERMITE (Reticulitermes hesperus) was the most damaging species in CALIFORNIA. Termites, probably R. hesperus, caused heavy damage to structural timbers and flooring in a residence at Salmon, Lemhi County, IDAHO, following a large swarm of reproductives during late March. Alates were collected at a Cambridge, Washington County, residence during late May. R. hesperus was a structural pest in many communities in UTAH. EASTERN SUBTERRANEAN TERMITE (Reticulitermes flavipes) is still the major structural pest in ALABAMA. R. flavipes was swarming by March 19 in Providence County, RHODE ISLAND, with generalized swarming throughout the State by May 16. This termite caused economic damage to a variety of structures in central and southern MARYLAND. R. flavipes remains the chief pest of structures in the State. Damage will be in excess of several thousand dollars to homes in Montgomery, Prince Georges, Baltimore, and Anne Arundel Counties.

Unspecified termites were numerous in DELAWARE, especially during the spring and early summer. These pests were the most important structural pests again this year in VIRGINIA, although fewer cases and less structural damage were reported. Reports of damage were widespread, however.

WESTERN DRYWOOD TERMITE (Incisitermes minor) was found in a trailer-home near Chico, Kitsap County, WASHINGTON. The infestation was judged to have been present several years. I. minor was heavy and damaging to cabinets in mobile homes in Clark and Ormsby Counties, NEVADA. Treatments were required. A DRYWOOD TERMITE (Incisitermes snyderi) was reported in Coffee County, ALABAMA, in August. This was reported as a new county record. Colonies of A POWDER-POST TERMITE (Cryptotermes brevis) were reported inside two homes in Houston and Mobile Counties, ALABAMA, in April and June.

BLACK VINE WEEVIL (Brachyrhinus sulcatus) was found in homes in the Willamette Valley of OREGON in the fall. Other species, especially B. rugosostriatus and STRAWBERRY ROOT WEEVIL (B. ovatus), were more common in 1968. Mostly these DERMESTID BEETLES, VARIED CARPET BEETLE (Anthrenus verbasci) and Trogoderma spp. were unusually common in homes in the Willamette Valley in the fall. Populations appeared to be heavier than in 1968. A DERMESTID BEETLE (Megatoma variegata) was collected from a residence at Orofino, Clearwater County, IDAHO, on March 17. This species is uncommon. BLACK CARPET BEETLE (Attagenus piceus) was especially noticeable as a pest of cereals and fabrics in MICHIGAN. Carpet beetles were one of the three most numerous and destructive household pests in the State. CIGARETTE BEETLE (Lasioderma serricorne) was the main pantry pest throughout ALABAMA.

A CARPENTER ANT (Camponotus herculeanus) continued to be a perennial nuisance in and around homes in many areas of northern IDAHO during May. ODOROUS HOUSE ANT (Tapinoma sessile), ARGENTINE ANT (Iridomyrmex humilis), CARPENTER ANTS (Camponotus spp.), and Liometopum occidentale were of some concern in CALIFORNIA.

BOXELDER BUG (Leptocoris trivittatus) adults were very annoying in homes in late March in DELAWARE, especially in New Castle County. Boxelder bug was a common nuisance in homes in UTAH.

CASEMAKING CLOTHES MOTH (Tinea pellionella) and WEBBING CLOTHES MOTH (Tinea bisselliella) were the major pests of clothes, carpets, and upholstery materials in ALABAMA.

STORED PRODUCTS

Highlights:

CIGARETTE BEETLE damaged bulk tobacco in Virginia. INDIAN-MEAL MOTH infestations increased in Indiana, and the pest was found in several bins of stored soybeans in Illinois.

SAW-TOOTHED GRAIN BEETLE (*Oryzaephilus surinamensis*) was one of the three most numerous and destructive pests of stored products in homes in MICHIGAN. Saw-toothed grain beetle, DRUGSTORE BEETLE (*Stegobium paniceum*), and SPIDER BEETLES were the most frequently reported beetles infesting stored products in INDIANA. *O. surinamensis* was the most often reported. Saw-toothed grain beetle was heavy in stored oats and wheat in Emmons County, NORTH DAKOTA. The infestation caused heating. *O. surinamensis* was very common in home-stored flour and infested stored feeds for cattle and poultry on farms in UTAH.

RED FLOUR BEETLE (*Tribolium castaneum*) was more abundant than CONFUSED FLOUR BEETLE (*T. confusum*) in PENNSYLVANIA. Confused flour beetle damaged stored barley in Golden Valley County, NORTH DAKOTA. *T. confusum* and other cereal pests were more numerous in Canyon County, IDAHO, than in several years.

GRANARY WEEVIL (*Sitophilus granarius*) adults and larvae caused 100 percent damage to wheat, oats, and barley sampled in Foster County, NORTH DAKOTA. Granary weevil and RICE WEEVIL (*Sitophilus oryzae*) often infested stored wheat and other whole grain feeds in UTAH. *S. oryzae* was a serious pest of stored corn and grain sorghum in central and south ALABAMA.

CIGARETTE BEETLE (*Lasioderma serricorne*) damaged bulk tobacco in Roanoke, VIRGINIA, in late summer. Treatment was required to bring the infestations under control. Numerous household infestations of this beetle were also reported throughout the State. DRUGSTORE BEETLE (*Stegobium paniceum*) was the most common stored product pest reported in homes in VIRGINIA. There were numerous reports of this pest in stored products in the State, but most were infestations in homes.

INDIAN-MEAL MOTH (*Plodia interpunctella*) was one of the three most numerous and destructive pests of home-stored products in MICHIGAN. An increased number of infestations was reported in INDIANA during 1969. Indian-meal moth was found in several bins of stored soybeans in ILLINOIS. Only an occasional soybean storage area was infested before 1969. Indian-meal moth remained a problem in stored corn and milo in NEBRASKA. This pest is becoming increasingly more difficult to control with existing materials.

Blacklight trap collections in warehouses in MICHIGAN were carefully screened during the winter for adults of POTATO TUBERWORM (*Phthorimaea operculella*). Storage houses in Montcalm County appeared to be clean. Small moth populations in two warehouses in Bay County were eliminated by chemical controls and thorough cleaning. The number of inquiries concerning ANGOUMOIS GRAIN MOTH (*Sitotroga cerealella*) in INDIANA decreased in 1969. Angoumois grain moth was a serious pest of stored peanuts, corn, grain, sorghum, and feeds in ALABAMA. ALMOND MOTH (*Cadra cautella*) was serious and the more important pest of stored peanuts in ALABAMA.

GREENHOUSE SLUG (*Milax gagates*) and another SLUG (*Arion circumscriptus*) damaged potatoes in bulk storage at Monroe, Benton County, OREGON. The potatoes were muddy when put in storage, due to late harvest. These slugs left slime trails and ate holes in the potatoes. Rapid cleaning and processing prevented heavy damage. Bait pellets also aided in the control of the infestation.

BENEFICIAL INSECTS

Highlights:

BRACONIDS were effective in the control of pest species on several crops, particularly the greenbug outbreak on sorghum in Kansas. Several parasitic WASPS were released for the control of alfalfa weevil, cereal leaf beetle, green peach aphid, and gypsy moth. Some recoveries were reported. LADY BEETLES were effective in controlling greenbug and corn leaf aphid on wheat and grain sorghum in New Mexico, and greenbug on sorghum in Kansas. Several PREDATORS were heavy on some crops in several areas during the 1969 season

BRACONIDS were effective in controlling or aiding in the control of pest species in several areas of the Nation. Aphidius smithi was the main parasite of Acyrtosiphon pisum (pea aphid) at Touchet, Walla Walla County, WASHINGTON. Parasitism by a braconid, probably Aphidius pulcher, suppressed aphid populations in alfalfa hay fields at Post Falls, Kootenai County, IDAHO, in June and July. Aphid mummies ranged up to 8 per alfalfa leaf in untreated pea aphid infested fields in south-central and southeast areas. In NEVADA, unspecified braconids held populations of Rhopalosiphum maidis (corn leaf aphid), Schizaphis graminum (greenbug), pea aphid, and Therioaphis maculata (spotted alfalfa aphid) below economic levels, or helped to reduce damaging populations of these pest. Lysiphlebus testaceipes appeared in COLORADO toward the end of September and reduced aphid populations to very low levels. Lysiphlebus sp. was effective in aiding in the control of the greenbug outbreak on sorghum in KANSAS.

Braconids, especially L. testaceipes, were the most important parasites of aphids on cole crops, cotton, and grain in ALABAMA. Agathis stigmatera, widely distributed in the sugarcane region of south FLORIDA, parasitized about 20 percent of the Diatraea saccharalis (sugarcane borer) larvae sampled. Opius cereus, imported from Trinidad, was reared and released at Homestead, Dade County, FLORIDA, in mid-July. By September 2 it had parasitized 10 percent of the Anastrepha suspensa (Caribbean fruit fly) pupae in a sample from Dade County. One hundred adults of Microctonus aethiops were released against adults of Hypera postica (alfalfa weevil) in Pulaski County, VIRGINIA. The following braconids were released in DELAWARE: Microctonus sp. against alfalfa weevil, Praon myzophagum and Aphidius gifuensis against Myzus persicae (green peach aphid), and Dendrosoter protuberans against Scolytus multistriatus (smaller European elm bark beetle). Cocoons of Apanteles congregatus were common on Manduca sexta (tobacco hornworm) larvae by August 19 in RHODE ISLAND.

ICHNEUMON WASPS exerted some control of crop pests in 1969. Bathyplectes curculionis was very numerous in UTAH and parasitized a large percentage of alfalfa weevil larvae. B. curculionis counts in INDIANA were very high in Knox, Tippecanoe, and Lake Counties but remained low in the central and eastern districts. The high population range appears to be extending northward in the Wabash River Valley rather than eastward through the Ohio River Valley. B. curculionis probably reduced the level of damage by alfalfa weevil in the western districts. In MICHIGAN, recovery of B. curculionis during summer was less than 1 percent in most fields. Diaparsus spp. and Lemophagus curtus were released against Oulema melanopus (cereal leaf beetle) larvae at Gull Lake, Kalamazoo County, and at East Lansing, Ingham County, MICHIGAN. In VIRGINIA 100 adults of B. contracta were released against alfalfa weevil larvae in Charlotte County in May. Bathyplectes sp. was released against alfalfa weevil in DELAWARE.

An ENCYRTID WASP (Ooencyrtus kuwanai) was released against Porthetria dispar (gypsy moth) in DELAWARE. About 9,582,500 O. kuwanai were released in PENNSYLVANIA. Releases were made at all gypsy moth catch sites west of the Susquehanna River and at many eastern locations. A total of 247 releases was made from August 26 to November 15.

A EULOPHID WASP (Tetrastichus julis) was released against cereal leaf beetle larvae in southwest Jackson County and at East Lansing, Ingham County, MICHIGAN. T. julis larvae were recovered at Gull Lake, Kalamazoo County, indicating probable establishment in Michigan since none were released there in 1969. Another EULOPHID WASP, Aphelinus varipes, was released against green peach aphid in DELAWARE.

A MINUTE EGG PARASITE (Trichogramma minutum) was an important parasite of Heliothis spp. eggs on cotton in ALABAMA. In FLORIDA, T. fasciatum parasitized a small percentage of eggs of sugarcane borer.

A MYMARID WASP (Anaphes flavipes) was recovered for the second year at Gull Lake, Kalamazoo County, MICHIGAN. It appeared that this egg parasite of cereal leaf beetle is established there and at several other sites.

A VESPID WASP (Odynerus dilectus) was very abundant for the first time in Cache County, UTAH. In May it was one of the most common pollinators in several strawberry fields and on other flowers near Logan. In June a nesting site of several thousand individuals was found at North Logan. Several specimens were returning to the nest with alfalfa weevil larvae. Several cells were entirely provisioned with alfalfa weevil larvae.

HONEY BEE (Apis mellifera) winter survival was poor in central and eastern WASHINGTON, with 50 percent survival in Yakima County, 60 percent at Cashmere, Chelan County, and 75 percent at Spokane, Spokane County. As the acreage for alfalfa seed increased in NEVADA, colonies for pollination increased from 25,000 to 30,000. Honey bee colonies in ALABAMA remained at about 91,000. The honey crop in MICHIGAN was about average. More honey bee colonies were rented, particularly to growers of blueberries and pickling cucumbers. The number of colonies has increased during the past 5 years on the strength of pollination contracts although the price of honey remained static.

ALFALFA LEAFCUTTER BEE (Megachile rotundata) numbers used by alfalfa seed growers remained at about the 1968 levels in NEVADA. Specimens of a LEAFCUTTING BEE (M. concinna) were collected at Salt Lake City, Salt Lake County, UTAH, and in the Uintah Basin. This is a new State record. In UTAH, M. rotundata was beneficial where it was numerous in alfalfa seed areas. M. rotundata adults in IDAHO first appeared at Parma, Canyon County, May 31, several days earlier than usual. M. rotundata nest material imported from the Southwest to Yakima County, WASHINGTON, was found to contain Tribolium brevicornis (a tenebrionid beetle). This beetle is predaceous on M. rotundata larvae and feeds on stores in the nest. This was the first report of T. brevicornis in Washington.

LADY BEETLES, mostly CONVERGENT LADY BEETLE (Hippodamia convergens), held corn leaf aphid, greenbug, pea aphid, and spotted alfalfa aphid below economic levels or helped to reduce damaging populations in NEVADA. H. convergens was the dominant species on alfalfa in UTAH where pea aphid or spotted alfalfa aphid was numerous. Several species of lady beetles in WYOMING effectively reduced high populations of pea aphid in alfalfa and corn leaf aphid in corn in July and August. H. convergens, H. sinuata, H. parenthesis, and other species were heavy in eastern COLORADO. Counts ranged 80-150 per 100 sweeps in alfalfa and 3-4 per plant in corn and sorghum from June through most of August. Aphids were kept low to moderate. Lady beetles helped to control greenbug and corn leaf aphid on wheat and grain sorghum in east and south NEW MEXICO. Lady beetles in KANSAS helped bring the greenbug outbreak on sorghum under control. H. convergens was the most common predator on aphid-infested sorghum in many OKLAHOMA areas during summer.

Lady beetles, primarily H. convergens and Coleomegilla maculata, ranged 20-30 in 100 sweeps of wheat in northwest ARKANSAS March 28. Numbers declined slightly in April, increased to 200-300 in 100 sweeps of small grains and legumes by late May, declined in mid-summer, and increased with cooler fall weather. H. convergens and C. maculata fuscilabris were the more important lady beetles that fed on

aphids on cotton, grain, and vegetables in ALABAMA. C. maculata and H. tredecimpunctata adults ranged 50-170 per 100 sweeps of alfalfa in north-central INDIANA May 16. The first larvae of the season, probably C. maculata, on oats in the north-central district were observed June 11. Adults had decreased to 3 per 100 row feet by June 27. Between July 31 and August 6, corn in the southeast, west-central, central, and east-central districts contained 2.6 egg masses per 10 stalks. The masses averaged 11.3 eggs. Hatching was well underway by August 6, yielding mostly C. maculata. In OHIO, C. maculata was one of four abundant beneficial insects and the most common lady beetle on oats, wheat, corn, and alfalfa. Early spring counts were as high as 10 adults per 25 sweeps of alfalfa. Later in the summer 2-5 adults and 3-5 larvae per aphid-infested cornstalk were common.

WEEVILS were released in attempts to control unwanted plant species. Phrydiuchus spilmani adults were released on Mediterranean sage (Salvia aethiops) in Lake County, OREGON, between October 9 and November 5. Adults of Rhinocyllus conicus were released in fields containing musk (Carduus nutrans) and curl thistle (C. acanthoides) in Russell and Pulaski Counties, VIRGINIA. In August, additional adults were released in Augusta, Shenandoah, Rockingham, Bath, Highland, Alleghany, Frederick, Clarke, Loudoun, and Page Counties.

DAMSEL BUGS (Nabis alternatus and N. ferus) in UTAH preyed on aphids, thrips, and related injurious forms. Nabis sp. was moderate on WYOMING alfalfa. In COLORADO, Nabis spp. were heavy and fed on aphids in alfalfa, corn, and sorghum. Nabis spp. were seen in some OKLAHOMA areas all year. They were the most common predators on alfalfa in the central and south-central areas in mid-July. Nabis spp. ranged 10-15 in 100 sweeps of alfalfa in northwestern ARKANSAS April 4. Present until frost in October, they were the most abundant predator in early fall. N. ferus ranged 4-5 per 25 sweeps of alfalfa during early spring and all summer in OHIO.

FLOWER BUGS (Orius tristicolor and O. insidiosus) and other anthocorids preyed on aphids, thrips, and related injurious forms in UTAH. O. insidiosus began reproducing May 2 in northwest ARKANSAS. By May 23, adults and nymphs ranged 150-200 in 100 sweeps of alfalfa. Orius spp. were one of the 2 more important Hemiptera in ALABAMA preying on eggs and larvae of Heliothis spp. on cotton, corn, tomatoes, soybeans, and snap beans.

BIG-EYED BUGS (Geocoris spp.) commonly preyed on aphids, thrips, and related injurious crop pests in UTAH. Geocoris spp. adults, 5-10 in 100 sweeps, first appeared by late May in ARKANSAS. Numbers declined with high temperatures. G. punctipes was one of the 2 more important Hemiptera in ALABAMA preying on eggs and larvae of Heliothis spp. on cotton, corn, tomatoes, soybeans, and snap beans.

GREEN LACEWINGS (Chrysopa spp.) were common on alfalfa in UTAH. Heavy numbers of Chrysopa spp. in COLORADO fed on aphids in alfalfa, corn, and sorghum. Green lacewings in KANSAS helped bring the greenbug outbreak on sorghum under control. Chrysopa spp. were the most common predators on alfalfa in northeast and north-central OKLAHOMA in late May. Larvae of GOLDEN-EYE LACEWING (C. oculata) were important predators of aphids on corn, grain sorghum, cotton, ornamental shade trees, and vegetables in ALABAMA.

SYRPHID FLY larvae were numerous in UTAH on alfalfa and in aphid-infested orchards. These larvae entered Pemphigus galls and aphid-rolled leaves, and were present wherever aphids were numerous. In OHIO, syrphid fly larvae were common in late summer among aphids on alfalfa and corn. Larvae, 1-10 per plant, suppressed aphids fairly well. In ALABAMA, syrphid fly larvae were important predators of aphids on corn, grain sorghum, cotton, ornamental shade trees, and vegetables.

A CINNABAR MOTH (Tyria jacobaeae) increased in an area of Curry County, OREGON. A number of larvae were moved to nearby sites. Tansy ragwort growth has been reduced, especially in local areas where this insect is very abundant. Larvae heavily damaged 1 acre of tansy ragwort at the 1966 release site at Amboy, Clark County, WASHINGTON.

A PHYTOSEIID MITE (Typhlodromus sp.) appeared to control Tetranychus mcdanieli (a spider mite) where sprays had not penetrated into the crowns of apple trees in Canyon and Payette Counties, IDAHO.

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**ECONOMIC INSECT
REPORT**



Issued by

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AGRICULTURAL RESEARCH SERVICE

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SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearinghouse and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

GREENBUG severe on wheat in scattered areas of Oklahoma. (p. 191).

EUROPEAN CORN BORER overwintering larval survival high in southern Illinois. (p. 191).

HEEL FLY running cattle in southwest Texas. (p. 193).

CATTLE LICE heavy in Oklahoma and Arkansas. (p. 194).

Prediction

WESTERN PEACH TREE BORER expected to require controls in Montana in 1970. (p. 197).

Detection

New State records include ALFALFA WEEVIL from Florida (p. 191), a GRASSHOPPER and two ASPARAGUS BEETLES from Nevada (p. 192), and a SYMPHYLAN from Missouri (p. 192).

For new county and island records see page 195.

Special Reports

Summary of Insect Conditions in the United States - 1969

Deciduous Fruits and Nuts (pp. 196-201)

Citrus (pp. 201-203)

Other Tropical and Subtropical Fruit (p. 203)

Small Fruits (pp. 203-204)

Origin and Distribution of Daylily Thrips, Frankliniella hemerocallis Crawford. (p. 205).

Distribution of Army Cutworm. Map. (p. 206).

Survey Methods. Selected References 1944. Part XXVII. (pp. 207-208).

Some First Occurrences of Season

TARNISHED PLANT BUG nymphs in Florida; EASTERN TENT CATERPILLAR larvae in Alabama; APPLE APHID in Washington; HORN FLY adults in Oklahoma; ORANGE TORTRIX larvae in Oregon; and HEEL FLY in Texas.

Reports in this issue are for week ending March 20 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance.....	191
Insects Affecting	
Corn, Sorghum, Sugarcane.....	191
Small Grains.....	191
Forage Legumes.....	191
Potatoes, Tomatoes, Peppers.....	192
Cole Crops.....	192
General Vegetables.....	192
Deciduous Fruits and Nuts.....	192
Citrus.....	193
Small Fruits.....	193
Ornamentals.....	193
Forest and Shade Trees.....	193
Man and Animals.....	193
Households and Structures.....	194
Beneficial Insects.....	194
Federal and State Plant Protection Programs.....	194
Hawaii Insect Report.....	195
Detection.....	195
Light Trap Collections.....	195
Corrections.....	195
Summary of Insect Conditions in the United States - 1969	
Deciduous Fruits and Nuts.....	196
Citrus.....	201
Other Tropical and Subtropical Fruit.....	203
Small Fruits.....	203
Origin and Distribution of Daylily Thrips, <i>Frankiniella hemerocallis</i> Crawford.....	205
Distribution of Army Cutworm. Map.....	206
Survey Methods. Selected References 1944. Part XXVII.....	207

WEATHER OF THE WEEK ENDING MARCH 23

HIGHLIGHTS: The West cooled after 9 consecutive weeks of above-normal temperatures. Heavy snow fell in parts of the central Great Plains but most had melted by the weekend. Flood-producing rains occurred in the Deep South.

PRECIPITATION: Two large storms brought heavy snow to the Nation last week. The first of these was in progress at the end of the previous week. It dumped record-breaking amounts in 4 States: Up to 30 inches in southeastern Kansas, 27 inches in southwestern Missouri, 20 inches in northeastern Oklahoma, and 14 inches in northwestern Arkansas. The storm weakened as it moved eastward to the Ohio River Valley and into Pennsylvania. Rain and locally heavy thunderstorms occurred south of the snow belt from central Arkansas and western Tennessee to the central gulf coast. The second important storm developed in the Far Northwest early in the week. It intensified as it crossed the Rocky Mountains. It dumped heavy snow in southeastern Montana, central Wyoming, northeastern Colorado, northwestern Kansas, and south-central Nebraska. A third disturbance caused heavy thunderstorms and torrential rains across the Southland. It developed in eastern Texas about midweek, moved eastward across the Gulf States and then northeastward. Weekly rainfall totals approached or exceeded 8 inches in parts of Mississippi and Alabama. Columbus, Mississippi, measured 5.65 inches Friday morning. The weekly total at Birmingham, Alabama, was 8.92 inches. The heavy rains in Mississippi, Alabama, and Georgia caused flash flooding closing some roads and forcing some families from their homes. After bringing heavy rains to the Southeast, the storm moved northeastward and produced stormy weather to the eastern third of the Nation. Snow in the Northeast and the Appalachians and rain along the Atlantic coast. Mixtures of snow, sleet, and freezing rain fell in some places increasing the hazards of highway travel. The week ended with inclement weather continuing over much of the East. Weather of the week continued on page 204.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMY CUTWORM (Chorizagrotis auxiliaris) - COLORADO - Larvae remain in northeastern area wheat; snowstorms kept activity low. (Johnson). OKLAHOMA - Larvae ranged 0-2 per linear foot in wheat in Major County. (Okla. Coop. Sur.).

GREENBUG (Schizaphis graminum) - TEXAS - Damage decreased in most Rolling Plains counties week of March 9-13. Damage currently moderate to heavy in Foard County, light to moderate in Wichita County. Damage light in Wilbarger, Young, and Hall Counties. Small grains growing well. (Boring). OKLAHOMA - Ranged 0-40 per linear foot in most wheat in Major and Alfalfa Counties; up to 125 per linear foot in scattered fields in Major County. Ranged as high as 300 per linear foot in Noble County. Moderate in Garfield and Kiowa Counties. Scattered fields sprayed in most areas. Averaged 6 per linear foot in barley in Major County. (Okla. Coop. Sur.). COLORADO - Surveys negative in wheat in northeastern areas. (Johnson). ARIZONA - No buildup on barley, oats, or wheat at Yuma, Yuma County. (Ariz. Coop. Sur.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - FLORIDA - Slowly increasing, nymphs and adults 160 per 100 sweeps of alfalfa, at Gainesville, Alachua County. (Mead).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - ILLINOIS - Overwintering larval survival in southern section ranged 89-98 percent. (Ill. Ins. Rpt.).

SOUTHWESTERN CORN BORER (Diatraea grandiosella) - ILLINOIS - Overwintering larval survival 28.6 percent in Alexander and Pulaski Counties. (Ill. Ins. Rpt.).

SMALL GRAINS

HESSIAN FLY (Mayetiola destructor) - KANSAS - Statewide samples of wheat plants (3 fields per county) examined by H.W. Somsen, showed average percent infestation by district as follows: Northeast zero, east-central trace, southeast zero, north-central 44, central 65.7, south-central 38.3, northwest 36.7, and west-central 33.1. (Simpson).

PALE WESTERN CUTWORM (Agrotis orthogonia) - COLORADO - Larvae remain in wheat in northeastern area. (Johnson).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - FLORIDA - Nine larvae taken in 100 sweeps of alfalfa at Gainesville, Alachua County, March 18, 1970, by F.W. Mead. Determined by J. Howell. This is a new State record. Additional larvae recovered from same field March 19 and 20. Larval population apparently increasing. (Mead). SOUTH CAROLINA - Statewide in alfalfa; heavy in older stands, light in young seedlings. (Thomas). MISSISSIPPI - Larvae averaged 24 per 20 stems of alfalfa in Pontotoc County. (Pitre). ARKANSAS - Egg surveys in northeast area indicate few if any larvae will hatch from eggs laid in fall. (Dumas, Boyer). TEXAS - Widespread and heavy populations caused heavy damage to alfalfa in Wharton County. Controls applied in Falls County. (Smith et al.). CALIFORNIA - Hypera spp. larvae heavy on alfalfa in Pauma Valley, San Diego County. (Cal. Coop. Rpt.). ILLINOIS - H. postica eggs per square foot in untreated alfalfa, by county: Washington 85.9, Jackson 174. (Ill. Ins. Rpt.).

EGYPTIAN ALFALFA WEEVIL (Hypera brunneipennis) - ARIZONA - Except for stems, adults destroyed field of alfalfa on Yuma Mesa. Adults 20+ per square foot on ground and on volunteer green alfalfa in adjoining irrigation ditch. (Ariz. Coop. Sur.).

GRASSHOPPERS - NEVADA - Opeia obscura collected at Overton, Clark County, October 23, 1969, on alfalfa by R.C. Bechtel and D.F. Zoller. This is a new State record. Cordillacris occipitalis cinerea collected in Diamond Valley, Eureka County, July 17, 1968, by P.C. Martinelli. This is a new county record. Ageneotettix deorum collected at Horse Creek, Churchill County, July 24, 1968, by R.C. Bechtel and P.C. Martinelli. This is a new county record. All determined by R.C. Bechtel. (Bechtel).

PEA APHID (Acyrtosiphon pisum) - FLORIDA - Increasing, nymphs and adults 800 per 100 sweeps on alfalfa at Gainesville, Alachua County. (Mead). TEXAS - Heavy in alfalfa in Bailey County. (Adams).

TARNISHED PLANT BUG (Lygus lineolaris) - FLORIDA - Light on alfalfa, first nymphs at Gainesville, Alachua County. (Mead).

GREEN CLOVERWORM (Plathypena scabra) - FLORIDA - Larvae 30 per 100 sweeps of alfalfa at Gainesville, Alachua County. (Mead).

POTATOES, TOMATOES, PEPPERS

GREEN PEACH APHID (Myzus persicae) - DELAWARE - Infested commercial tomatoes and some ornamentals in greenhouses in New Castle and Kent Counties. (Burbutis).

COLE CROPS

DIAMONDBACK MOTH (Plutella xylostella) - TEXAS - Locally heavy in 40-acre field of cabbage in Kleberg County. (Triplett, Mar. 13).

GENERAL VEGETABLES

ASPARAGUS BEETLES (Crioceris spp.) - NEVADA - C. duodecimpunctata (spotted asparagus beetle) collected May 9, 1969, by W.H. Arnett and C. asparagi (asparagus beetle) taken May 28, 1969, by C.A. Heringer from asparagus at Fallon, Churchill County. Determined by R.C. Bechtel. These are new State records. C. duodecimpunctata collected on asparagus at Smith, Lyon County, May 26, 1969, and at Schurz, Mineral County, May 13, 1969, by C.A. Heringer. These are new county records. (Bechtel).

A SYMPHYLAN (Scutigera caudata) - MISSOURI - Collected by L.R. Hanning at Vichy, Maries County, October 26, 1969. Determined by J.S. Waterhouse. This is a new State record. (Munson).

DECIDUOUS FRUITS AND NUTS

EUROPEAN RED MITE (Panonychus ulmi) - VIRGINIA - Eggs heavy on peaches and apples in Montgomery County. (W.A. Allen).

PEAR PSYLLA (Psylla pyricola) - WASHINGTON - Spraying underway in Chelan County pear orchards. Some oviposition occurred on spurs of apples in Yakima County. (Rushmore, Gregorich).

TENT CATERPILLARS (Malacosoma spp.) - ALABAMA - First instars of M. americanum (eastern tent caterpillar) on cherry, apple, and other fruit trees and ornamentals in Lee County March 10. One to 10 percent of trees infested. (McQueen). CALIFORNIA - Egg masses, probably M. disstria (forest tent caterpillar), heavy on apple trees at Rohnerville, Humboldt County. (Cal. Coop. Rpt.).

APPLE APHID (Aphis pomi) - WASHINGTON - Apples generally infested March 17 in upper and lower Yakima Valley, Yakima County. (Gregorich).

CITRUS

CITRUS RED MITE (Panonychus citri) - ARIZONA - Averaged 10+ per leaf in 200 acres of lemons at Yuma, Yuma County; controls underway. Light in 12 additional nurseries at Phoenix, Maricopa County. (Ariz. Coop. Sur.).

SMALL FRUITS

SALT-MARSH CATERPILLAR (Estigmene acrea) - CALIFORNIA - Larvae heavy in strawberry planting at Bonsall, San Diego County. (Cal. Coop. Rpt.).

ORANGE TORTRIX (Argyrotaenia citrana) - OREGON - Overwintering larvae feeding on cane berries in Multnomah County. (Every).

A GELECHIID MOTH (Symmoca signatella) - CALIFORNIA - Larvae medium in bark of 20-acre grape planting at Manteca, San Joaquin County. (Cal. Coop. Rpt.).

A BILLBUG (Sphenophorus phoeniciensis) - CALIFORNIA - Adults medium in soil in strawberry planting at Redding, Shasta County. (Cal. Coop. Rpt.).

ORNAMENTALS

PEAR PSYLLA (Psylla pyricola) - CALIFORNIA - This psyllid and Sabulodes caberata (omnivorous looper) heavy on evergreen pear trees at Fremont, Alameda County. (Cal. Coop. Rpt.).

A PSYLLID (Paurocephala fremontiae) - CALIFORNIA - Nymphs and adults medium on Fremontia sp. at Claremont, Los Angeles County. This is a new county record. (Cal. Coop. Rpt.).

A CONIFER APHID (Cinara tujafilina) - NEVADA - Heavy on arborvitae, large amounts of honeydew attracting honeybees in southern Washoe County. (Hilbig). OKLAHOMA - Continues to increase on arborvitae in Payne County. Many colonies ranged 100-150 individuals. (Okla. Coop. Sur.).

TEXAS LEAF-CUTTING ANT (Atta texana) - TEXAS - Medium to heavy on ornamentals near Alice in Jim Wells County. Control difficult. (Brandes, Mar. 13).

FOREST AND SHADE TREES

A SPIDER MITE (Oligonychus milleri) - CALIFORNIA - Heavy on scattered Pinus halepensis at Glendora, Los Angeles County. (Cal. Coop. Rpt.).

EUROPEAN ELM SCALE (Gossyparia spuria) - CALIFORNIA - Counts of 75+ per twig on evergreen street elms at Poway, San Diego County, and Oak View, Ventura County. This scale could be severe this year unless treated. (Cal. Coop. Rpt.).

MAN AND ANIMALS

SCREW-WORM (Cochliomyia hominivorax) - No cases reported in U.S. March 15-21. Total of 51 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico March 8-14 as follows: Sonora 36, Chihuahua 8, Nuevo Leon 1, Tamaulipas 6. Total of 14 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 6,718,000; Mexico 124,590,000. (Anim. Health Div.).

COMMON CATTLE GRUB (Hypoderma lineatum) - TENNESSEE - Larval counts of 3.7 per cow in 16 of 45 head in Giles County. (Edwards et al.). TEXAS - Adults light and running cattle near Brackettville, Kinney County. (Kincaid).

HORN FLY (Haematobia irritans) - OKLAHOMA - Occasional specimens on cattle in Payne County. First of season. (Okla. Coop. Sur.).

CATTLE LICE - OKLAHOMA - Mainly Haematopinus eurysternus (short-nosed cattle louse) heavy in Hughes and Noble Counties, and moderate in Mayes and Cleveland Counties. (Okla. Coop. Sur.). ARKANSAS - H. eurysternus heavy in Benton County. Second report in State in 15 to 20 years. Linognathus vituli (long-nosed cattle louse) very heavy in Benton County. (Lancaster, Simco).

LONE STAR TICK (Amblyomma americanum) - OKLAHOMA - Many replete females dropping off of deer in Cherokee County. (Okla. Coop. Sur.).

MOSQUITOES - TEXAS - Culex salinarius adults observed indoors and around porch lights as early as February 6. Culiseta inornata adults active during February. (Jefferson County Mosq. Cont. Dist.).

HOUSEHOLDS AND STRUCTURES

SUBTERRANEAN TERMITES (Reticulitermes spp.) - ALABAMA - First winged forms of R. flavipes (eastern subterranean termite) from inside home in Lee County. (McQueen). MARYLAND - R. flavipes swarming continues to annoy homeowners in Prince Georges, Montgomery, Anne Arundel, and Baltimore Counties. (U. Md., Ent. Dept.). NEVADA - R. tibialis alates swarming in home in Reno, Washoe County. (Gustafson).

A POWDER-POST BEETLE (Trogoxylon aequale) - ALABAMA - Collected at Foley, Baldwin County, by G. Wilson, from imported wood carving February 20, 1970. Determined by T.J. Spilman. (McQueen).

BENEFICIAL INSECTS

HONEY BEE (Apis mellifera) - OKLAHOMA - Estimated 20 percent of colonies across State lost due to winter starvation. Mainly due to light nectar flow last fall. (Okla. Coop. Sur.).

SYRPHID FLIES - ALABAMA - Adults and larvae plentiful and feeding on aphids in central areas. (McQueen).

DRAGONFLIES - ALABAMA - First adults of season emerged from lakes and feeding. (McQueen).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - GEORGIA - Specimens collected at Appling, Columbia County, March 10 by W. Waller along Interstate Highway 20. Determined by V.H. Owens, confirmed by D.R. Smith. This is a new county record. (PPD).

PINK BOLLWORM (Pectinophora gossypiella) - CALIFORNIA - Preliminary releases of sterile moths began March 16 in Coachella Valley; total of 315,000 moths released in first 3 days of operation. (PPD).

SOYBEAN CYST NEMATODE (Heterodera glycines) - NORTH CAROLINA - Collected on farm at Williamston, Martin County, March 12 by W.J. Westcott. Determined by V.H. Owens, confirmed by A.M. Golden. This is a new county record. (PPD).

HAWAII INSECT REPORT

General Vegetables - BEET ARMYWORM (Spodoptera exigua) generally light in green onions at Waianae, Oahu; moderate in 0.25-acre field, about 20 percent of leaves affected. (Kawamura).

Fruits - Damage by FULLER ROSE WEEVIL (Pantomorus cervinus) moderate to terminal leaves of citrus and avocado trees at Kahului and Omaopio; damage light to gardenia and various citrus at Makawao, Maui. (Hori, Miyahira).

Ornamentals - A SOFT SCALE (Saissetia nigra) moderate on red ginger (Alpinia purpurata) blossoms and on hibiscus hedge at Koloa, Kauai; heavy on hibiscus at Kipahulu, Maui. (Sugawa, Miyahira).

Forest and Shade Trees - A CONIFER APHID (Cinara carolina) nymphs and adults light in 200 acres of slash pine at Kokee, Kauai. Infestations clustered on growing tips and young cones. (Sugawa). Larvae of a NOCTUID MOTH (Melipotis indomita) heavy under bark of kiawe (Prosopis pallida) trees at Napili, Maui. KOA HAOLE LOOPER (Anacamptodes fragilaria) larvae moderate. Trees severely defoliated. (Miyahira).

Beneficial Insects - Adults of a CRYPTOCHETID FLY (Cryptochetum iceryae) emerged from the COTTONY-CUSHION SCALE (Icerya purchasi) which was infesting twigs of ironwood (Casuarina equisetifolia) trees at Hilo, Hawaii, for a new island record. This parasite previously recorded on Oahu, first discovered in July 1966. (Kobayashi). SOUTH AFRICAN EMEX WEEVIL (Apion antiquum) adult damage moderate to emex leaves, larvae heavy on stems in pastureland at Omaopio, Maui. (Miyahira, Kawamura).

Miscellaneous Insects - CROTON CATERPILLAR (Achaea janata) larvae heavy and causing nearly 100 percent defoliation of roadside castorbean (Ricinus communis) plants at Auwahi and Lahaina, Maui. (Tamura, Ah Sam).

DETECTION

New State Records - ALFALFA WEEVIL (Hypera postica) FLORIDA - Alachua County (p. 191). ASPARAGUS BEETLES (Crioceris asparagi and C. duodecimpunctata) NEVADA - Churchill County (p. 192). A GRASSHOPPER (Opeia obscura) NEVADA - Clark County (p. 192). A SYMPHYLAN (Scutigereella causeyae) MISSOURI - Maries County (p. 192).

New County and Island Records - A CRYPTOCHETID FLY (Cryptochetum iceryae) HAWAII - Hawaii (p. 195). GRASSHOPPERS - NEVADA (Cordillacris occipitalis cinerea) Eureka and (Ageneotettix deorum) Churchill (p. 192). IMPORTED FIRE ANT (Solenopsis saevissima richteri) GEORGIA - Columbia (p. 194). A PSYLLID (Paurocephala fremontiae) CALIFORNIA - Los Angeles (p. 193). SOYBEAN CYST NEMATODE (Heterodera glycines) NORTH CAROLINA - Martin (p. 194). SPOTTED ASPARAGUS BEETLE (C. duodecimpunctata) NEVADA - Lyon and Mineral (p. 192).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville, 3/13-19, BL - Armyworm (Pseudaletia unipuncta) 2, black cutworm (Agrotis ipsilon) 1, granulate cutworm (Feltia subterranea) 9, salt-marsh caterpillar (Estigmene acrea) 2. TEXAS - Waco, 3/13-20, BL - Armyworm 46, granulate cutworm 1, variegated cutworm (Peridroma saucia) 52, yellow-striped armyworm (Prodenia ornithogalli) 8.

CORRECTIONS

CEIR 20(12):185 - An ENCYRTID WASP (Ooencyrtus kuwanai) should be An ENCYRTID WASP (Ooencyrtus kuwanai).

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1969
(Continued from page 188)

DECIDUOUS FRUITS AND NUTS

Highlights:

CODLING MOTH was the major pest of apples in New Mexico and losses were heavy where control was inadequate. Infestations of ORIENTAL FRUIT MOTH in peaches were reported for the first time in Utah. RED-BANDED LEAF ROLLER infestations in peaches were more serious than for the past 10 years in Virginia. WESTERN PEACH TREE BORER was severe on peach, prune, and cherry in a few local areas of California, and will require controls on cherries in Montana in 1970. LESSER PEACH TREE BORER is rapidly becoming a problem in the cherry growing area of northern Michigan. PEACH TREE BORER and lesser peach tree borer were the most destructive pests of peach, plum, and cherry throughout Alabama. SAN JOSE SCALE increased on fruits and nuts in California, and was the most important scale insect on peach, apple, plum, and pear in Alabama. PEAR PSYLLA was unusually abundant in commercial pears in the Willamette Valley of Oregon, was reported for the first time in Utah, and infestations were above average in Connecticut and Rhode Island. PEAR-SLUG was unusually abundant in California, and populations were much heavier than in 1968 in Oregon. NAVEL ORANGEWORM was severe on almond and walnut in California. PECAN NUT CASEBEARER was heavy in areas of Oklahoma and reported for the first in Pennsylvania. HICKORY SHUCKWORM was the major insect pest of pecans throughout Alabama.

CODLING MOTH (*Laspeyresia pomonella*) was very prevalent on fruit and nut crops in CALIFORNIA. Populations were very low in OREGON. Less than one percent of the fruit in Hood River and Wasco Counties showed evidence of "stings" or larvae at harvest. Codling moth was normal in WASHINGTON. Proper controls kept damage minimal. First adults of the season were taken in sex lure traps May 4 at Buena, Yakima County, and May 6 in the upper Yakima Valley which was 8 days earlier than in 1968. The first larval entry was noted in pear May 21, four days earlier than in 1968. Second-generation adults peaked July 21. Third-generation larvae were first found on August 27. The first codling moth injury of the season in IDAHO occurred May 29 in 1-inch apples at Fruitland, Payette County. As in previous years, this pest was common to abundant in backyard apple trees, or in abandoned or neglected orchards statewide. Codling moth populations in apples and damage to pears were about normal in UTAH. Adults ranged 4-130 per trap on the Western Slope in COLORADO by June 10. The second-generation began appearing in peaches and apples about June 25 in Delta and Montrose Counties. Populations had declined by September 24. Codling moth was the major pest of apples throughout NEW MEXICO. Losses were heavy where control was inadequate.

Codling moth blacklight trap catches in WISCONSIN were light throughout the summer except for a small peak of up to 9 moths on August 15. Controls kept damage light. In MICHIGAN, variable early season weather split the first generation, resulting in an overlapping of larval generations the rest of the season. No economically damaging infestations were found. Sprays prevented development of infestations on apples in the Piedmont area of VIRGINIA. In MARYLAND, codling moth populations were light and sprays prevented crop losses. Damage by this pest was insignificant in NEW JERSEY in well-sprayed commercial orchards, but was very noticeable in abandoned blocks and in backyard trees.

ORIENTAL FRUIT MOTH (*Grapholitha molesta*) adults were not taken in regularly tended bait pots in orchards which were infested in 1968 at Medford, Jackson County, OREGON. In COLORADO, adults peaked, up to 90 per 5 traps, by early June. The second generation peaked at 100 per 5 traps by July 20. Counts were still high in early August, but declined by September 4. Larval infestations were found for the first time in UTAH in peach orchards in Utah County in August. Oriental peach moth populations in VIRGINIA were lower than during the past several years. Injury to fruit was minor. Twig infestations ranged light to

moderate early in the season. In NEW JERSEY, injury by this olethreutid was very light in commercial blocks and then only on poorly sprayed trees. Counts were typically abundant in backyard stone-fruit trees. Oriental fruit moth larvae were more common than usual in peaches in CONNECTICUT. This pest caused much damage to peach where trees had not been sprayed by July 16 in Providence County, RHODE ISLAND.

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) second-generation larvae in VIRGINIA caused 10-12 percent injury in several peach orchards in July. Infestations were more serious than in the past 10 years. The third generation injured 30-50 percent of the apples in 2 orchards in the Piedmont region in September. The population has been increasing each year for the past several years. In northern Virginia, populations were as low as they have been for the past several years. Injury in NEW JERSEY was insignificant in well-sprayed commercial orchards, but was very noticeable in abandoned blocks and in backyard trees.

FRUIT-TREE LEAF ROLLER (Archips argyrospilus) was damaging in a few locations in CALIFORNIA, particularly in the northern area. Infestations were about normal in UTAH. Injury in NEW JERSEY was insignificant in well-sprayed commercial orchards but very noticeable in abandoned blocks and backyard trees.

WESTERN PEACH TREE BORER (Sanninoidea exitiosa graefi) was severe in a few local areas of CALIFORNIA, on peach, prune, and cherry. PEACH TREE BORER (Sanninoidea exitiosa) populations in UTAH were about normal on peaches. Damage was common to plums and prunes. In MONTANA, S. exitiosa infested cherry trees at Flathead, Lake County. Not much control work was done, but growers will need to implement controls in 1970. LESSER PEACH TREE BORER (Synanthedon pictipes) is rapidly becoming a problem in the cherry belt, especially in tart cherries, in northern MICHIGAN. Peach tree borer and lesser peach tree borer were the most destructive pests of peach, plum, and cherry trees throughout ALABAMA, and were extremely destructive to peach in FLORIDA. S. pictipes was light throughout MARYLAND. Populations of S. exitiosa in NEW JERSEY were similar to those of past years. Injury occurred in many commercial blocks due to improper timing and poor spray coverage. Much injury occurred in home plantings. S. pictipes populations and injury ranged light to moderate throughout NEW JERSEY.

PEACH TWIG BORER (Anarsia lineatella) larval survival was about 2 percent, normally 70 percent, in the Yakima Valley of WASHINGTON. In OREGON, larvae infested 5-10 percent of the terminals in orchards near Yamhill and McMinville, Yamhill County. Fewer larvae were found in Italian prune orchards. Peach twig borer larvae were more serious than usual on peaches in UTAH. This pest also infested plum and pear in the State. Larvae ranged light to moderate on the Western Slope of COLORADO. Damage and loss were light. Most damage occurred where only 1 or 2 sprays were applied.

Infestations of a PYRALID MOTH (Acrobasis tricolorella) in MICHIGAN are limited mostly to cherry orchards in Oceana County, although the pest does occur as far north as Traverse City in Grand Traverse County. The situation was less acute and costly than formerly but did warrant continued attention. Localized larval infestations of a NOCTUID MOTH (Abragrotis alternata) seriously damaged blossoms, buds, and new growth of apple, plum, and peach in some southwest areas of MICHIGAN. GREEN FRUITWORM (Lithophane antennata) populations in the Piedmont and northern areas of VIRGINIA were lower than normal, but injury was light in many apple orchards at petal fall.

PLUM CURCULIO (Conotrachelus nenuphar) heavily damaged plum and peach in a few north-central, south-central, and southeast counties of OKLAHOMA from late May to mid-July. Found statewide in ALABAMA, it was the most serious pest to fruit of peach, plum, and apple. Control in MICHIGAN was readily obtained on apple, plum, and peach. With no second generation in VIRGINIA, no peach injury occurred. Twig infestations ranged light to moderate in early season. Injury in NEW JERSEY was insignificant in well-sprayed, commercial orchards, but was very noticeable in abandoned blocks and backyard trees.

SAN JOSE SCALE (*Aspidiotus perniciosus*) increased in occurrence and importance in CALIFORNIA. In UTAH it damaged many apple orchards and infested several Salt Lake and Utah County pear orchards. Infestations in IDAHO were present in many Canyon and Payette County orchards during early spring. Larvae scarred about half of the fruit surface of apricots on several unsprayed trees at Riggins, Idaho County. In MONTANA, San Jose scale was not found outside of Plains in Sanders County until 1969. One orchard of about 20 trees was lightly infested near Paradise, 6 miles from Plains. Plains is the only area in Montana where this scale insect has been established for more than 2 years. San Jose scale remained the most important scale insect affecting peach, apple, plum, and pear in central and north ALABAMA.

WHITE PEACH SCALE (*Pseudaulacaspis pentagona*) has become the more important scale on peach and plum and several other nonfruit hosts in south and central ALABAMA. It caused less damage to peaches in FLORIDA in 1969 than in previous years.

PEAR PSYLLA (*Psylla pyricola*) was unusually abundant in commercial pear orchards in the Willamette Valley of OREGON. It was particularly troublesome where chlorinated hydrocarbon sprays were not applied during the dormant season. Adult survival in WASHINGTON was high despite severe winter temperatures in the Yakima Valley. Survival ranged 20-50 percent in the north-central area. Snow hampered early control programs. Egg laying began in most areas of Payette County, IDAHO, during the week ending March 21. Pear psylla was a new State record in UTAH. It damaged a few pear orchards in September and October at Ogden, Weber County. In MICHIGAN the number of orchards with heavy buildups increased as resistance to an organic phosphate and a carbamate spread. Weather prevented prebloom control with a chlorinated hydrocarbon-oil combination in numerous instances. Pear psylla infestations were severe in all unsprayed trees in PENNSYLVANIA. Most garden pears were completely defoliated and blackened by sooty fungus by early August. Controls were difficult in commercial groves. Pear psylla was typically abundant and troublesome on backyard pear trees throughout NEW JERSEY. Numbers in CONNECTICUT were above average on pears. Pear psylla infested many pear trees throughout RHODE ISLAND by July 11, and complaints were more numerous than in 1968. There were many reports of inadequate controls. A heavy, isolated infestation was found in Washington County August 5.

WHITE APPLE LEAFHOPPER (*Typhlocyba pomaria*) outbreaks on plum and apple in MICHIGAN were scattered in Berrien and Van Buren Counties in late August and September. The cause was probably inadequate first-generation control from petal fall to second cover in the southwest area. An outbreak occurred in the southern half of PENNSYLVANIA. Other than a few minor adjustments in the spray programs, no problems resulted. This was the first outbreak of this species in the fruit belt of this State in over 20 years. In MARYLAND, yellowing was moderate to heavy on apple foliage in 3 orchards at Hagerstown and Smithsburg, Washington County.

Adult movement of unspecified CICADAS from range foothill lands into orchards was heavy in the Alpine area of Utah County, UTAH, in June. Oviposition caused conspicuous damage to about 1,000 acres of orchards in the area. Some controls were applied.

ROSY APPLE APHID (*Dysaphis plantaginea*) was often above normal to sometimes conspicuously abundant on apples in UTAH. Rosy apple aphid caused damage on the Western Slope of COLORADO where controls were inadequate. Fruit damage was light to moderate where proper controls were used. Unseasonably cool, wet weather through June favored increased and prolonged infestations in MICHIGAN. Feeding lasted longer than in most years. Prominent on apples in northern VIRGINIA, rosy apple aphid caused more damage than usual in Frederick, Clarke, Warren, and Shenandoah Counties. Populations were light in most areas of MARYLAND. Damage was heavy in 2 orchards in Harford and Queen Annes Counties. Numbers were light in most NEW JERSEY areas; injury was insignificant.

APPLE APHID (Aphis pomi) was often above normal on UTAH apples. Unseasonably cool, wet weather into June favored increased and prolonged infestations in MICHIGAN. Feeding lasted longer than in most years. Normal numbers on VIRGINIA apples were easily controlled in Frederick, Clarke, Warren, and Shenandoah Counties. Apple aphid was light in most areas of NEW JERSEY and injury was insignificant. This aphid was a problem in localized areas of CONNECTICUT.

BLACK CHERRY APHID (Myzus cerasi) was serious in many cherry orchards in north and central UTAH. GREEN PEACH APHID (M. persicae) was normal to below normal on peaches in UTAH. M. persicae caused damage on the Western Slope of COLORADO where improper controls were used. Damage was light to moderate on fruit where proper controls were used. M. persicae lightly infested most peach orchards in VIRGINIA; no serious injury resulted. Populations were more prevalent than for 20 years. M. persicae in NEW JERSEY was typically abundant without noticeable injury on stone fruits in the spring.

AN APHID (Anuraphis helichrysi), MEALY PLUM APHID (Hyalopterus pruni), and RUSTY PLUM APHID (Hysteroneura setariae) were often numerous on plums and prunes during spring and sometimes during fall in UTAH. WOOLLY APPLE APHID (Eriosoma lanigerum) was often above normal to sometimes conspicuously abundant on apples in UTAH.

WESTERN BROWN STINK BUG (Euschistus impictiventris) was heavy on deciduous fruit trees in the Salt River Valley in ARIZONA in late February. Heavy populations of TARNISHED PLANT BUG (Lygus lineolaris) were present during the bloom period and injured 14 percent of the peach fruit in VIRGINIA.

APPLE MAGGOT (Rhagoletis pomonella) catches were generally low in WISCONSIN, but a few large catches occurred erratically at different sites and at different times. Controls in commercial orchards kept damage light. Populations in MICHIGAN peaked about August 4. Fly activity threatened fruit quality until September 20. Crop damage was not extensive. Apple maggot injury in NEW JERSEY was insignificant in well-sprayed, commercial orchards, but very noticeable in abandoned blocks and backyard trees. Damage in RHODE ISLAND was moderate to apples in a home orchard on August 18. Unsprayed orchards were most heavily damaged.

CHERRY FRUIT FLY (Rhagoletis indifferens) adults first emerged in OREGON May 14 at The Dalles, Wasco County, and May 25 in Marion County. R. indifferens adults in IDAHO were first trapped May 19 at Weiser, Washington County. R. indifferens was a threat at Flathead Lake, Lake County, MONTANA. Controls were applied although the cherry crop was light. CHERRY FRUIT FLY (R. cingulata) and BLACK CHERRY FRUIT FLY (R. fausta) first emerged in quantity on June 25 in MICHIGAN. From then till harvest, fly activity demanded carefully timed spray applications to preclude egg laying.

PEAR-SLUG (Caliroa cerasi) was unusually abundant in CALIFORNIA. Counts in OREGON were much higher than in 1968, particularly on cherry trees in Marion and Clackamas Counties. In IDAHO it severely skeletonized leaves of cherries and hawthorn at Orofino, Clearwater County, in June. Damage by pear-slug in UTAH was moderate to pear but light to plum and prune. Injury was conspicuous in Emery, Washington, Kane, Weber, Davis, Utah, and Salt Lake Counties. In PENNSYLVANIA, pear-slug had defoliated up to 50 percent of unsprayed home orchard trees by July in Susquehanna and Clearfield Counties.

EUROPEAN RED MITE (Panonychus ulmi) was locally heavy on prune and apple in CALIFORNIA. Overwintering eggs in IDAHO were fewer in most orchards during 1969 than in preceding years. Damage in UTAH was greater than normal in some Utah County orchards. In MICHIGAN below normal temperatures and excessive rain from April through June effectively checked critical buildups of European red mite until late July. Many growers did not need to use summer miticides.

Overwintered eggs of European red mite in VIRGINIA were extremely heavy in many peach orchards, but heavy summer rains prevented buildup to injurious populations. The Piedmont area had the lightest population in 15 years, due to heavy summer rains. In northern Virginia, infestations were spotty but easily controlled. European red mite populations throughout PENNSYLVANIA were comparatively low in most orchards. Injury was the least that has occurred in over 10 years. Populations in NEW JERSEY were light to moderate in most apple orchards except in late August and September when populations increased sharply and leaf bronzing was common. Damage was minor and spotty. Wet conditions helped to check build-ups in early and midsummer. Low numbers on peaches and pears caused very little injury. European red mite was a problem in localized areas of CONNECTICUT. Overwintered eggs in RHODE ISLAND ranged up to 250 per spur of apple April 13 at Kingston, Washington County. Dormant oil sprays and routine control reduced the threat to acceptable levels.

SPIDER MITES (Tetranychus spp.) laid eggs in the Hood River Valley of Hood River County, OREGON, during the week of April 11, about 2 weeks later than in 1968. The integrated control program in Jackson County pear orchards using Typhlodromus spp. (phytoseiid mites) appears effective so far. One orchardist estimated a savings of \$3,000 in a 120-acre orchard where predator mites were heavy. TWO-SPOTTED SPIDER MITE (T. urticae) was a general pest of most fruit trees in CALIFORNIA. T. mcdanieli was damaging in Washington County orchards and commonly serious throughout UTAH. T. mcdanieli tended to be replaced by T. urticae. It often damaged pears. Spider mites damaged foliage in untreated and improperly treated apple orchards throughout NEW MEXICO. T. urticae was damaging on the Western Slope of COLORADO where improper controls were used. Fruit damage ranged light to moderate where proper controls were used. In MICHIGAN an almost constant 10-day heavy rain before June 15 drove Tetranychus sp. off of orchard-floor vegetation and into fruit trees. This spider mite became a concern 3-4 weeks ahead of schedule, and outnumbered EUROPEAN RED MITE (Panonychus ulmi) in many orchards throughout July. T. urticae was generally light in most apple orchards in NEW JERSEY until September when heavy populations were noted in several Camden County blocks. Very little injury occurred.

PEACH SILVER MITE (Aculus cornutus) winter survival was about one percent in Chelan County, WASHINGTON, where it is usually about 60 percent. APPLE RUST MITE (A. schlechtendali) was light in Salt Lake and Utah Counties, UTAH. PEAR LEAF BLISTER MITE (Eriophyes pyri) caused normal injury to pears in UTAH.

NAVEL ORANGEWORM (Paramyelois transitella) continued to be a severe pest of almonds and walnuts in CALIFORNIA. PECAN NUT CASEBEARER (Acrobasis caryae) infested pecans in most areas of TEXAS in late April and May. In OKLAHOMA, A. caryae was heavy and scattered in the southwest, south-central, and northeast areas in June and early July. The first and second generations of A. caryae caused some pecan losses in central and south ALABAMA. In FLORIDA the first generation of A. caryae was severe on pecans; the second-generation was light. PECAN LEAF CASEBEARER (A. juglandis) on English walnut in Lycoming County, PENNSYLVANIA, was reported as a new State record. Mercer County was a new county record.

HICKORY SHUCKWORM (Laspeyresia caryana) was heavy in harvested pecans in Hardeman and Bosque Counties, TEXAS, early in January, light to moderate in Glasscock County in September, and heavy in Dallas County in October. It was moderate to heavy in northeast and south-central OKLAHOMA in late September and October. In ALABAMA, hickory shuckworm was still the major insect pest of pecans throughout the State. Serious losses of nuts and quality occurred. Populations in FLORIDA ranged from heavy in untreated pecans to light in properly sprayed orchards.

WALNUT CATERPILLAR (*Datana integerrima*) damaged pecan and walnut trees in north-central and northeast OKLAHOMA in September. From mid-July until late August, larvae defoliated 30-50 percent of about 75 percent of all walnut trees along roadsides in north-central, central, south-central, west, and southwest OHIO. Walnut caterpillar larvae completely defoliated a few walnut trees in Monongalia, Hampshire, and Jefferson Counties, WEST VIRGINIA, for the third consecutive year.

FALL WEBWORM (*Hyphantria cunea*) was moderate on pecans in Val Verde, Milam, and many northern Blackland counties of TEXAS in late August, light throughout the east area in September, and heaviest in Limestone County in late September. Larvae were especially heavy in south-central OKLAHOMA on pecans.

OMNIVOROUS LEAF TIER (*Cnephasia longana*) was unusually heavy during spring in the Willamette Valley of OREGON. Larvae damaged filbert orchards. Counts appear to have been much higher than in the last few years, especially in Marion and Washington Counties. In IDAHO, larvae infested flowering chestnuts at Boise, Ada County, early in July.

PECAN WEEVIL (*Curculio caryae*) was light to moderate in Glasscock County and light to heavy in north-central counties in TEXAS. Pecan weevil was heavy in scattered areas by late August. Counts were moderate to heavy in most pecan areas in September and October. This weevil has become more widespread and damaging in ALABAMA. Infestations were about the same as in 1968 in central and south areas. Pecan weevil was extremely active on pecans from August to October in FLORIDA.

WALNUT HUSK FLY (*Rhagoletis completa*) was generally heavy in most locations of CALIFORNIA. Treatment timing is now effective. In OREGON, Columbia and Lane Counties were reported as new county records. Adults at Medford, Jackson County, were heavier than in previous years. Larvae infested all nuts on some trees. The primary economic damage was centered around Roseburg, Douglas County. Larvae in IDAHO infested black and English walnuts at Wilder, Canyon County. Fully grown larvae infested up to 40 percent of the nuts from trees at Homedale, Owyhee County. Walnut husk fly infestations in UTAH were light to moderate in English walnuts and generally lighter in black walnuts from Payson, Utah County, northward.

WALNUT APHID (*Chromaphis juglandicola*) was light to heavy on English walnuts in UTAH. Black walnut trees were often sticky from honeydew in central and north areas. FILBERT APHID (*Myzocallis coryli*) was very numerous during spring at Logan, Cache County, and in Davis and Salt Lake Counties, UTAH. BLACK PECAN APHID (*Myzocallis caryaefoliae*), BLACK-MARGINED APHID (*Monellia costalis*), and *Monelliopsis nigropunctata* were serious on pecans in south and central ALABAMA. Generally, these species were less important than in 1968.

A FRUIT-TREE MITE (*Bryobia rubrioculus*) damaged almonds in many local areas of CALIFORNIA. PECAN LEAFROLL MITE (*Aceria caryae*) was heavier and more widespread than usual in several north-central, northeast, and east-central counties of OKLAHOMA.

CITRUS

Highlights:

CITRUS WHITEFLY populations in Florida were nearly at an 18-year high, and SPIREA APHID and BLACK SCALE peak populations were the highest on record in 18 years. CITRUS FLAT MITE was heavy in some citrus groves in Arizona. SPIDER MITES were a problem on citrus in California and Arizona. CITRUS RUST MITE was the highest on record in 18 years in Florida.

CITRUS WHITEFLY (Dialeurodes citri) was at the normal low level until May and June in FLORIDA when it nearly reached the 18-year high. It was in the high range in July and early August, then decreased until late September when the high level was again reached. At the July peak, 72 percent of the groves were infested and 9 percent had heavy infestations. In October, citrus whitefly remained in the high range, the highest on record for October, and nearly equaled the record for any month in the past 18 years. Infestations decreased in November but were still above normal and the highest on record for November.

SPIREA APHID (Aphis spiraeicola) was scarce through February in FLORIDA citrus. Infestations increased rapidly to above normal levels through March and April, with the late April peak higher than at any time in 18 years of observations.

BLACK SCALE (Saissetia oleae) populations were below normal until mid-May in FLORIDA and then rapidly increased to normal by late June. Infestations were moderate to heavy in 59 percent of the groves. During the summer this was the only scale on citrus that attained a high level and exceeded normal abundance. Black scale reached a peak in mid-July, then slowly decreased. Population levels remained comparatively high for this scale, with October and November counts the highest in 18 years of record for each of these months.

YELLOW SCALE (Aonidiella citrina) increased on citrus from Tulare County, CALIFORNIA, north. CALIFORNIA RED SCALE (Aonidiella aurantii) was unusually abundant and destructive in CALIFORNIA. Parasite and predator balance was still upset. Populations of an ARMORED SCALE (Unaspis citri) were low throughout FLORIDA. Infestations were heavy in some areas and an important problem.

MEALYBUGS were extremely low in FLORIDA through late April but by late June were abnormally high. Mealybugs were above normal through August. Counts were the highest on record in October and nearly equaled the record for any month for the past 18 years. Populations decreased in November but still were above normal and the highest on record for the month.

CITRUS FLAT MITE (Brevipalpus lewisi) was heavy in many Yuma County, ARIZONA, groves during February, March, June, July, and August. Counts were moderate in some widely scattered areas of Maricopa County during October. Controls were generally successful.

A SPIDER MITE (Eotetranychus lewisi) was more prevalent on citrus this year in several scattered locations in CALIFORNIA, and CITRUS RED MITE (Panonychus citri) was still a severe pest of citrus in most areas of State. Heavy populations of citrus red mite infested lemon trees from February through May in ARIZONA. Counts were light during the summer. A buildup occurred in October. This pest was controlled by heavy November rains in most groves.

CITRUS RUST MITE (Phyllocoptruta oleivora) populations were above normal nearly all year on FLORIDA citrus. The highest counts in 18 years were noted for May and July. Populations were very high all summer. In untreated groves during late July, 42 percent of the fruits were infested and 62 percent of the groves harbored heavy infestations. CITRUS BUD MITE (Aceria sheldoni) infestations continued on citrus in Santa Barbara and Ventura Counties, CALIFORNIA.

NAVEL ORANGEWORM (Paramyelois transitella) was very abundant in northern CALIFORNIA navel oranges in dooryard and commercial orchards. BEET ARMYWORM (Spodoptera exigua) larvae damaged young citrus seedlings in June and September in some nurseries in Yuma County, ARIZONA. Controls were needed.

WESTERN FLOWER THRIPS (Frankliniella occidentalis) was damaging to tangerines in the desert areas of CALIFORNIA. CITRUS THRIPS (Scirtothrips citri) was severe in many locations of California. Citrus thrips was most troublesome in Yuma County, ARIZONA. Controls began in mid-February, continued into March, and began again in mid-April. A second buildup occurred in June at Yuma and additional hatches con-

tinued into August. Nurseries were sprayed continually. During October a fall buildup began but died out when natural conditions reduced populations. The groves in the Salt River Valley did not have so heavy a buildup. Counts were moderate in groves during mid-April.

OTHER TROPICAL AND SUBTROPICAL FRUIT

FIG PSYLLID (Homotoma ficus) was heavy on figs at Concord, Contra Costa County, CALIFORNIA, and was found later in Solano County in low numbers. This was reported as a new record for North America. For background information on this psyllid see CEIR 19(31):611.

OLIVE SCALE (Parlatoria oleae) was prevalent on olives in Tulare County, CALIFORNIA, during the 1969 season.

SMALL FRUITS

STRAWBERRY CROWN BORER (Tyloderma fragariae) damaged some strawberries in UTAH. STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus), BLACK VINE WEEVIL (B. sulcatus) and B. rugosostriatus damaged home plantings and older strawberry patches in UTAH. Small patches of strawberries were damaged by Brachyrhinus spp. and Peritelinus oregonus in June at Stevenson, Skamania County, WASHINGTON.

A SAP BEETLE (Glischochilus quadrisignatus) was tunneling into strawberries and destroying the crop at Saint Anthony, Fremont County, IDAHO, during August. The strawberry harvest was 90-95 percent completed in MICHIGAN, before meaningful migrations of another SAP BEETLE (Stelidota geminata) into plantings began. GRAPE FLEA BEETLE (Altica chalybea) was numerous on grape leaves in the east-central and central districts of INDIANA.

BRAMBLEBERRY LEAFHOPPER (Macropsis fuscula) infestations were light on wild Rubus and commercial raspberries in Whatcom and Pierce Counties, WASHINGTON. Whatcom County was the first new county record since this leafhopper was reported in the United States in July 1968. Adults of a LEAFHOPPER (Erythroneura elegantula) ranged over 100 per sweep on European grapes in mid-September at Hermiston, Umatilla County, OREGON. Foliage was mottled a light yellow green and some were brown and shriveled. No fruit damage was evident. Erythroneura spp. were widespread and increasing in CALIFORNIA. VIRGINIA-CREEPER LEAFHOPPER (E. ziczac) and E. comes discolored susceptible grape varieties in several areas of UTAH.

GRAPE PHYLLOXERA (Phylloxera vitifoliae) was found on roots of European grapes in Douglas, Jackson, Josephine, and Wasco Counties, OREGON. These were the first collections in the State. MEADOW SPITTLEBUG (Philaenus spumarius) infested strawberries in the southeast, east-central, and eastern edges of the central and south-central districts of MINNESOTA.

GRAPE BERRY MOTH (Paralobesia viteana) was damaging in some vineyards in Washington County, UTAH, and STRAWBERRY LEAF ROLLER (Ancylics comptana fragariae) was common in the spring on strawberries in the northern part of the State. P. viteana was moderate but late in MICHIGAN. Damage to vineyards was minimal due to correct timing of controls.

RASPBERRY CROWN BORER (Bembecia marginata) larvae infested most of the older canes in a boysenberry planting April 17 at Caldwell, Canyon County, IDAHO. OMNIVOROUS LEAF TIER (Cnephasia longana) was observed damaging cranberries and strawberries in the spring in the Willamette Valley of OREGON. Populations were much heavier than in the last few years, especially in Marion and Washington Counties. Additional sprays were applied to some strawberry fields for satisfactory control. WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) was injurious in some vineyards in Washington County, UTAH.

SPIDER MITES were generally moderate and below normal on raspberries in some localities of UTAH. They were damaging in Emery, San Juan, Davis, Sevier, Rich, Utah, and Cache Counties. Spider mites, mostly TWO-SPOTTED SPIDER MITE (*Tetranychus urticae*), are becoming difficult to control in some strawberry fields in MINNESOTA, due to increased resistance to acceptable miticides. BLUEBERRY BUD MITE (*Aceria vaccinii*) infested blueberry at Melrose, Alachua County, FLORIDA, for a new State record.

First nymphs of STRAWBERRY APHID (*Chaetosiphon fragaefolii*) were observed on strawberry plants May 6 at Vancouver, Clark County, WASHINGTON. Infestations were lighter than normal at this time. Populations averaged 71 per strawberry leaf by August 25, which was higher than normal.

GARDEN SYMPHYLAN (*Scutigera immaculata*) infested ripe strawberries at Vancouver, Clark County, WASHINGTON, and was a potential contaminant of processed strawberries.

Weather of the week continued from page 190.

TEMPERATURE: Temperatures averaged slightly above normal along the Pacific coast, the Canadian border, and the Florida Peninsula and below normal over most of the rest of the Nation. Much of the West had enjoyed 8 consecutive weeks of mild temperatures before the arrival of last week's cold weather. Much of the central Rocky Mountain area and the central and southern Great Plains averaged 6° to 12° colder than normal. Record-breaking cold occurred in the Southeast early in the week. Subfreezing temperatures occurred in the northern Florida Peninsula Monday morning. On Tuesday morning, subfreezing weather occurred as far south as central Georgia in the East and to the Rio Grande in western Texas. Subzero temperatures were recorded at Grand Forks, North Dakota, and at Alamosa, Colorado, Wednesday morning. Afternoon temperatures in the West ranged generally from the 30's and 40's in the northern States to the 60's and 70's along our southern border except in the deep-snow area of Kansas and nearby parts of neighboring States which remained below freezing for several days. A warming over the Central and East occurred in the latter part of the week. Maximums reached the 50's in the central Great Plains and minimums remained above freezing in the Ohio River Valley. The warmer weather melted much of the snow cover. (Summary supplied by Environmental Data Service, ESSA.)

Origin and Distribution of Daylily Thrips, Frankliniella hemerocallis

Crawford (Thysanoptera : Thripidae)

A male of Frankliniella hemerocallis Crawford (1948, Wash. Ent. Soc. Proc. 50(4):83-84) was intercepted on Hemerocallis sp. plants from Japan (S.F. 398, IIPIRB 69-23972) by Plant Quarantine Inspector R. Wion on October 23, 1969. This is the first oriental record of the daylily thrips. As this thrips is highly specific on Hemerocallis species and these are native to Asia or Eurasia, we concluded that it is also oriental in origin. We previously believed that it was native to North America because of its similarity to the native North American tobacco thrips, F. fusca (Hinds), and its occurrence within the range of F. fusca. The range of F. fusca includes North America east of the 100th parallel. Locality records for F. hemerocallis are Geneva, Wisconsin; Gainesville, Florida; Beltsville and Glendale, Maryland; and New York, New York.

The two species are easily separated by the absence in F. hemerocallis and the presence in F. fusca of a pair of pores on the disc of the metanotum. Dark areas of the legs are extensive and concolorous with the body in F. hemerocallis and scant and much lighter than the body in F. fusca.

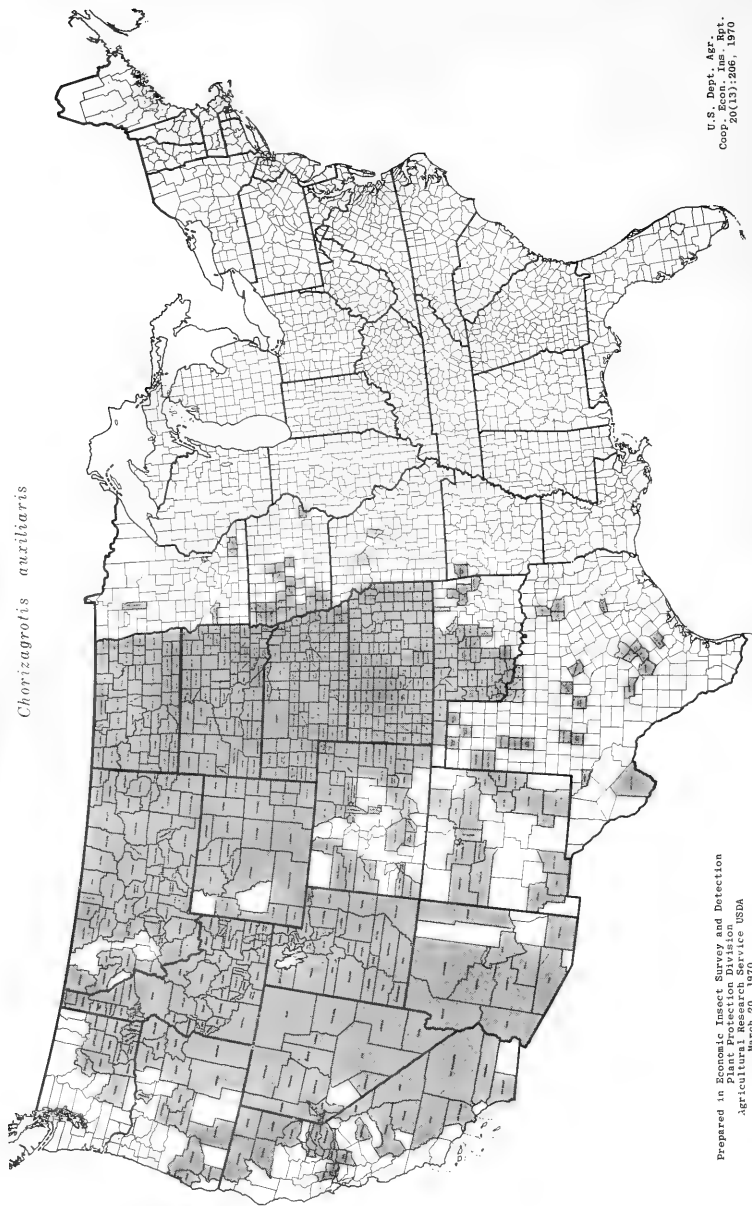
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U.S. Dept. Agr.
Coop. Econ. Ins. Rpt.
20(13):205, 1970

Distribution of Army Cutworm

Chorizagrotis auxiliaris



U. S. Dept. Agr.
Coop. Econ. Inis. Serv.
20(13) 2486, 1970

Prepared in Economic Entomology Survey and Detection
Division, Plant Protection Division
Agricultural Research Service USDA
March 20, 1970

SURVEY METHODS

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Part XXVII

Additional copies of Parts I through XXVII of this bibliography are available from Economic Insect Survey and Detection.

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REPORT**

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**PLANT PROTECTION DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE**



AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearinghouse and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

EUROPEAN CRANE FLY larvae found in Washington. This is first known established infestation in United States. (p. 215).

Predictions

POTATO PSYLLID survey of spring breeding areas in Arizona and California indicates a light to moderate potential this season. (p. 211).

ALFALFA WEEVIL expected to be of minor importance in New Jersey in 1970. (p. 212).

EASTERN TENT CATERPILLAR expected to be moderate to heavy in central and eastern panhandle counties of West Virginia. (p. 213). FOREST TENT CATERPILLAR expected to cause noticeable defoliation on 60,000 acres of forest land in West Virginia (p. 213); populations will increase in Minnesota, but remain about same in Michigan (p. 220). SPRUCE BUDWORM population in Minnesota expected to increase slightly, with further increase of infested area. An infestation in Maine threatens to cause increased tree mortality. (p. 218). JACK-PINE BUDWORM and PINE ROOT COLLAR WEEVIL may be more numerous in Michigan. (p. 218).

Detection

A GALL MIDGE reported for the first time from Florida. This species has been reported only from Cuba and St. Vincent, West Indies. This is a new North American record. (p. 213).

Other new State and county records on page 215.

Special Reports

Summary of Insect Conditions in the United States - 1969

Ornamentals (pp. 216-217).

Forest and Shade Trees (pp. 217-228).

Highlight section of Forest Insect Conditions in the United States - 1969 (pp. 224-228).

Contributors (p. 229).

European Chafer Quarantine Map. Centerfold.

Distribution of Cattle Grubs. Map. (p. 230).

Some First Occurrences of Season

PINK BOLLWORM moths in California; WESTERN TENT CATERPILLAR larvae in Nevada; PEA APHID in Nevada; BLACK CHERRY APHID in Washington; and ELM LEAF BEETLE adults in Oregon.

Reports in this issue are for week ending March 27 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance.....211

Insects Affecting

Corn, Sorghum, Sugarcane.....211	Citrus.....212
Small Grains.....211	Ornamentals.....213
Turf, Pastures, Rangeland.....211	Forest and Shade Trees.....213
Forage Legumes.....212	Man and Animals.....214
Potatoes, Tomatoes, Peppers.....212	Households and Structures.....214
Deciduous Fruits and Nuts.....212	

Beneficial Insects.....214

Federal and State Plant Protection Programs.....215

Hawaii Insect Report.....215

Detection.....215

Light Trap Collections.....215

Summary of Insect Conditions in the United States - 1969

Ornamentals.....216	
Forest and Shade Trees.....217	
Contributors.....229	

Distribution of Cattle Grubs. Map.....230

European Chafer Quarantine. Map. Centerfold

WEATHER OF THE WEEK ENDING MARCH 30

HIGHLIGHTS: Temperatures ranged widely from below zero in parts of the northern Great Plains to above 90° at some desert locations in southern California. Heavy snow plagued parts of the Northeast and tornadoes and violent thunderstorms struck the Deep South.

PRECIPITATION: At the beginning of the week snow fell from Michigan to the northern and central Appalachians. By 7 a.m., Monday, the snow depth at Rumford, Maine, reached 22 inches. About 10 inches fell during the day in the mountains in northeastern Tennessee. A Pacific storm moved inland bringing rain to the northern Pacific coast and snow to the mountains. This storm gained strength as it crossed the Rocky Mountains and moved into the central Great Plains. Winds gusted to 80 to 90 m.p.h. at Fort Collins, Colorado, and to 60 m.p.h. at Denver on Tuesday afternoon. Violent weather, tornadoes and heavy thunderstorms, occurred on Wednesday in connection with the intensifying storm. Tornado reports came from Arkansas and Illinois. Heavy snow fell in the north-central States accumulating to a foot or more in northeastern Illinois, northern Indiana, and Lower Michigan. Strong winds piled the snow in 4-foot drifts in places. Transportation and communication facilities were slowed or halted. Much of the western half of the Nation received less than 0.25 inch of precipitation during the week. No rain or only light sprinkles fell in California and nearby parts of neighboring States. On Friday, strong winds drifted the snow badly in the Texas Panhandle and raised clouds of dust in southwestern Texas. Frontal activity late in the week brought 8 to 15 inches of snow to parts of the Northeast from Kentucky to New England. Severe thunderstorms, accompanied by strong winds, violent lightning, and torrential rains occurred in the central and eastern Gulf States. Jacksonville, Florida, received over 7 inches in 2 days. Totals across the Florida Peninsula in the vicinity of Fort Myers ranged from 4 to 8 inches.

Weather continued on page 228.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

Potato Psyllid Survey, Spring Breeding Areas of Arizona and California - 1969

The 1970 spring survey for potato psyllid (Paratrioza cockerelli) was conducted March 6-12 in the overwintering areas of Arizona and California. Lycium spp., the preferred wild host, was in poor condition or dormant at many locations in Arizona and California, except for agricultural areas where roadside runoff or irrigation had supplemented moisture from rains.

Comparison of average populations per 100 sweeps on overwintering hosts found during spring surveys from 1964 through 1970 are as follows:

<u>State</u>	<u>District</u>	<u>1970</u>	<u>1969</u>	<u>1968</u>	<u>1967</u>	<u>1966</u>	<u>1965</u>	<u>1964</u>
Arizona	Tucson, Phoenix	137	407	214	34	73	508	158
California	Blythe, Barstow	363	167	120	8	228	87	100

Results of the survey indicate a light to moderate migration potential this season. (PPD West. Reg.).

ARMY CUTWORM (Chorizagrotis auxiliaris) - COLORADO - Early instars ranged up to 1 per linear foot of wheat at New Raymer, Weld County. Feeding light. None found elsewhere in Weld, Logan, and Washington Counties. (Johnson).

GREENBUG (Schizaphis graminum) - NEW MEXICO - Light on wheat in Curry County. Ungrazed fields show heavier infestations. (N.M. Coop. Rpt.). KANSAS - Range per linear foot of wheat by county as follows: Comanche 5-300, Barber up to 70, Clark up to 20, and Pratt up to 10. Trace in Meade and Chautauqua Counties. Surveys negative in 4 south-central, 1 central, and 7 southeast counties. Predators in few fields in Clark and Comanche Counties. (Redding, Martinez). ARKANSAS - Light in southwest area small grain. (Boyer).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - WISCONSIN - Overwintering larval survival 85 percent at Hancock, Waushara County, and at Monroe, Green County. (Wis. Ins. Sur.).

SMALL GRAINS

BROWN WHEAT MITE (Petrobia latens) - OKLAHOMA - Ranged 25-50 per linear foot in wheat in Cimarron County. Most damaging pest in wheat at present. (Okla. Coop. Sur.).

WINTER GRAIN MITE (Penthaleus major) - OKLAHOMA - Light, up to 4 per linear foot, in Mayes County wheat. Averaged 50 per linear foot in Noble County. (Okla. Coop. Sur.).

PALE WESTERN CUTWORM (Agrotis orthogonia) - COLORADO - Larval counts 7-8 per linear foot in border of small-grain field in northeast Washington County. (Pilcher).

TURF, PASTURES, RANGELAND

WESTERN TENT CATERPILLAR (Malacosoma californicum) - NEVADA - First instars on desert peach (Prunus andersonii) and bitterbrush (Purshia tridentata) in southern Washoe County. Hatch not complete. (Adams, Bechtel).

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - CALIFORNIA - Larvae heavy and damaging dichondra at Modesto, Stanislaus County. (Cal. Coop. Rpt.).

AN APHID (Asiphonella dactylonii) - CALIFORNIA - Adults of this species and Chorizococcus rostellum (a mealybug) heavy locally on Bermuda grass at Santa Paula, Ventura County. (Cal. Coop. Rpt.).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - ARKANSAS - Variable in southwest area: Adults ranged 12-15 and larvae 5-6 per 100 sweeps along Red River in Miller County. Larvae ranged 800-1,000 and adults 5-10 per 100 sweeps 20 miles south and across river in Lafayette County. Specimens taken in Howard County. This is a new county record. (Boyer). TENNESSEE - Light in alfalfa in western area. (Cagle et al.). NEW JERSEY - Expected to be minor pest in 1970. (Race, Mar. 20). UTAH - Adults numerous in poplar duff near alfalfa at Salt Lake City, Salt Lake County. (Knowlton, Mar. 27). NEVADA - First eggs of season light and spotty in Mason and Smith Valleys, Lyon County, and in southern Washoe County. (Adams, Bechtel).

CLOVER LEAF WEEVIL (Hypera punctata) - MISSOURI - Light in east-central and south-east areas. Larvae ranged 1-2 per square foot of alfalfa in Ste. Genevieve County. (Hanning). Larval counts averaged 1.5 per square foot in alfalfa and 2.0 per square foot in red clover in Cape Girardeau County. (Munson).

PEA APHID (Acyrtosiphon pisum) - NEVADA - Light in Clark County alfalfa. (Zoller). Appearing in alfalfa in Lyon and southern Washoe Counties. (Adams, Bechtel). NEW MEXICO - Moderately heavy, ranged 20-50 per square foot, in alfalfa around Roswell, Chaves County. (Mathews). OKLAHOMA - Ranged 25-100 per square foot in alfalfa in Mayes County. Averaged 50 per square foot in Noble County. (Okla. Coop. Sur.). MISSOURI - Light, up to 15 per 10 sweeps, in alfalfa checked in southeast area. (Munson). ARKANSAS - Light, ranged 50-75 per 100 sweeps of clover and alfalfa in southwest area. (Boyer). TENNESSEE - Moderate in alfalfa in western area. Buildup expected. (Cagle et al.).

POTATOES, TOMATOES, PEPPERS

VEGETABLE WEEVIL (Listroderes costirostris obliquus) - CALIFORNIA - Larvae light and damaging 10-acre tomato planting at Otay, San Diego County. (Cal. Coop. Rpt.).

DECIDUOUS FRUITS AND NUTS

BLACK CHERRY APHID (Myzus cerasi) - WASHINGTON - Hatching underway in Wenatchee, Chelan County, March 23. (Rushmore).

CITRUS

Citrus Insect Situation in Florida - Mid-March - CITRUS RUST MITE (Phyllocoptruta oleivora) infested 74 (norm 61) percent of groves; economic in 42 (norm 41) percent. Increased on leaves and remained in high range, decreased to moderate range on fruit. Both levels slightly above normal. Little change expected. Highest districts west, south, and east. CITRUS RED MITE (Panonychus citri) infested 48 (norm 39) percent of groves; economic in 18 (norm 15) percent. Increased and slightly above normal for March, but still in low range. Little change expected. Highest district west. TEXAS CITRUS MITE (Eutetranychus banksi) infested 20 (norm 31) percent of groves; economic in 3 (norm 14) percent. Population below average and in very low range. It will remain low. Highest district west. SIX-SPOTTED MITE (Eotetranychus sexmaculatus) infested 6 percent of groves; economic in 1 percent. Normal population level for March. Gradual increase expected. GLOVER SCALE (Lepidosaphes gloverii) infested 82 (norm 80) percent of groves; economic in 10 (norm 16) percent. Below normal and in moderate range. Slight increase expected. Highest districts south and east. PURPLE SCALE (L. beckii) infested 68 (norm 79) percent of groves; economic in 6 (norm 9) percent. Below normal and in low range. Slight increase expected. Highest district west. CHAFF SCALE (Parlatoria pergandii) infested 48 (norm 61) percent of

groves; economic in 2 (norm 10) percent. Below normal and in low range. Little change expected. Highest district north. BLACK SCALE (*Saissetia oleae*) infested 13 (norm 30) percent of groves; economic in 2 (norm 13) percent. Beginning to recover from cold weather set-back in January. Population much below normal and very low. Highest district west. YELLOW SCALE (*Aonidiella citrina*) infested 61 (norm 63) percent of groves; economic in 9 (norm 12) percent. Population near normal moderate level for March. Slight increase expected. Highest districts north and east. An ARMORED SCALE (*Unaspis citri*) infested 25 percent of groves; 8 percent moderate. Population low but is highest on record for February. Increase expected. WHITEFLIES infested 59 percent of groves; economic in 37 percent. Population in high range and higher than in March of prior 18 years. Further increase expected. APHIDS infested 8 percent of groves. Light to date but will increase and intensify greatly until late April. (W.A. Simanton (Citrus Expt. Sta., Lake Alfred)).

ORNAMENTALS

A GALL MIDGE (*Neolasioptera portulacae* (Cook)) - FLORIDA - Seven adults and one gall collected from *Portulaca oleracea* at Dania, Broward County, April 11, 1962, by D.P.B. McLean. Determined by R.J. Gagne. This is a new North American record. This species has been reported from only Cuba and St. Vincent, West Indies. (Fla. Coop. Sur.). Little is known of the economic importance of this gall midge. (PPD).

GREEN SHIELD SCALE (*Pulvinaria psidii*) - CALIFORNIA - All stages medium on *Philodendron* sp. in nursery at Sacramento, Sacramento County. Collected by C.A. Mellor, March 19. Determination by R. Wilkey. (Cal. Coop. Rpt.).

A SNAIL (*Otala vermiculata*) - TEXAS - Damaging shrubbery and trees at Waco, McLennan County, March 25. Collected by D.J. Markwardt. Determined by W.J. Byas. This is a new county record. Common food snail in Mediterranean countries. Locally introduced into New Orleans, Louisiana. Also reported from California and Ohio. (PPD).

FOREST AND SHADE TREES

EASTERN TENT CATERPILLAR (*Malacosoma americanum*) - WEST VIRGINIA - Moderate to heavy infestations expected in central and eastern panhandle counties; egg masses ranged 5-10 per 10 wild black cherry trees. Light infestations expected throughout remainder of State; egg masses ranged zero to 4 per 10 trees in February. (W. Va. Ins. Sur.). FLORIDA - Last instars seeking pupation sites at Gainesville, Alachua County. (Mead).

FOREST TENT CATERPILLAR (*Malacosoma disstria*) - WEST VIRGINIA - Egg masses ranged 1-17 per sampled plot in Tyler, Wetzel, Ohio, and Marshall Counties. These are new county records. Expect 60,000 acres of forest land to be noticeably defoliated and 12,000 additional acres infested with no noticeable defoliation. Increase expected in Tucker County but no egg masses found March 4. (W. Va. Ins. Sur.).

FRUIT-TREE LEAF ROLLER (*Archips argyrospilus*) - CALIFORNIA - Early instars heavy on oak trees in Sacramento, Sacramento County. (Cal. Coop. Rpt.).

ELM LEAF BEETLE (*Pyrrhalta luteola*) - OREGON - Adults noted at Salem, Marion County, March 25. (Westcott).

A CECIDOMYIID MIDGE (*Cecidomyia piniinopis*) - OREGON - General, especially on lodgepole pine (*Pinus contorta*) at Portland, Multnomah County. Much heavier than normal. (Larson).

A SAWFLY (*Neodiprion pratti pratti*) - WEST VIRGINIA - Eggs averaged 110 per 3-inch twig on pitch pine in Lincoln County, March 19. Heavy infestation expected. (W. Va. Ins. Sur.).

A PINE BARK APHID (Pineus sylvestris) - CALIFORNIA - Adults heavy, 30-20 per twig, on Scotch pine nursery stock at Escondido, San Diego County. (Cal. Coop. Rpt.).

MAN AND ANIMALS

SCREW-WORM (Cochliomyia hominivorax) - No cases reported in U.S. March 22-28. Total of 55 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico March 15-21 as follows: Baja California 1, Sonora 39, Chihuahua 8, Tamaulipas 7. Total of 15 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 6,728,000; Mexico 129,714,000. (Anim. Health Div.).

COMMON CATTLE GRUB (Hypoderma lineatum) - WYOMING - Larvae ranged 1-11 (averaged 4.6) on 14 untreated cows and 6-40 (averaged 16.3) on 14 untreated calves at Gillette, Campbell County, on January 20. (Lloyd). Larvae ranged 0-9 (averaged 1.5) in 18 untreated yearlings at Torrington, Goshen County, on March 3. (Lloyd, Parshall). TENNESSEE - Inspection of 35 cattle negative in Benton County. (Cagle).

FACE FLY (Musca autumnalis) - CALIFORNIA - Hibernating adults annoying in households in Anderson, Shasta County, and Dunsmuir, Siskiyou County. (Cal. Coop. Rpt.).

HOUSE FLY (Musca domestica) - NEW JERSEY - Heavy in heated calf pen in Somerset County. (Ins.-Dis. Newsltr.).

CATTLE LICE - ALABAMA - Heavy on numerous untreated beef cattle herds in Wilcox and Mobile Counties. (Farquhar, Vickery).

HOUSEHOLDS AND STRUCTURES

ELM LEAF BEETLE (Pyrrhalta luteola) - MARYLAND - Overwintered adults becoming active in and around homes in the southwest areas of Baltimore City. (U. Md., Ent. Dept.).

BOXELDER BUG (Leptocoris trivittatus) - MARYLAND - Adults annoying homeowners in Montgomery, Baltimore, Anne Arundel, and Prince Georges Counties. (U. Md., Ent. Dept.).

A CARPENTER ANT (Camponotus subbarbatus) - WEST VIRGINIA - Specimen collected in Hampshire County June 1, 1968, by J. Brooks. Determined by D.R. Smith. This is a new State record. (W. Va. Ins. Sur.).

BENEFICIAL INSECTS

BIG-EYED BUGS (Geocoris spp.) - OKLAHOMA - Light, 0-1 per square foot, in alfalfa in Mayes County. (Okla. Coop. Sur.). ARKANSAS - Adults ranged 5-10 in 100 sweeps of alfalfa in southwest area. (Boyer).

DAMSEL BUGS (Nabis spp.) - ARKANSAS - Adults ranged 25-30 in 100 sweeps of alfalfa in southwest area. (Boyer).

A FLOWER BUG (Orius insidiosus) - ARKANSAS - Light, ranged 5-10 in 100 sweeps, in alfalfa in southwest area. (Boyer).

CONVERGENT LADY BEETLE (Hippodamia convergens) - OKLAHOMA - Adults light, 0-3 per square foot, in alfalfa in Mayes County. Two larvae noted in wheat in Noble County. (Okla. Coop. Sur.). ARKANSAS - H. convergens and Coleomegilla maculata ranged 12-15 in 100 sweeps of alfalfa in southwest area. (Boyer).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

EUROPEAN CRANE FLY (Tipula paludosa) - WASHINGTON - Larvae heavy, 75-100 per square foot, in sod at Peace Arch State Park in Blaine, Whatcom County. Collected March 18, 1970, by T. Knowbaugh after treatment of small sod area. Determined by A. Stone. This is first known established larval infestation in United States, although adults previously collected in blacklight traps at several localities in Whatcom and Skagit Counties. Damaging populations causing losses to homeowners, farmers, and municipalities throughout Fraser Valley in Canada, immediately north of United States-Canadian border. (PPD).

PINK BOLLWORM (Pectinophora gossypiella) - CALIFORNIA - Trapped 1 native and 1 sterile moth in Coachella Valley and 2 native moths in Borrego Springs. First of season. Released 978,500 sterile moths in Coachella Valley; total to date 1,293,500. (PPD).

HAWAII INSECT REPORT

Corn - All stages of CORN PLANTHOPPER (Peregrinus maidis) heavy in 0.5 acre of old sweet corn at Halawa, Oahu. Nymphs and adults of Tyrtus mundulus (cane leafhopper egg sucker) moderate in same area. (Kawamura).

General Vegetables - GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) moderate to heavy in snap beans at Waimanalo, Oahu, despite intensive spraying. All stages of BEAN FLY (Melanagromyza phaseoli) trace to light in most commercial snap bean plantings at Waimanalo, Oahu. Larvae moderate in 2-inch-high snap bean seedlings at Pearl City. (Kawamura).

Forest and Shade Trees - Larvae of KOA HAOLE LOOPER (Anacamptodes fragilaria) moderate to heavy on koa haole (Leucaena glauca), kiawe (Prosopis pallida), and klu (Acacia farnesiana) on Oahu; heavy at Waikapu, Maui, 100+ acres of koa haole 90 percent defoliated. (Miyahira et al.).

Beneficial Insects - All stages of a SCIOMYZID FLY (Sepedon sauteri) heavy in one acre of taro (Colocasia esculentum) at Waihee, Maui. (Davis, Miyahira). All stages of a LADY BEETLE (Coccinella septempunctata brucki) recovered in farm areas at Pearl City, Waimanalo, and Halawa, Oahu. (Kawamura).

Miscellaneous Insects - Adults of an ICHNEUMON WASP (Diplazon laetatorius) heavy (7 per sweep) in weeds bordering farm areas at Waianae, Oahu. Parasitizes aphid-feeding syrphids. (Funasaki).

DETECTION

New North American Record - A GALL MIDGE (Neolasioptera portulacae) (Cook) FLORIDA - Broward County (p. 213).

New State Record - A CARPENTER ANT (Camponotus subbarbatus) WEST VIRGINIA - Hampshire County (p. 214).

New County Records - ALFALFA WEEVIL (Hypera postica) ARKANSAS - Howard (p. 212). A SNAIL (Otala vermiculata) TEXAS - McLennan and FOREST TENT CATERPILLAR (Malacosoma disstria) WEST VIRGINIA - Marshall, Ohio, Tyler, Wetzel (p. 213). EUROPEAN PINE SAWFLY (Neodiprion sertifer) WEST VIRGINIA - Pocahontas (p. 219). SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) SOUTH DAKOTA - Hughes (p. 223).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville, 3/20-26, BL - Granulate cutworm (Feltia subterranea) 9, salt-marsh caterpillar (Estigmene acrea) 3. TEXAS - Waco - 3/20-26, BL - Armyworm (Pseudaletia unipuncta) 39, black cutworm (Agrotis ipsilon) 2, corn earworm (Heliothis zea) 1, granulate cutworm 8, variegated cutworm (Perideroma saucia) 105.

SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1969
(Continued from page 208)

ORNAMENTALS

Highlights:

BAGWORM caused heavy damage to evergreen shrubs in several States. TEA SCALE was serious on camellia and holly in Alabama and Florida. JUNIPER SCALE was severe in many areas of Utah and in areas of Idaho. EUROPEAN EARWIG continued to spread in Pennsylvania. SPIDER MITES were serious on a variety of ornamentals in several areas.

BAGWORM (Thyridopteryx ephemeraeformis) populations and damage increased in NEBRASKA. Many junipers were 40 and 50 percent defoliated. Infestations in KANSAS were most numerous on junipers. Bagworm was also found on cotoneaster and honeylocusts. Heavy populations damaged evergreens in many areas of OKLAHOMA during summer. Heavy throughout TENNESSEE on several species of plants, infestations were heaviest in east and central areas. Bagworm is still the most destructive pest of coniferous shrubs throughout ALABAMA.

Bagworm caused heavy damage to many ornamentals in July and August in parts of WEST VIRGINIA. More than 50 percent defoliation of junipers and black locusts occurred in Ohio, Cabell, and Mason Counties. Some Norway spruce were lightly damaged in Kanawha County and 3-4 acres of white pine were infested in Wirt County. The greatest loss occurred to nursery stock and home ornamentals. Most nursery stock was treated. Damage should be light in 1970, but populations will probably be heavy in West Virginia. Bagworm larvae were heavy on newly planted shrubs and trees along highways in MARYLAND. This was the most frequently encountered pest of nursery stock in the State in 1969. Injury to arborvitae in DELAWARE was severe in some cases and especially noticeable in early August when most larvae were fully grown.

Other Lepidoptera were of some concern in several Western States. LILAC LEAF MINER (Gracillaria syringella) infestations were reported from several locations in Lemhi, Custer, Madison, Lincoln, and Bannock Counties, IDAHO. FALL WEBWORM (Hyphantria cunea) was heavy on trees and ornamentals in Clark County in July and on roadside shrubbery and trees in many counties in eastern and central WASHINGTON. AZALEA LEAF MINER (Gracillaria azaleella) was locally heavy on azaleas in northern CALIFORNIA, and larvae of a NOCTUID MOTH (Platypolia loda) seriously damaged a commercial planting of tiger lilies at Colfax, Placer County.

FULLER ROSE WEEVIL (Pantomorus cervinus) damaged ornamentals throughout CALIFORNIA. Adults of HOLLYHOCK WEEVIL (Apion longirostre) were collected at Seattle, King County, WASHINGTON, June 29. This was the first record for the western part of the State. This weevil was also abundant in Whitman County in late May. BLACK VINE WEEVIL (Brachyrhinus sulcatus) larvae were heavy on the roots of 10,000 container-grown blue spruce in a nursery at Tumwater, Thurston County, WASHINGTON. B. sulcatus was again serious in some CONNECTICUT areas. Many foundation plantings around public buildings were lost. A JAPANESE WEEVIL (Pseudocneorhinus bifasciatus) severely damaged ornamentals in many areas of VIRGINIA from Norfolk to Richmond to Fairfax in late summer. A WEEVIL (Rhynchophorus cruentatus) was occasionally serious on palms in FLORIDA. Damage was estimated at \$5,000 in one nursery.

OYSTERSHELL SCALE (Lepidosaphes ulmi) was heavy on lilac and cotoneaster in WYOMING. Infestations in SOUTH DAKOTA continued unabated on lilacs at Rapid City, Pennington County, and Spearfish, Lawrence County. Eggs in WISCONSIN were less numerous than in previous years due to predation by a pyemotid mite in Dane

County. Populations on lilac were lighter than in previous years. Oystershell scale continued heavy on lilacs in MICHIGAN. Failure to recognize early infestations and to apply suitable controls were major factors in this pest's continued presence.

The following were some of the major armored scale pests. Many heavy infestations of EUONYMUS SCALE (Unaspis euonymi) continued to occur throughout DELAWARE. U. euonymi continues as a major pest year after year in MICHIGAN. Infestations on pachysandra are becoming more routine and difficult to control. Diaspis boisduvalii severely damaged orchids in Hamilton County, TENNESSEE. TEA SCALE (Fiorinia theae) was the most destructive and widespread scale on camellia and Burford hollies in ALABAMA. F. theae remained serious on camellias and Chinese holly in FLORIDA. JUNIPER SCALE (D. carueli) was moderate to severe about homes in many parts of UTAH. In IDAHO, juniper scale was severe on ornamental junipers at Twin Falls, Twin Falls County, in early May and at Nampa, Canyon County, in late August. Some shrubs were killed.

A SOFT SCALE (Pulvinaria floccifera) infested English holly trees at residences in Portland, Multnomah County, OREGON. The scales were especially abundant on ventral leaf surfaces. Honeydew and sooty mold were conspicuous on dorsal leaf surfaces. FLETCHER SCALE (Lecanium fletcheri) was lighter than usual in Dane County, WISCONSIN. Erratic early summer weather in MICHIGAN adversely affected control of L. fletcheri on yew. This scale has become a major nursery problem, but should be only an incidental pest with correct practices. HEMISPHERICAL SCALE (Saissetia coffeae) continued to be an important pest of greenhouse plants, palms, and cycads in FLORIDA. Ceroplastes spp. continued to spread in eastern VIRGINIA, and damage increased. In MARYLAND, Ceroplastes spp. have been increasing over the past 3 years in foundation plantings and at nursery outlets.

Specimens of a MEALYBUG (Rhizoecus cacticans) were found on the roots of African-violet (Saintpaulia ionantha) at Bellingham, Whatcom County, WASHINGTON, for a new State record. A SPITTLEBUG (Clastoptera juniperina) was reported from Rocky Mountain juniper (Juniperus scopulorum) at Malad, Oneida County, for a new State record in IDAHO. Whiteflies, mostly CITRUS WHITEFLY (Dialeurodes citri), remained among the worst pests of a variety of ornamentals in FLORIDA, including gardenia, viburnum, ligustrum, and ornamental citrus.

EUROPEAN EARWIG (Forficula auricularia) continued to spread in PENNSYLVANIA. Small pockets of infestations one or two years ago are now countywide in scope. This earwig was very damaging to yard plants and flowers in CALIFORNIA.

SPIDER MITES were the most prevalent and injurious pests on various ornamentals in NEVADA. TWO-SPOTTED SPIDER MITE (Tetranychus urticae) and other spider mites were constant pests of roses, azaleas, holly, and many other shrubs and annual flowers throughout ALABAMA. T. urticae was serious on a variety of ornamentals, especially roses, in FLORIDA.

BROWN GARDEN SNAIL (Helix aspersa) damaged nursery stock at Medford, Jackson County, OREGON. Populations have been steadily increasing for several years. This snail was very abundant and damaging to ornamentals in CALIFORNIA.

FOREST AND SHADE TREES

Highlights:

SPRUCE BUDWORM was a pest of shelterbelt trees in Montana and defoliation ranged moderate to heavy in Minnesota. NANTUCKET PINE TIP MOTH damaged Scotch pine in Kansas, slash pine in Florida, and Virginia pine in Maryland. PINE LEAF CHERMID was of much concern on red spruce and white pine in West Virginia. PINE NEEDLE SCALE was epidemic in the Lake Tahoe area of California, and was prevalent on

ornamental and plantation pines in central and northeast Pennsylvania. PINE TORTOISE SCALE was of concern to Christmas tree growers in west Pennsylvania. TENT CATERPILLARS again defoliated many deciduous trees in several areas. EASTERN TENT CATERPILLAR was the most important forest pest in Ohio, and populations were heavy throughout West Virginia and in several areas of Maryland. Larvae of a TORTRICID MOTH defoliated several thousand acres of oak in Michigan. SADDLED PROMINENT was troublesome in Michigan, and defoliated 50,000 acres in Pennsylvania. AN OLETHREUTID MOTH damaged white oaks in Pennsylvania. ELM LEAF BEETLE caused some defoliation in several areas. SMALLER EUROPEAN ELM BARK BEETLE increased in Minnesota. WALKINGSTICK defoliated 5 square miles of hardwoods in Minnesota.

SPRUCE BUDWORM (Choristoneura fumiferana) was a pest of shelterbelts and ornamental fir and spruce in MONTANA. The main areas affected were Butte, Silver Bow County, and Plentywood, Sheridan County. C. fumiferana defoliation in MINNESOTA was moderate to heavy on 437,760 acres and light on 1,958,400 acres. Balsam fir and white spruce mortality was low. The outlook for 1970 is a slight increase in population, with a further increase of the infested area. JACK-PINE BUDWORM (C. pinus) moth flights and damage in MICHIGAN increased after a 3-year reduction. Several pine plantings in Oceana and Muskegon Counties showed severe damage. This pest will be more evident in 1970.

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) infestations on ornamental pine in OREGON were sprayed at Hermiston, Umatilla County. Control was directed against the moths, in contrast to sprays against the larvae in 1968. A new, established infestation was found in southwest Portland, Multnomah County. Sprays were applied in June when the adults were flying. A small infestation was found at a residence in northwest Portland. Known adult populations appear to be lower than in 1968. NANTUCKET PINE TIP MOTH (R. frustrana) injury resulted in unmarketable Scotch pines for Christmas trees in KANSAS. Infestations in MISSOURI were heaviest in Butler, St. Francois, and Ste. Genevieve Counties, and light in Jasper, Greene, Wright, Oregon, Shannon, Washington, and Carter Counties. R. frustrana was largely a pest of 2 to 8-year-old pines used as highway and lawn shade trees in ALABAMA. In FLORIDA, R. frustrana was unusually severe on a young slash pine plantation of 100 acres near Gainesville, Alachua County, in May, and was heavy in a young loblolly pine plantation of 140 acres near Chiefland, Levy County, in late summer. R. frustrana and R. subtropica were generally heavy on loblolly and slash pines during spring in north Florida. In MARYLAND, R. frustrana damaged 40-80 percent of the tips on Virginia pines in Prince Georges and Anne Arundel Counties.

A PINE NEEDLE-SHEATH MINER (Zelleria haimbachi) damage was above normal to home and Christmas tree plantings in Clackamas and Multnomah Counties, OREGON. In scattered areas near Medford, Jackson County, damage was severe to native ponderosa pine. WESTERN HEMLOCK LOOPER (Lambdina fiscellaria lugubrosa) declined on Mt. Baker National Forest, Whatcom County, WASHINGTON, due probably to parasites. A total of 750 acres was infested in the west area. PINE TUSSOCK MOTH (Dasychira plagiata) increased for the third consecutive season in northern Pine and southern Carlton Counties, MINNESOTA. Chemical control will be needed on 1,000 acres of jack pine in northern Pine County in 1970. A GELECHIID MOTH (Exoteleia nepheos) in new locations of Ottawa and Ingham Counties, MICHIGAN, indicate establishment over a broad area. It shows every indication of becoming a problem in coming years. Scotch pine appears to be the prime host, but other Pinus spp. are probably susceptible.

PINE ROOT COLLAR WEEVIL (Hylobius radicis) heavily infested many Christmas tree plantings in Wexford, Missaukee, and Newaygo Counties, MICHIGAN. Injury was light on treated trees and severe in many abandoned plantings. With this type of planting increasing, it could be more numerous in 1970. Adult damage by PALES WEEVIL (H. pales) in cut-over pine plantings in MICHIGAN is increasing. Failure

to treat stumps allowed it to increase. While no population explosion is expected, increase will continue in 1970. H. pales appears to have been increasing on pine in WEST VIRGINIA.

WHITE-PINE WEEVIL (Pissodes strobi) seems to be increasing in WEST VIRGINIA, especially in the eastern panhandle. Damage to white pine throughout RHODE ISLAND was heavy by August 19.

PINE BARK APHID (Pineus strobi) was troublesome in nursery plantations of Norway pine throughout MINNESOTA. PINE LEAF CHERMID (P. pinifoliae) was abundant throughout the red spruce and white pine range of WEST VIRGINIA. It is considered one of the more important conifer insects in the State. If populations continue to increase, mortality could be prevalent in both red spruce and white pine. The southern limit of the white pine range is not yet heavily infested. EASTERN SPRUCE GALL APHID (Adelges abietis) and COOLEY SPRUCE GALL APHID (A. cooleyi) remained heavy on all species of spruce and fir in PENNSYLVANIA. Over 100 inquiries from home gardeners were received. Protective treatments were applied against A. abietis to about 80 percent of Norway and white spruce Christmas tree plantations and against A. cooleyi to about 50 percent of the older fir plantations.

An epidemic of PINE NEEDLE SCALE (Phenacaspis pinifoliae) in the Lake Tahoe area of CALIFORNIA threatened thousands of pines. This scale heavily infested spruce and pine in WYOMING. In MONTANA, pine needle scale was serious on spruce in Beaverhead, Carbon, Park, Sweet Grass, and Stillwater Counties. This armored scale was prevalent on ornamental and plantation pines throughout central and northeast PENNSYLVANIA. One Christmas tree plantation in Luzerne County lost 10,000 trees; another plantation in Lycoming County had at least 40 percent of the trees ruined.

SPRUCE BUD SCALE (Physokermes piceae) was general on Colorado blue spruce at Boise, Ada County, IDAHO, in late May and early June. Control was required. PINE TORTOISE SCALE (Toumeyella numismaticum) appeared to be increasing in MICHIGAN. Poorly timed controls and lack of early detection contributed to this increase. T. numismaticum was of concern to all Christmas tree growers in west PENNSYLVANIA. The outbreak was centered in Indiana County; light to moderate infestations were scattered throughout the State. At least 5,000 acres were moderately to heavily infested.

A CONIFER SAWFLY (Neodiprion taedae linearis) in MISSOURI completely defoliated a 3-acre shortleaf pine plantation in St. Francois County and a 3-acre plantation in Bollinger County. RED-HEADED PINE SAWFLY (N. lecontei) infested plantation-grown trees in Texas, Dent, St. Francois, and Maries Counties, MISSOURI. EUROPEAN PINE SAWFLY (N. sertifer) infestations in INDIANA were more frequent than in past years. In OHIO, heavy infestations of N. pratti pratti occurred in Adams, Scioto, Ross, Pike, and Gallia Counties. Infested areas appear to be increasing annually. Most infestations resulted in 50-75 percent or more defoliation. Second instars of N. sertifer were collected from pitch and red pine on May 20, 1969, in Pocahontas County, WEST VIRGINIA. Determination was made by D.L. Schuder. This is a new county record. N. pratti pratti, first collected in Boone County in 1966, has now spread in WEST VIRGINIA into Wayne, Kanawha, and Lincoln Counties. An outbreak of N. lecontei occurred during spring in FLORIDA on nearly 1,000 acres of year-old slash pine in Taylor County. Red-headed pine sawfly and N. merkeli occurred in an outbreak on slash pine in Glades County in November. N. excitans severely defoliated 100 acres of large loblolly pines near Williston, Levy County, in November.

LARCH SAWFLY (Pristiphora erichsonii) defoliation ranged moderate to heavy over much of the 500,000 acres of eastern larch in MINNESOTA in 1969. The population has subsided slightly from that of 1968.

An ERIOPHYID MITE (Trisetacus pseudotsugae) was reported as a new State record in CALIFORNIA. It was found in Douglas-fir nursery stock at Half Moon Bay, San Mateo County, and later on native Douglas-fir at Saratoga Gap, Santa Cruz County.

Nymphs and adults of SPIDER MITES (Tetranychus spp.) infested Alberta spruce in nurseries at Portland, Multnomah County, OREGON. Many eggs were seen on needles of small ponderosa pines grown for Christmas trees. Control may be required before spring to prevent damage. Heavy numbers of SPRUCE SPIDER MITE (Oligonychus ununguis) in IDAHO noticeably webbed ornamental conifers at Challis, Custer County; Moscow, Latah County; Pocatello, Bannock County; and Rexburg, Madison County, in late August.

FOREST TENT CATERPILLAR (Malacosoma disstria) infested maple, ash, and elm in several areas and native chokecherry in 6 southwest counties of MONTANA. Defoliation in NORTH DAKOTA was complete on 1,000 acres of oak, ash, basswood, poplar, and elm in Benson County. The 1969 defoliation area in MINNESOTA was virtually the same as in 1968, except for a 200-acre outbreak in southern Otter Tail County. This location is about 125 miles southwest of the present infestation area which extends about 15 miles on all sides of International Falls. The very lightly infested area extends as far west as Lake of the Woods, south to Grand Rapids, Itasca County, and Virginia, St. Louis County, and east to Cook County. In 1969, weather favored forest tent caterpillar, and pupal parasitism was low. With higher egg mass counts, populations will increase in 1970. The area defoliated by forest tent caterpillar in MICHIGAN did not increase as expected. Defoliation was less severe in Antrim and Kalkaska Counties. Parasitism and disease were not high and weather was not a deterrent. Infestations occurred primarily on hard maple rather than aspen. Populations were most severe on high ground where maple predominates. The population for 1970 is not expected to increase dramatically. Forest tent caterpillar is a serious potential threat to economically important hardwoods in OHIO. About 5,000 trees, primarily maple, were defoliated in a 30-mile wide strip along the Ohio River in Monroe and Belmont Counties early in June. Damage to oaks ranged light to moderate in northern and eastern WEST VIRGINIA. Building up slowly, populations will probably peak in 1970. Additional buildup did not occur in the northeast section where this pest had been increasing during the past few years.

EASTERN TENT CATERPILLAR (Malacosoma americanum) counts were comparable to those of 1968 in NEBRASKA. Defoliation ranged 15-25 percent on wild plum in the southeast, particularly in Gage, Jefferson, and Saline Counties. Eastern tent caterpillar is probably the most important forest pest in OHIO for no other reason than sheer aggravation. It affects 90 percent or more of all wild cherry trees which are prevalent and widespread in the State. Large tents dotted the entire landscape in the south area late in April. By July, wild cherry began to recover from the severe defoliation. The heaviest eastern tent caterpillar infestations in recent years occurred throughout WEST VIRGINIA, except in the north-central region which had only a few tents. Because a wilt disease was prevalent, the population is expected to decrease in 1970. Heavy defoliation occurred on wild cherry and on isolated wild apple throughout MARYLAND. The heaviest defoliation occurred in Baltimore, Anne Arundel, Prince Georges, and Howard Counties.

FRUIT-TREE LEAF ROLLER (Archips argyrospilus) severely damaged yard and native oaks and damaged nearby ornamentals in CALIFORNIA. Larvae dangling from trees created a nuisance and large numbers of moths became a household and yard nuisance. A severe outbreak of LARGE ASPEN TORTRIX (Choristoneura conflictana) on aspen occurred in St. Louis and Lake Counties, MINNESOTA. Defoliation was lighter in Carlton, Cook, Koochiching, Lake of the Woods, and Beltrami Counties. Larvae of a TORTRICID MOTH (A. semiferanus) severely defoliated several thousand acres of oak, mostly black oak, in several northeast MICHIGAN counties. It has been severe for the last 3 or 4 years. Some tree mortality was evident. Natural control has exerted little noticeable reduction. Larvae of OAK LEAF TIER (Croesia semipurpurana) continued to infest red oaks in PENNSYLVANIA. There was a slight decline from 1968.

EUROPEAN CHAFER

COOPERATIVE FEDERAL, STATE, AND CANADIAN QUARANTINES

COUNTIES ENTIRELY COLORED ARE COMPLETELY REGULATED; COUNTIES PARTIALLY COLORED ARE PARTIALLY REGULATED.

GENERALLY INFESTED AREA - STATE, FEDERAL, AND CANADIAN REGULATIONS.

PROTECTION DIVISION OFFICE FOR ASSISTANCE REGARDING AREAS UNDER REGULATION AND REQUIREMENTS FOR MOVING REGULATED ARTICLES.

U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PROTECTION DIVISION AND
CANADIAN DEPARTMENT OF AGRICULTURE
COOPERATING WITH AFFECTED STATES

Revised Feb. 27, 1970

SEE REVERSE SIDE FOR REQUIREMENTS CONCERNING CERTIFICATION OF REGULATED ARTICLES.

True bulbs, corms, rhizomes, and tubers (other than clumps of dahlia tubers) of ornamental plants are exempt*** if free of soil.

6. Used mechanized soil-moving equipment.

Used mechanized soil-moving equipment is exempt*** if cleaned and repainted.

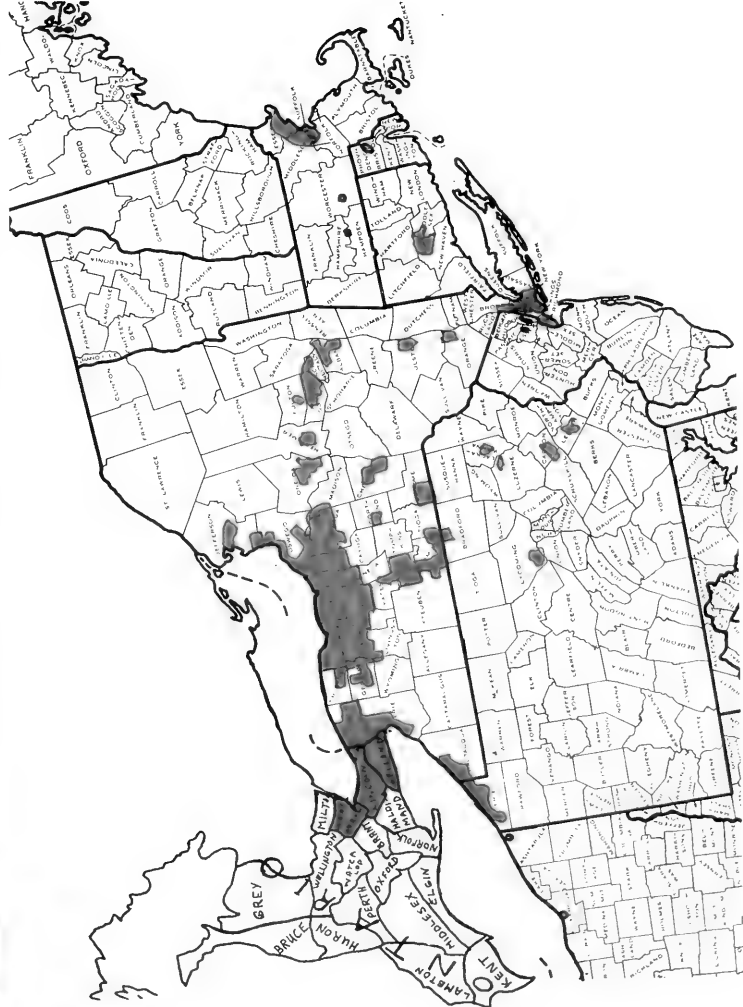
EUROPEAN CHAFER

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GENERALLY INFESTED AREA - STATE, FEDERAL, AND CANADIAN REGULATIONS.
(ERADICATION TREATMENTS NOT IN PROGRESS OR PLANNED)

STATE REGULATIONS ONLY. (SUPPRESSIVE TREATMENTS IN PROGRESS OR PLANNED)



RESTRICTIONS ARE IMPOSED ON MOVEMENT OF REGULATED ARTICLES FROM A REGULATED AREA AS FOLLOWS:

1. RED INTO OR THROUGH WHITE OR BLUE.
2. BLUE INTO ANY OTHER AREA WHEN REQUIRED BY APPROPRIATE STATE QUARANTINE OR BY AN AUTHORIZED INSPECTOR.

IN THE UNITED STATES, CONSULT YOUR STATE OR FEDERAL PLANT PROTECTION INSPECTOR OR YOUR COUNTY AGENT AND, IN CANADA, YOUR NEAREST PLANT PROTECTION DIVISION OFFICE FOR ASSISTANCE REGARDING AREAS UNDER REGULATION AND REQUIREMENTS FOR MOVING REGULATED ARTICLES.

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Revised Feb. 27, 1970

SEE REVERSE SIDE FOR REQUIREMENTS CONCERNING CERTIFICATION OF REGULATED ARTICLES.

- * Effective July 1, 1970, soil samples of any size may be moved from regulated areas to any approved laboratory, including the U. S. Army Corps of Engineers, without a certificate or permit attached.
- ** Information as to designated laboratories may be obtained from an inspector.
- *** Exempt if not exposed to infestation after cleaning or other prescribed handling.

VARIABLE OAK LEAF CATERPILLAR (Heterocampa manteo) completely defoliated 150 acres of oaks and birches in the Killdeer Mountains in Dunn County, NORTH DAKOTA. SADDLED PROMINENT (H. guttivitta) defoliation of maple and oak in isolated areas of Wexford and Grand Traverse Counties, MICHIGAN, indicated possibly more trouble in 1970. Much of the forested stands are predominantly hardwoods, a preferred host. H. guttivitta was again abundant in areas of Wayne, Monroe, Pike, Lackawanna, and Susquehanna Counties in PENNSYLVANIA. Over 50,000 acres of forests were defoliated. A virus disease was active in heavily infested areas. In southern Wayne County up to 90 percent of the larvae were diseased.

SPRING CANKERWORM (Paleacrita vernata) occurred in the usual infestations in the northern Black Hills of SOUTH DAKOTA. It also damaged shelterbelts near Miller, Hand County; Chamberlain, Brule County; Highmore, Hyde County; and Mission, Todd County. Twenty-two acres of shelterbelts were treated at Highmore by the end of May. The most serious infestation of P. vernata and FALL CANKERWORM (Alsophila pometaria) in MINNESOTA occurred at St. Paul, Ramsey County, where 40 blocks of elms were almost completely defoliated. In MICHIGAN, P. vernata and A. pometaria defoliation was heavy in parts of Muskegon, Ingham, and Oakland Counties. The 1970 outlook is much the same, but because parasitism is high in several localities, levels may not increase much in 1970.

MIMOSA WEBWORM (Homadaula anisocentra) was reported from Glenn County, CALIFORNIA, for a new county record. Damage was moderate to heavy on mimosa in east and central OKLAHOMA from early June to mid-October. Nine new counties were found infested in 1969. Injury was moderate to heavy on honeylocust throughout east KANSAS and light to moderate on mimosa in southeast and south-central areas. Mimosa webworm was the major pest of mimosa throughout ALABAMA. Infestations were heavy in east and central TENNESSEE in late summer and early fall with locally heavy damage. On honeylocust and mimosa in the southwest and south-central districts of INDIANA by June 20, populations approached economic levels by mid-September in western districts. Mimosa webworm infested 50-75 percent of the honeylocust in west and south OHIO. Numbers were very abundant on mimosa and honeylocust throughout DELAWARE.

FALL WEBWORM (Hyphantria cunea) was as heavy as in 1968 in OREGON, especially in the Columbia River Gorge and the Willamette Valley. Larvae started leaving their webs the first week in September, about 2 weeks earlier than in 1968. Shade trees were damaged throughout most of NEW MEXICO. Defoliation was noticeable in central and west TENNESSEE in August and September. Fall webworm is about as large a problem in the fall in OHIO as eastern tent caterpillar is in the spring. Webs became abundant in mid-August. The heaviest populations occurred in Monroe, Belmont, and Harrison Counties where they were most common on wild cherry and walnut trees. In WEST VIRGINIA fall webworm infested wild cherry and hickory in Hancock and Brooke Counties. It spread southward from Hancock into Ohio County. By early July, first-generation larvae were common on a variety of trees throughout DELAWARE. Second-generation larvae appeared from mid to late August.

Larvae of a GEOMETRID MOTH (Eulype hastata) defoliated at least 40 percent of the white birch in the northern Black Hills of SOUTH DAKOTA in August. Injury was probably minimal, but some losses in vigor may have occurred. LINDEN LOOPER (Erannis tiliaria) declined in the eastern panhandle of WEST VIRGINIA. Fifteen to twenty percent of the hardwood stands in Morgan and Berkeley Counties were affected. Adults of a GEOMETRID MOTH (Physostegania pustularia) caused considerable nuisance and some alarm in areas of Perry, Dauphin, Bedford, and Northumberland Counties, PENNSYLVANIA. Although moths were extremely abundant about lights in late June, larval feeding on red maple was light.

Larval infestations of a PSYCHID MOTH (Apterona crenulella) at Mountain Home, IDAHO, in early June added Elmore County to the list of counties where damaging numbers have occurred. Larvae infested young elms at American Falls, Power

THE FOLLOWING CROPS OR ARTICLES MUST BE MOVED UNDER CERTIFICATE OR PERMIT YEAR-ROUND EXCEPT AS INDICATED

1. Soil, compost, decomposed manure, humus, muck, and peat, separately or with other things.
Soil samples shipped to Corps of Engineers Soil Laboratories are exempt*.
Soil samples of one pound or less shipped to designated laboratories** are exempt*.
Compost, decomposed manure, humus, and peat are exempt*** if dehydrated, ground, pulverized, or compressed.
 2. Plants with roots, except soil-free aquatic plants, moss, and Lycopodium (clubmoss or ground-pine or running pine).
 3. Grass sod.
 4. Plant crowns and roots for propagation.
 5. True bulbs, corms, rhizomes, and tubers of ornamental plants when freshly harvested or uncured.
True bulbs, corms, rhizomes, and tubers (other than clumps of dahlia tubers) of ornamental plants are exempt*** if free of soil.
 6. Used mechanized soil-moving equipment.
Used mechanized soil-moving equipment is exempt*** if cleaned and repainted.
- * Effective July 1, 1970, soil samples of any size may be moved from regulated areas to any approved laboratory, including the U. S. Army Corps of Engineers, without a certificate or permit attached.
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County, and damaged a home garden at Heyburn, Minidoka County. BAGWORM (Thyridopteryx ephemeraeformis) injury to locust was severe in some cases and especially noticeable in early August when most larvae were fully grown in DELAWARE.

CALIFORNIA OAKWORM (Phryganidia californica) was unusually damaging in San Diego County, CALIFORNIA, and completely defoliated oaks along the coast highway from Kings County to Monterey County. BOXELDER LEAF ROLLER (Gracillaria negundella) defoliated several thousand boxelder trees in UTAH in the mouths of canyons in Cache, Box Elder, Weber, Davis, Salt Lake, and Utah Counties with scattered damage elsewhere. CARPENTERWORM (Prionoxystus robiniae) was the major pest of shelterbelt plantings and ornamental trees in MONTANA. A serious outbreak of ASH BORER (Podosesia syringae fraxini) in MINNESOTA occurred in a Minneapolis suburb on a municipal planting of green ash. Over 1,000 trees up to 5 inches in diameter were affected and mortality was high. Previous drought conditions were apparently a predisposing factor. Defoliation by larvae of a NOCTUID MOTH (Enargia decolor) was moderate on quaking aspen over a 3 million-acre area in north-central MINNESOTA in July. Defoliation occurred mostly on smaller aspen, both open and forest understorey, and on scattered areas of forest type of all sizes. Larvae of an OLETHREUTID MOTH (Pseudexentera cressoniana) severely infested white oaks on over 200,000 acres in PENNSYLVANIA, extending from Lycoming County to Lancaster County.

ELM LEAF BEETLE (Pyrrhalta luteola) was unusually heavy in CALIFORNIA. Numbers were above normal and damaging in many localities and counties in UTAH. In IDAHO the first eggs were found at Parma, Canyon County, May 6, and the first adult damage was observed April 18. In WYOMING, elm leaf beetle defoliated many elms at Wheatland, Platte County, and Torrington, Goshen County. This insect usually does not cause much damage. The pest continued to spread to new areas in NEW MEXICO. Siberian elms in Quay and De Baca Counties were almost completely defoliated. Elms in TEXAS were seriously damaged in many south Plains counties. Infestations were heavy in many Rolling Plains and Trans-Pecos counties. Elm leaf beetle was heavy in some areas of OKLAHOMA, but in general, damage was not so heavy as in 1968 in most of the State. This leaf beetle was the most widespread insect pest of shade trees in KANSAS where defoliation of Siberian elms was very severe. Elms on lawn and street plantings were damaged from central to north ALABAMA. Heavy damage occurred locally throughout TENNESSEE. Counts in WEST VIRGINIA were heavier than in recent years. Elms were damaged in north-central counties and in the northern and eastern panhandle counties. Elm leaf beetle larvae were common on some elms in mid-July in DELAWARE.

COTTONWOOD LEAF BEETLES (Chrysomela scripta complex) were common on willows in several UTAH counties. This complex was heavy on cottonwoods in MONTANA at Roundup, Musselshell County; Loma, Chouteau County; and Terry, Treasure County. In NORTH DAKOTA up to 30 larvae per leaf damaged poplars and willows in Dickey County. Larvae damaged cottonwoods in Adams and Williams Counties.

ALDER FLEA BEETLE (Altica ambiens) was severe on alder and willow in some north CALIFORNIA counties. Altica plicipennis had caused much damage to willows by mid-August along the Little Missouri River near Camp Crook in Harding County, SOUTH DAKOTA. ELM CALLIGRAPH (Calligrapha scalaris) was much more common than usual in OKLAHOMA. American elms were damaged in many counties in all areas except in the northeast and southeast areas.

LOCUST LEAF MINER (Xenochalepus dorsalis) was widespread in OHIO and exceptionally populous in the counties along the Ohio River. Black locusts in Scioto County were rust colored from larval and subsequent adult feeding by mid-July. Found throughout WEST VIRGINIA, defoliation was heaviest, 50-75 percent, in Kanawha, Putnam, Boone, Cabell, Mason, and Lincoln Counties. Black locust was severely damaged in the southwest area. Noticeable throughout the State, locust leaf miner was not so damaging as expected in the north area. Although damage to black locust appeared lighter than last year, damage remained heavy in all sections of MARYLAND.

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) was locally heavy on elm in a few scattered locations in CALIFORNIA. Populations have been low for the past few years. Wasco County, OREGON, was a new county record. In SOUTH DAKOTA, this bark beetle was taken from dying elms in the city park at Pierre, Hughes County, in October. This is a new county record. Adults emerged the first week of May in Lancaster County, NEBRASKA. Dutch elm disease spread into Thomas, Logan, and Dundy Counties in 1969. The disease is now found in 70 counties in Nebraska. Smaller European elm bark beetle increased in southeast MINNESOTA. Dutch elm disease cases doubled this past season and spread into 7 new counties.

ASIATIC OAK WEEVIL (Cyrtopistomus castaneus) adult feeding was especially heavy, 30-80 percent defoliation, in the Cedar Mountain area of Madison County, MISSOURI.

WALKINGSTICK (Diaperomera femorata) defoliated over 3,200 acres of hardwoods west of Gull Lake near Brainerd, Crow Wing County, MINNESOTA. A GRASSHOPPER (Dendrotettix quercus) appeared in large numbers over 40,000 acres in northwest Iron and northeast Reynolds Counties, MISSOURI, and completely stripped hickory trees in the infested area.

Brood IX of PERIODICAL CICADA (Magicada septendecim) appeared in southeast WEST VIRGINIA during summer. Heavy populations occurred in Fayette and Raleigh Counties, and damage was heavy in Fayette and Greenbrier Counties. A heavy and unusual occurrence of a LEAFHOPPER (Alebra albostrigella) developed on elms at Oakland, Alameda County, CALIFORNIA. This is the second record in the State in 50 years.

OYSTERSHELL SCALE (Lepidosaphes ulmi) heavily infested green ash, willow, and poplar in WYOMING. L. ulmi infestations in SOUTH DAKOTA continued unabated on elm at Rapid City, Pennington County, and Spearfish, Lawrence County. OBSCURE SCALE (Melanaspis obscura) infested white, scarlet, and willow oaks in home and woodlot stands in Prince Georges County, MARYLAND. The eulophid wasps, Coccophagoides fuscipennis, Prospaltella berlesii, Ablerus clisiocampae, and Phycus varicornis, were the most prevalent parasites in the area. EUROPEAN ELM SCALE (Gossyparia spuria) became widespread in CALIFORNIA late in the season when honeydew drip became a high nuisance. EUROPEAN FRUIT LECANIUM (Lecanium corni) killed many oaks in park areas in Oakland County, MICHIGAN. Several new infestations of CALICO SCALE (L. cerasorum) occurred in New Castle County, DELAWARE, especially on maple and sweetgum, with some infestations on sour cherry, mountain-ash, and flowering peach.

A STINK BUG (Elasmucha lateralis) collected on birch trees at Burney, Shasta County, was a new State record for CALIFORNIA. Defoliation by a PLANT BUG (Tropidosteptes pacificus) in OREGON was extensive to 2,500 three to four-year-old ash trees in a Portland, Multnomah County, nursery. Leaf browning was severe on ash at Salem, Marion County. ASH PLANT BUG (T. amoenus) threatened green ash in late July in some areas of Hill, Toole, and Gallatin Counties, MONTANA.

BROWN-HEADED ASH SAWFLY (Tomostethus multicinctus) defoliated ash in Shasta County, CALIFORNIA. BIRCH LEAF MINER (Fenusa pusilla) damage was heavy in Racine, Kenosha, Dane, Iowa, Calumet, Fond du Lac, Portage, Door, Eau Claire, Brown, and Marathon Counties, WISCONSIN. F. pusilla declined on gray birch in CONNECTICUT probably due to cold, wet weather at the time of adult emergence.

The spring adults of a MIDGE (Dasineura gleditchiae) emerged from heavily infested honeylocust at Blackfoot, Bingham County, IDAHO, early in May. Larvae and pupae were numerous by May 27. Infestations occurred at Weiser, Washington County, and at Lewiston, Nez Perce County. The Lewiston record was the first known infestation in northern Idaho.

The following summary is the highlights section of the "Forest Insect Conditions in the United States - 1969" which was compiled and published by the Forest Service, U.S. Department of Agriculture. Copies of the complete annual summary are available upon request from the Regional Forester or Area Director in your area. Addresses of the regional offices may be found on page 229 in this issue of the CEIR.

Situation in the Western States

The major forest insect pests in the Western States were pine BARK BEETLES. Several new outbreaks and the continuation of existing ones continued to deplete forest resources in the West. Many of the new infestations developed in areas of severe stand disturbance caused by a variety of factors such as adverse weather, man's activities in the forest, and air pollution. In addition to BARK BEETLES, outbreaks of DEFOLIATORS, SAP-SUCKING INSECTS and TIP MOTHS caused damage in many locations. The following summarize the most serious problems in the various regions of the West.

A general increase in forest insect activity was observed throughout the ALASKA region. Rapidly expanding populations of SPRUCE BEETLE (Dendroctonus obesus) erupted on parts of the Kenai Peninsula where more than 40,000 acres of white spruce stands were heavily damaged. Less spectacular but serious infestations also occurred near Anchorage and on the Tongass National Forest. Drought, wind-storm, and man's activities in the forest have triggered several of these outbreaks. Infestations from other pests, such as REDWOOD BARK BEETLE (Phloeosinus sequoiae), FLATHEADED FIR BORER (Melanophila drummondi), BLACK-HEADED BUDWORM (Acleris variana), and HEMLOCK SAWFLY (Neodiprion tsugae), all showed an upswing in activity. LARGE ASPEN TORTRIX (Choristoneura conflictana) was the only major pest that indicated a downward trend.

Forest insect damage in OREGON and WASHINGTON was less than in previous years. However, BARK BEETLES continued to inflict heavy timber losses in several areas, killing more than one-half billion board feet of sawtimber. Most of this damage was attributed to DOUGLAS-FIR BEETLE (Dendroctonus pseudotsugae), FIR ENGRAVER (Scolytus ventralis), SPRUCE BEETLE (D. obesus), MOUNTAIN PINE BEETLE (D. ponderosae), and WESTERN PINE BEETLE (D. brevicomis). DEFOLIATORS were widespread but caused little damage overall. LARCH CASEBEARER (Coleophora laricella) continued to spread in Washington but thus far has not reached Oregon. Other forest pest populations followed a downward or static trend.

In CALIFORNIA, forest insect infestations were at the lowest level in several years. An outbreak of WESTERN PINE BEETLE near McCloud continued to deplete overstocked ponderosa pine stands but declined in area and severity. For the second consecutive year infestations of SCALE INSECTS increased in various areas of the State.

The overall forest insect situation improved in the northern Rocky Mountains but WESTERN BUDWORM (Choristoneura occidentalis), LARCH CASEBEARER, MOUNTAIN PINE BEETLE, and DOUGLAS-FIR BEETLE continued to cause serious damage. Noteworthy was the collapse of a SPRUCE BEETLE outbreak in northwestern MONTANA. Long standing outbreaks of WESTERN BUDWORM decreased east of the Continental Divide but increased west of the Divide, particularly on the Nezperce National Forest, IDAHO. Other forest insect pests were PINE ENGRAVER (Ips pini), FIR ENGRAVER, PINE BUTTERFLY (Neophasia menapia), and a PINE LOOPER (Phaeoura mexicanaria).

During the past decade MOUNTAIN PINE BEETLE dominated the forest insect situation in the Intermountain States. Long standing outbreaks in northeastern IDAHO, western WYOMING, and northern UTAH continued to deplete mature and overmature stands of lodgepole and ponderosa pine. Vigorous control programs were successful in some areas while in others, uncontrolled outbreaks continued. DOUGLAS-FIR BEETLE activity increased throughout southern IDAHO, and in some areas the mortality may

exceed the allowable annual cut. Heaviest damage occurred on the Boise and Payette National Forests where populations have increased since 1965. A combination of natural factors and a trap-tree program minimized an expected increase in SPRUCE BEETLE activity in southeastern IDAHO and western WYOMING. Natural factors also reduced WESTERN BUDWORM populations in southern Idaho and western Wyoming.

MOUNTAIN PINE BEETLE infestations continued to dominate the forest insect situation in the central Rockies. Epidemic populations were present on nine National Forests as well as other Federal, State, and private lands throughout the region. An accelerated salvage program and limited chemical control have reduced beetle populations and timber losses considerably in some areas but most of the infestations continued uncontrolled. SPRUCE BEETLE has become epidemic on the Medicine Bow National Forest where more than 7,000 standing trees are currently infested. Salvage logging and trap-tree programs are expected to control this outbreak. Freezing temperatures and increased parasitism were responsible for a further decline in the WESTERN BUDWORM population which is at the lowest level in 11 years.

In the Southwest, damage by SPRUCE BEETLE continued to climb for the third consecutive year. Serious timber mortality occurred in several areas throughout the region, especially in northern NEW MEXICO and eastern ARIZONA. MOUNTAIN PINE BEETLE and ROUNDHEADED PINE BEETLE (Dendroctonus adjunctus) populations also increased.

Situation in the Southern and Southeastern States

SOUTHERN PINE BEETLE (Dendroctonus frontalis) continues to be the principal forest pest in the South and the Southeast. A severe outbreak increased in extent and severity in the southern Appalachian Mountains while on the National Forests in TEXAS, populations subsided to an endemic level. Other infestations occurred in the gulf coast area, Piedmont, and Atlantic Coastal Plains. New infestations were reported in southeastern TEXAS, northeastern LOUISIANA, and adjoining portions of ARKANSAS. Hurricane Camille left an abundance of beetle susceptible material scattered over 1.9 million acres in southeastern MISSISSIPPI. ENGRAVER BEETLES have already begun to build up in windthrown trees in this area. BALSAM WOOLLY APHID (Adelges piceae) continued to be a problem in the Fraser fir type in the southern Appalachians. Mount Rogers is now the only major fir area in the Southeast free of infestation. Other important insects were BLACK TURPENTINE BEETLE (D. terebrans), FOREST TENT CATERPILLAR (Malacosoma disstria), NANTUCKET PINE TIP MOTH (Rhyacionia frustrana), FALL CANKERWORM (Alsophila pomataria), and several species of PINE SAWFLIES.

Situations in the Lake and Central States and the Northeast

DEFOLIATORS were the most destructive forest pests in the eastern region. More than three million acres of forest were defoliated during the past year. GYPSY MOTH (Porthetria dispar) continued to increase in extent and severity throughout the New England area. State and Federal agencies are extremely concerned over its southward spread into DELAWARE and MARYLAND. SPRUCE BUDWORM (Choristoneura fumiferana) populations have increased in northern MINNESOTA for the third consecutive year. An infestation in MAINE threatens to cause increased tree mortality in 1970. SADDLED PROMINENT (Heterocampa guttivitta) caused heavy defoliation on more than one million acres in New England. Populations of JACK-PINE BUDWORM (C. pinus) declined in the Lake States. A complex of CANKERWORMS and LOOPERS caused varying degrees of defoliation throughout the Northeast. One million acres of defoliation were attributed to a complex of LEAF ROLLERS and LEAF TIERS. FOREST TENT CATERPILLAR continued to cause heavy defoliation in MINNESOTA; however, a reduction in population levels was reported in MICHIGAN, ILLINOIS, and VERMONT. New infestations were detected in OHIO, WEST VIRGINIA,

PENNSYLVANIA, and MINNESOTA. BEECH SCALE (*Cryptococcus fagi*) and its associate fungus are causing widespread destruction of commercial size beech trees in New England. Chemical control was applied to SARATOGA SPITTLEBUG (*Aphrophora saratogensis*) populations in WISCONSIN and MICHIGAN. Freezing winter temperatures reduced BALSAM WOOLLY APHID population in parts of New England but tree mortality continued in many areas. Two insecticides showed promise in controlling PINE TUSSOCK MOTH (*Dasychira plagiata*) in MINNESOTA.

Suppression Activities

During 1969 land managers, Federal, State, and private, continued their cooperative effort to curb destructive forest insect outbreaks and reduce insect populations to manageable levels. More than \$10 million was spent in 1969 for suppression and developing and testing new and more effective methods of survey and control.

Criteria for suppression continued to receive increased attention. At the beginning of the decade large scale aerial spray projects involving several hundred thousand acres of forest land were quite common. Since 1963 the acreage treated by aircraft has decreased from 1.5 million acres to less than 33 thousand acres in 1969. Of more importance was the discontinued use of the persistent pesticides to control defoliating insects. Most of the acreage sprayed in 1969 was for pilot testing promising nonpersistent insecticides against the spruce budworm.

Virulent and widespread outbreaks of the mountain pine beetle continue to plague the Western States, particularly Idaho, Utah, and Wyoming. Land managers treated over 403,000 beetle infested trees in 1969 in an attempt to reduce beetle populations to manageable levels.

In the Southeast and Gulf States, Federal, State, and private agencies relied almost entirely on nonchemical methods for suppression of serious southern pine beetle infestations. Effective control was obtained in North Carolina, Texas, Louisiana, Georgia, South Carolina, and Alabama. Land managers treated over 439,000 beetle infested pines. Harvesting beetle infested trees was the primary means of control, along with piling and burning or chemically treating infestations in inaccessible areas.

Other bark beetles requiring suppression were spruce beetle, Douglas-fir beetle, western pine beetle, roundheaded pine beetle, and several species of pine engravers. Salvage of infested timber, various silvicultural treatments, and limited use of chemicals were the primary controls used against these pests.

Major defoliators requiring control were western budworm in the Western States, spruce budworm, gypsy moth, saddled prominent, and a complex of leaf rollers and cankerworms in the Northeast. Successful control of gypsy moth was obtained on 61,250 acres in New York and New Jersey with aerial applications of carbaryl.

Federal, State, and private agencies are working together to find more effective means of detection and suppression to limit the spread of this serious pest.

In Minnesota 10,000 acres were aerially sprayed for control of spruce budworm. Zectran ^{1/} was tested for the third consecutive year against western budworm. Two 4,000-acre plots were sprayed with 0.15 pound of Zectran in one-half gallon of TPM carrier per acre. A C-47 aircraft was used to apply the chemical. Problems in getting the spray to the target insect caused results to be erratic.

^{1/} Trade names used in this article are solely for the purpose of providing specific information. This does not constitute a guarantee or warranty of the product by the U.S. Department of Agriculture over other products not mentioned.

Other pilot projects and insecticide tests were conducted in various sections of the country. In Washington, stabilized pyrethrins were tested against WESTERN HEMLOCK LOOPER (Lambdina fiscellaria lugubrosa). Preliminary analysis of data indicated this botanical insecticide to be effective at the rate of 0.2 pound per acre. In Wisconsin, Landrin was more effective than Gardona, Matacil, or Sevin for controlling jack-pine budworm. Sevin and Matacil provided sufficient control of the pine tussock moth in experiments by the Minnesota Department of Agriculture.

In the South, a pilot test of phorate systemic insecticides showed excellent control of Nantucket pine tip moth. Excellent control of fall cankerworm infestations was achieved in a test by the Virginia Division of Forestry with aerial applications of Gardona at the rates of one-half and one pound per acre.

There were numerous small projects in high-value recreation areas for control of PINYON NEEDLE SCALE (Matsucoccus acalyptus), NEVADA BUCK MOTH (Hemileuca nevadensis), balsam woolly aphid, tent caterpillars, and many other forest insects.

A summary of major pest control operations for 1969 is presented in the following tabulations:

Pest Control Accomplishments in the United States, 1969

<u>Insect</u>	<u>Location</u>	<u>Trees Treated</u>	<u>Acres Sprayed</u>
Southern pine beetle	South and Southeast	439,588	
Black turpentine beetle	South and Southeast	18,277	
Mountain pine beetle	Idaho, Utah, Montana, Colorado, South Dakota, and Wyoming	364,222	
Bark beetles ^{1/}	California, Oregon, and Washington	64,876	
White pine weevil	New York	308,400	
Balsam woolly aphid	North Carolina	43,000	
European pine shoot moth	Washington, and Oregon	11,735	
Saratoga spittlebug	Wisconsin		135
Leaf rollers and fall cankerworm	New Jersey		9,836
Spruce budworm	Idaho, Montana, and Minnesota		23,868
Miscellaneous	Entire United States	<u>1,269</u>	<u> </u>
Total		1,251,367	33,839

^{1/} Reported in various combinations of western pine beetle, mountain pine beetle, ips, flathead borers, etc.

REGIONAL AND AREA OFFICE ADDRESSES

U.S. FOREST SERVICE

<u>Region</u>		<u>Region</u>	
1	U.S. Forest Service Federal Building Missoula, Montana 59801	6	U.S. Forest Service P.O. Box 3623 Portland, Oregon 97208
2	U.S. Forest Service Federal Center, Building 85 Denver, Colorado 80225	10	U.S. Forest Service Federal Office Building P.O. Box 1628 Juneau, Alaska 99801
3	U.S. Forest Service Federal Building 517 Gold Avenue, S.W. Albuquerque, New Mexico 87101	<u>Area</u>	
4	U.S. Forest Service Federal Office Building 324 - 25th Street Ogden, Utah 84401	NA	Northeastern Area U.S. Forest Service 6816 Market Street Upper Darby, Pennsylvania 19082
5	U.S. Forest Service 630 Sansome Street San Francisco, California 94111	SA	Southeastern Area U.S. Forest Service Suite 800 1720 Peachtree Road, N.W. Atlanta, Georgia 30309

Weather of the week continued from page 210.

TEMPERATURE: Gale force winds continued winter chill over the Northern States early in the week. In contrast, afternoon temperatures reached the 70's and 80's in the south-central and southeastern States and the low 90's at a few desert locations in California. As cold fronts advanced southward, they brought the late winter chill to most of the Nation continuing the cool trend that had persisted during the two previous weeks. Subzero temperatures occurred in eastern North Dakota and northern Minnesota on 1 or 2 days. Spencer, Iowa, registered 6° below zero on Saturday morning. Subfreezing weather advanced far southward on Tuesday and Friday with Atlanta, Georgia, registering 32° on those days. Most of the area east of the Rocky Mountains averaged 3° to 9° below normal. Eastern New York, eastern Pennsylvania, northern New Jersey, and New England averaged slightly above normal. The Far West also averaged above normal. Mild temperatures prevailed over the Great Basin early in the week but colder weather beginning about midweek more than offset the warm beginning. (Summary supplied by Environmental Data Service, ESSA).

CONTRIBUTORS

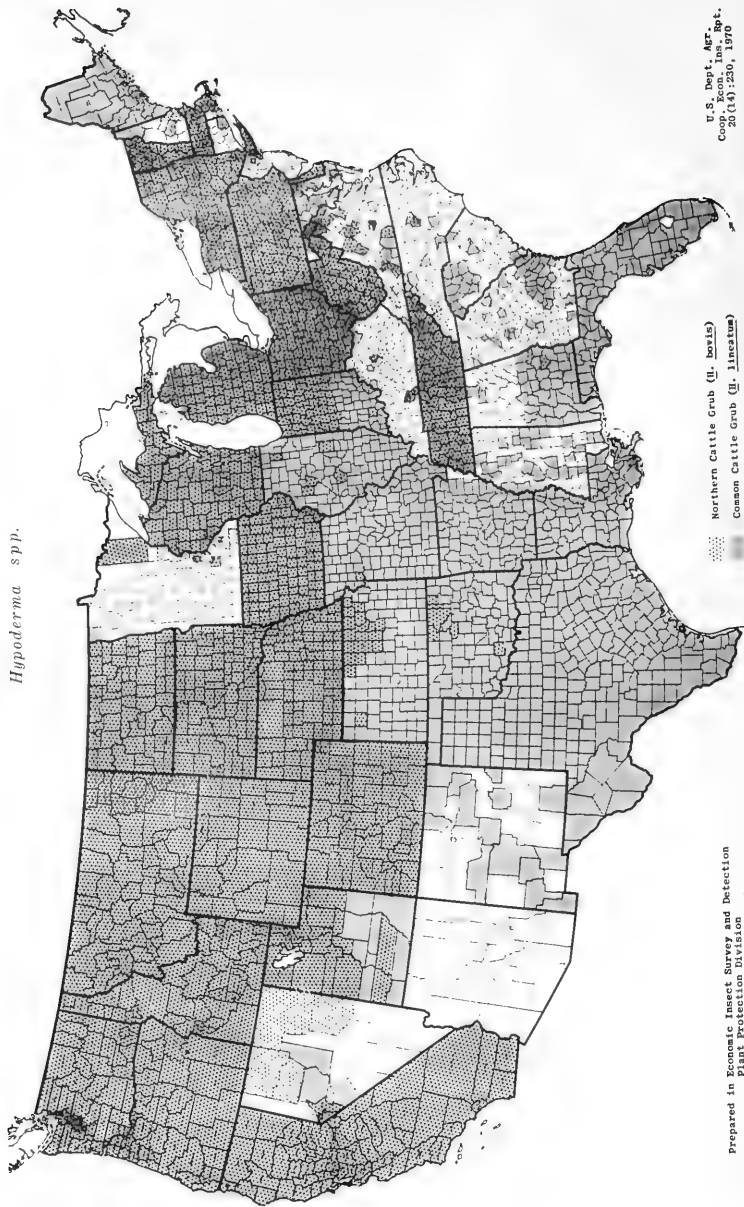
ALABAMA	IOWA	OKLAHOMA
H.F. McQueen	H. Gunderson	D.C. Arnold
ARIZONA	KANSAS	OREGON
J.E. May	J.H. Simpson	D.S. Horning
ARKANSAS	MARYLAND	PENNSYLVANIA
W.P. Boyer	J.L. Hellman	S.G. Gesell
CALIFORNIA	MICHIGAN	RHODE ISLAND
R.M. Hawthorne	R.L. Janes et al.	G. Field
COLORADO	MINNESOTA	SOUTH DAKOTA
T.E. Johnson	R. Flaskerd	P.A. Jones
CONNECTICUT	MISSISSIPPI	TENNESSEE
M. Savos	C.F. Sartor	C.D. Gordon
S.W. Hitchcock	MISSOURI	TEXAS
DELAWARE	R.E. Munson	L.R. Green
P.P. Burbutis	MONTANA	UTAH
L.P. Kelsey	R. Pratt	G.F. Knowlton
FLORIDA	NEBRASKA	R.S. Roberts
F.W. Mead et al.	D.L. Keith	VIRGINIA
HAWAII	NEVADA	W.A. Allen et al.
G. Funasaki	L.M. Burge	WASHINGTON
IDAHO	NEW JERSEY	J.T. Pennell
A.R. Gittins	S.R. Race	A.H. Retan
ILLINOIS	NEW MEXICO	WEST VIRGINIA
H.B. Petty	G.L. Nielsen	J.D. Hacker
S. Moore	NORTH DAKOTA	WISCONSIN
R. Randell	W.J. Brandvik	M.S. Conrad
T. Cooley	OHIO	WYOMING
INDIANA	F.T. Richter	A.E. Parshall
R.W. Meyer		

Included in the "Summary of Insect Conditions in the United States - 1969" are the following special reports:

1. The highlights section of Forest Insect Conditions in the United States - 1969, compiled by the Forest Service, U.S. Department of Agriculture.
2. Screw-worm (*Cochliomyia hominivorax*) Summary compiled by Animal Health Division, U.S. Department of Agriculture.

Distribution of Cattle Grubs

Hypoderma spp.



Prepared in Economic Insect Survey and Detection
Plant Protection Division
Agricultural Research Service USDA
March 27, 1970

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Hyattsville, Maryland 20782

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April 10, 1970

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Cooperative
**ECONOMIC INSECT
REPORT**



Issued by

PLANT PROTECTION DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

All reports and inquiries pertaining to this release, including the mailing list, should be sent to:

**Survey and Detection Operations
Plant Pest Control Division
Agricultural Research Service
United States Department of Agriculture
Federal Center Building
Hyattsville, Maryland 20782**

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

ALFALFA WEEVIL larvae damaged alfalfa in Oklahoma and Mississippi. (p. 234).
EUROPEAN CLOVER LEAF TIER larvae heavy on clovers in California. WESTERN
FLOWER THRIPS causing bud and leaf damage on alfalfa in Nevada. (p. 235).

FIG PSYLLID nymphs heavy on fig trees in California. (p. 235).

FRUIT-TREE LEAF ROLLER epidemic on shade trees in Sacramento, California.
(p. 236).

Predictions

BEEF LEAFHOPPER spring movement from southern breeding grounds to cultivated districts of central Arizona, southeastern California, southern Nevada, southern and eastern Utah, and western Colorado expected to be light to moderate; movement to central and northern Utah expected to be light. Above average population can be expected in many west side reproductive areas of San Joaquin Valley, California. (p. 233).

FOREST TENT CATERPILLAR defoliation expected to be moderate to heavy in some areas of Louisiana. (p. 236).

Detection

New State records include an AMBROSIA BEETLE from Missouri (p. 236), BROWN Recluse spider and a SCYTODID SPIDER from Pennsylvania (p. 237).

For new county records see page 237.

Special Reports

Beet Leafhopper Survey in Desert Areas of Southern Utah and Nevada, Southeastern California, and Central Arizona - 1970. (p. 233).

Survey Methods. Additional Selected References 1966. Part XXVIII. (pp. 239-242).

Some First Occurrences of Season

IMPORTED CABBAGEWORM adults in Idaho; SPRUCE SPIDER MITE eggs hatching in Washington; EASTERN TENT CATERPILLAR larvae in Oklahoma, South Carolina, and Maryland; FACE FLY in California; and SPRING CANKERWORM females in Minnesota.

Reports in this issue are for week ending April 3 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance.....233

Insects Affecting

Small Grains.....	234	Citrus.....	235
Turf, Pasture, Rangeland.....	234	Trop. & Subtrop. Fruits.....	235
Forage Legumes.....	234	Small Fruits.....	236
Potatoes, Tomatoes, Peppers.....	235	Forest and Shade Trees.....	236
Cole Crops.....	235	Man and Animals.....	236
Deciduous Fruits and Nuts.....	235	Households and Structures.....	237

Beneficial Insects.....237

Federal and State Plant Protection Programs.....237

Detection.....237

Hawaii Insect Report.....238

Survey Methods. Additional Selected References 1966. Part XVIII.....239

WEATHER BUREAU'S 30-DAY OUTLOOK

APRIL 1970

The Weather Bureau's 30-day outlook for April is for temperatures to average near to above normal in the Gulf and South Atlantic Coast States and near normal elsewhere along the eastern seaboard. Over the remainder of the Nation below normal temperatures are in prospect. Precipitation is expected to exceed normal over the northern Plains as well as the middle Mississippi Valley, the Ohio Valley, and Tennessee. Subnormal totals are indicated for the Pacific Northwest, western portions of the southern Plains and most of Florida. In unspecified areas near normal precipitation is expected.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price \$5.00 a year.

WEATHER OF THE WEEK ENDING APRIL 6

HIGHLIGHTS: Temperatures in the East continued much below normal except at mid-week when they climbed to near seasonal. The West remained cool until a fast weekend warming trend brought maximums to near normal. Heavy snow, flood-producing rains, and damaging winds accompanied a deep storm in the Northeast.

PRECIPITATION: As the storm that dumped 5 to 12 inches or more of snow in the Northeast on Easter Sunday moved eastward off the Atlantic coast, a new, more powerful storm was developing in the West. It produced 1 to several inches of snow to parts of Wyoming (7 inches at Douglas), Colorado, Nebraska, and Kansas, and heavier snow to parts of Arizona (14 inches at Flagstaff) and New Mexico. A storm centered in the Deep South on Tuesday caused a mixture of snow, sleet, and freezing rain to the Northeast, principally to Pennsylvania, New York, New Jersey, and Connecticut, and rain and drizzle from the middle Atlantic States to Georgia and Alabama. By noon Tuesday, a snowstorm was in progress from New England to the Middle Atlantic States and rain fell south of the snow belt. Shortly before mid-week, a storm brought snow from the adjoining Great Plains to the upper Mississippi River Valley with freezing rain and thundershowers, some with hail and strong wind, south and east of the snow belt. March ended with new snowfall and rainfall records set at a number of locations. Chicago, Illinois, received 74.5 inches of snow since last fall. This is more snow than fell in any previous season and more than twice the median amount. Flagstaff, Arizona, received 67.3 inches of snow in March setting a new record for the month. Jacksonville, Florida, set a new March rainfall record with 9.98-inch total. Numerous severe thunder-Weather of the week continued on page 238.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

Beet Leafhopper Survey in Desert Areas of Southern Utah and Nevada, Southeastern California, and Central Arizona - 1970

Surveys were conducted for beet leafhopper (*Circulifer tenellus*) during the period February 3-15, 1970. If present conditions prevail, spring movement from the southern breeding grounds to cultivated districts of central Arizona, southeastern California, southern Nevada, southern and eastern Utah, and western Colorado is expected to be light to moderate; movement to central and northern Utah is expected to be light.

In general, annual weed host-plant areas were small and intermittent throughout the region surveyed. Some rains occurred during the second week of survey, which may be sufficient to sustain host plants or germinate additional host plants in some locations.

The average number of beet leafhoppers per square foot where annual hosts were present was 0.077 in 1970 as compared to 0.028 in 1969, 0.034 in 1968, 0.09 in 1967, 0.013 in 1966, 0.04 in 1965, and 0.015 in 1964. It is estimated from data collected during the survey that overwintering beet leafhoppers in the spring breeding areas totaled 11.3 billion in 1970 as compared to 14.0 billion in 1969, 24.1 billion in 1968, 32.8 billion in 1967, 6.5 billion in 1966, 12.0 billion in 1965, and 112.0 billion in 1964.

This report covers only the beet leafhopper situation as found in the area surveyed and does not have reference to populations that may have overwintered in local areas in northern and eastern Utah or western Colorado or western Nevada.

The second beet leafhopper survey was made in the desert spring breeding areas of southeastern California, central Arizona, southern Nevada, and southern Utah during the period March 4-16, 1970. Populations remained about the same as indicated by earlier surveys, with movement of beet leafhoppers to the northern cultivated host crop area expected to be light to moderate.

Due to recent rains in the desert areas of Arizona, native host plants were in good condition and a slight buildup of beet leafhopper populations was evident. In all other areas surveyed, host plants were less abundant and unfavorable for population buildup. (PPD West. Reg.).

BEEF LEAFHOPPER (*Circulifer tenellus*) - CALIFORNIA - Population checks made in Kern, Kings, and Fresno Counties indicate spring hatch continuing. Ranged 30-40 per 10 sweeps in South Belridge area of Kern County. Above average population can be expected in many west side reproductive areas of San Joaquin Valley. (Cal. Coop. Rpt.).

ARMY CUTWORM (*Chorizagrotis auxiliaris*) - COLORADO - Larval activity declined in northeast area due to cold weather. (Johnson).

CORN LEAF APHID (*Rhopalosiphum maidis*) - ALABAMA - Few nymphs observed in whorls of Johnson grass shoots in Lee County. (McQueen).

GREENBUG (*Schizaphis graminum*) - NEW MEXICO - Light, ranged 1-10 per linear foot in barley in Chaves County. (Mathews). COLORADO - Surveys negative in north-eastern area wheat. (Johnson). KANSAS - Surveys negative on wheat in 2 east-central and 4 southeast counties. (Redding). OKLAHOMA - Populations in small grains in southwest and west-central areas declined past 14 days. Primarily due to parasitism by a braconid (*Lysiphlebus testaceipes*). *S. graminum* ranged up to 10 per linear foot in wheat in Bryan, Marshall, and Love Counties. (Okla. Coop. Sur.). ARKANSAS - Survey negative in Washington County. (Boyer). VIRGINIA - Hatching on reed canary grass in Montgomery County. (Allen, Mar. 26).

POTATO PSYLLID (Paratrioza cockerelli) - NEVADA - Adults medium on Lycium torreyi in Moapa Valley, Clark County. (Zoller).

SPOTTED ALFALFA APHID (Therioaphis maculata) - NORTH DAKOTA - Single specimen collected July 2, 1969, from barley adjacent to alfalfa in Cass County by S.D. Hintz. This is a new county record. (Brandvik). ARKANSAS - Survey negative in Washington County. (Boyer). ARIZONA - Averaged 140 per 100 sweeps of alfalfa in Gila Valley, Yuma County. (Ariz. Coop. Sur.).

SMALL GRAINS

STINK BUGS - FLORIDA - Adult counts per 100 sweeps of rye at Gainesville, Alachua County as follows: Euschistus ictericus 6, E. servus (brown stink bug) 16, Nezara viridula (southern green stink bug) 14, and Oebalus pugnax (rice stink bug) 3. (Mead).

A LYGAEID BUG (Paromius longulus) - FLORIDA - Adults 18 per 100 sweeps of rye at Gainesville, Alachua County. (Mead).

PALE WESTERN CUTWORM (Agrotis orthogonia) - COLORADO - Larval activity on small grain declined in northeast area due to cold weather. (Johnson).

ENGLISH GRAIN APHID (Macrosiphum avenae) - ARKANSAS - Light, ranged 5-10 in 100 sweeps of small grain in Washington County. (Boyer).

AN APHID (Rhopalosiphum padi) - OKLAHOMA - Ranged 5-25 per linear foot in wheat in Love, Marshall, and Bryan Counties. Light in southwest and west-central areas. (Okla. Coop. Sur.).

TURF, PASTURES, RANGELAND

AN ARMORED SCALE (Odonaspis ruthae) - NEVADA - Heavy on Bermuda grass in several lawns in Las Vegas, Clark County. (Zoller).

MOLE CRICKETS (Scapteriscus spp.) - FLORIDA - Problem in central areas on Bahia grass lawns and on Bahia grass shoulder areas of turnpike in southern area. (J.L. Taylor, J.B. Taylor).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - OKLAHOMA - Late-instar damage noticeable to alfalfa in scattered areas of Bryan County, especially in Calera area. Controls planned. Damaging in Grant area of Choctaw County. (Okla. Coop. Sur.). ARKANSAS - Survey negative in Washington County. (Boyer). MISSISSIPPI - Larvae averaged 81 per 20 stems of alfalfa in Pontotoc County; damage heavier than usual for this time of year. Controls recommended. (Pitre). FLORIDA - Larvae 33 in 100 sweeps of blooming alfalfa at Gainesville, Alachua County. (Mead). SOUTH CAROLINA - Numerous in all alfalfa; numerous adults unusual for time of year. (Thomas). INDIANA - First instars in 1 of 5 sampled alfalfa fields in Jackson County; egg counts heavy in 2 previous samplings. (Myer).

EGYPTIAN ALFALFA WEEVIL (Hypera brunneipennis) - ARIZONA - Averages per 100 sweeps of alfalfa in Yuma County as follows: Yuma Valley 25 larvae, Gila Valley 10 adults and 25 larvae, Yuma Mesa 20 adults and 35 larvae. Controls applied at Somerton. (Ariz. Coop. Sur.).

CLOVER LEAF WEEVIL (Hypera punctata) - INDIANA - Early instars ranged 1-17 per square foot in 5 alfalfa fields in Jackson County. (Myer). NEW MEXICO - Ranged up to 3 per square foot in Dexter and Hagerman area of Chaves County. Starting to pupate; no noticeable damage. (Mathews).

PEA APHID (Acyrtosiphon pisum) - NEVADA - Averaged 75 per sweep in Moapa Valley, Clark County, alfalfa. Parasites and predators light. (Zoller). ARIZONA - Heavy,

counts of 1,600 per 100 sweeps of alfalfa in Gila and Yuma Valleys, Yuma County. (Ariz. Coop. Sur.). NEW MEXICO - Generally light in alfalfa in Dona Ana County. (N.M. Coop. Rpt.). Ranged 10-30 per square foot on alfalfa in Eddy and Chaves Counties. (Mathews). OKLAHOMA - Increasing in scattered areas in southwest and west-central counties. Ranged 120-700 per square foot in Ellis County. Light in Garvin County. (Okla. Coop. Sur.). ARKANSAS - Light, ranged 5-10 in 100 sweeps of alfalfa and clovers in Washington County. Development later than normal. (Boyer).

EUROPEAN CLOVER LEAF TIER (Mirificarma formosella) - CALIFORNIA - Larvae heavy on clovers in pastures at Lincoln, Placer County. Hay pastures recently cut now heavily webbed and tied. Controls planned. Early occurrence result of mild weather. (Cal. Coop. Rpt.).

BEEET ARMYWORM (Spodoptera exigua) - ARIZONA - Larvae averaged 110 per 100 sweeps in field of alfalfa at Casa Grande, Pinal County. (Ariz. Coop. Sur.).

ALFALFA LOOPER (Autographa californica) - ARIZONA - Averaged 35 per 100 sweeps of alfalfa in Yuma Valley, Yuma County. (Ariz. Coop. Sur.).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - NEVADA - Heavy, causing bud and leaf damage on alfalfa in Moapa Valley, Clark County. Older leaves deformed and whitened. (Zoller).

BROWN WHEAT MITE (Petrobia latens) - NEVADA - Heavy and spotted on alfalfa in Moapa Valley, Clark County. (Zoller).

POTATOES, TOMATOES, PEPPERS

GREEN PEACH APHID (Myzus persicae) - NEW MEXICO - Heavy on bedding plants of chilli pepper, tomato, and snapdragon in commercial greenhouses in Bernalillo, Valencia, and McKinley Counties. (Heninger).

COLE CROPS

IMPORTED CABBAGEWORM (Pieris rapae) - IDAHO - First adult of season March 16 at Notus, Canyon County. (Homan).

DECIDUOUS FRUITS AND NUTS

PEAR PSYLLA (Psylla pyricola) - WASHINGTON - First nymphs of first generation observed at Toppenish March 31; about 1 percent of eggs hatched. Adult counts up to 1,452 per 25 trays, and 351 eggs on 15 spurs in untreated pear orchards in upper Yakima Valley, Yakima County, March 24. (Johnson, Gregorich).

ROSY APPLE APHID (Dysaphis plantaginea) - DELAWARE - Eggs abundant on many apple trees in Kent and Sussex Counties. (Boys).

EUROPEAN RED MITE (Panonychus ulmi) - DELAWARE - Eggs not as numerous on apple trees as in past years. (Boys).

PECAN NUT CASEBEARER (Acrobasis caryae) - ALABAMA - Few overwintered small larvae in cases in 2 pecan orchards in Lee County. First feeding observed. (McQueen).

CITRUS

CITRUS THRIPS (Scirtothrips citri) - ARIZONA - Controls applied in citrus nurseries and seed beds at Yuma, Yuma County. (Ariz. Coop. Sur.).

OTHER TROP. & SUBTROP. FRUITS

FIG PSYLLID (Homotoma ficus) - CALIFORNIA - Heavy, second and few third stage nymphs on fig trees at Concord, Contra Costa County. (Cal. Coop. Rpt.).

SMALL FRUITS

GRAPE ROOT BORER (*Vitacea polistiformis*) - SOUTH CAROLINA - Damage severe in vineyards at Great Falls, Chester County. (Thomas).

FOREST AND SHADE TREES

SOUTHERN PINE BEETLE (*Dendroctonus frontalis*) - Infestations declined below levels of recent years on private and National Forest lands in southeast TEXAS. Activity declined to endemic levels on Talladega National Forest in ALABAMA. First observations indicate overwintering brood reduced by cold weather in NORTH CAROLINA and TENNESSEE. (South. For. Pest Rptr., Mar.).

SPRUCE SPIDER MITE (*Oligonychus ununguis*) - WASHINGTON - Eggs hatching at Tumwater, Thurston County, March 25. (Barstow).

FOREST TENT CATERPILLAR (*Malacosoma disstria*) - LOUISIANA - Egg mass surveys in 1969 along Mermentau River and in Morgan City area of St. Mary Parish indicate moderate to heavy defoliation can be expected in 1970. (La. For. Comm.).

EASTERN TENT CATERPILLAR (*Malacosoma americanum*) - OKLAHOMA - First larvae of season on wild plum in Bryan, Marshall, and Love Counties. (Okla. Coop. Sur.). SOUTH CAROLINA - First observed March 17 on cherry and apple trees at Clemson, Oconee County. (Skelton). MARYLAND - First larvae of season on wild cherry at Hyattsville, Prince Georges County. (U. Md., Ent. Dept.).

BALSAM WOOLLY APHID (*Adelges piceae*) - NORTH CAROLINA - New infestation found in remote area of Balsam Mountains represents southernmost extension in southern Appalachians. (South. For. Pest Rptr., Mar.).

AN AMBROSIA BEETLE (*Xyleborus ferrugineus*) - MISSOURI - Specimen collected from buttress roots of *Quercus velutina* (black oak) at Salem, Dent County, by W.H. Kearby October 24, 1969. Determination by D.M. Anderson. This is a new State record. (Kearby).

FRUIT-TREE LEAF ROLLER (*Archips argyrospilus*) - CALIFORNIA - Epidemic infestations in many areas in and around Sacramento, Sacramento County. Oak and other shade trees stripped of new growth. Ornamental shrubs and some garden plants severely damaged and killed when growing under infested trees. (Cal. Coop. Rpt.).

SPRING CANKERWORM (*Paleacrita vernata*) - MINNESOTA - Female moths observed moving up trees at St. Paul, Ramsey County. (Minn. Pest Rpt.).

MAN AND ANIMALS

SCREW-WORM (*Cochliomyia hominivorax*) - No cases reported in U.S. March 29 to April 4. Total of 20 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico March 22-28 as follows: Baja California 3, Sonora 9, Chihuahua 8. Total of 5 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 6,528,000; Mexico 175,330,000. (Anim. Health Div.).

CATTLE GRUBS (*Hypoderma* spp.) - SOUTH DAKOTA - Total of 440 calves examined; 70 percent infested from White River area, Mellette County; 80 percent infested on Cheyenne River Indian Reservation in Dewey and Ziebach Counties. Averaged 18.8 and 10.1 larvae per calf, respectively. (Jones, Mar. 20). TENNESSEE - *H. lineatum* (common cattle grub) infested 9 of 21 head of cattle in Giles County. (Edwards, Parker).

FACE FLY (*Musca autumnalis*) - CALIFORNIA - Heavy emergence at Redding and Anderson, Shasta County. Annoying to homeowners. Males predominant on outsides of buildings; females prevalent on livestock. (Cal. Coop. Rpt.).

HOG LOUSE (Haematopinus suis) - OKLAHOMA - Moderate on hogs in Mayes County. (Okla. Coop. Sur.).

BROWN RECLUSE SPIDER (Loxosceles reclusa) - PENNSYLVANIA - Female collected in machine shop at Mechanicsburg, Cumberland County, January 15, 1970. Determined by S.G. Green. This is a new State record. (Green).

A SCYTODID SPIDER (Loxosceles rufescens) - PENNSYLVANIA - Male collected in building at Wilkes-Barre, Luzerne County, September 26, 1969. This is a new State record. Established population discovered in several buildings at University Park, Centre County, March 4-11. About 20 specimens collected. Source of infestation unknown. This is a new county record. Determinations made by S.G. Green. (Green).

HOUSEHOLDS AND STRUCTURES

A LONG-HORNED BEETLE (Xylotrechus annosus emotus) - NEVADA - Many adults emerging from firewood in home at Carson City, Ormsby County. Collected by W. Maddaford April 2. Determined by R.C. Bechtel. This is a new county record. (Bechtel).

BROWN SPIDER BEETLE (Ptinus clavipes) - IOWA - Specimens collected at State Center, Marshall County, and at Garner, Hancock County. These are new county records. (Iowa Ins. Sur.).

BENEFICIAL INSECTS

CONVERGENT LADY BEETLE (Hippodamia convergens) - ARKANSAS - Adults ranged 5-6 in 100 sweeps in small grain and alfalfa in Washington County. (Boyer).

A PHYTOSEIID MITE (Zetzellia mali) - WASHINGTON - This predaceous species abundant on prune twigs and apple spurs in mid-March in Yakima County. (Gregorich, Anthon).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

CEREAL LEAF BEETLE (Oulema melanopus) - TENNESSEE - Surveys negative in Fayette, Henry, Madison, Tipton, and Weakley Counties. (Gordon).

GRASSHOPPERS - OKLAHOMA - Averaged 0.25 viable egg pod per square foot of sod in rangeland areas in 4 northwest counties. (Okla. Coop. Sur.).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - ALABAMA - Mound building observed in pastures and fields in Talladega County. Winged forms in flight. (O'Daniel et al.). TENNESSEE - Surveys negative in Bedford, Coffee, Fayette, Giles, Hamilton, Maury, Meigs, Tipton, and Wayne Counties. (Gordon).

DETECTION

New State Records - AN AMBROSIA BEETLE (Xyleborus ferrugineus) MISSOURI - Dent County. (p. 236). BROWN RECLUSE SPIDER (Loxosceles reclusa) PENNSYLVANIA - Cumberland County. (p. 237). A SCYTODID SPIDER (Loxosceles rufescens) PENNSYLVANIA - Luzerne County. (p. 237).

New County Records - BROWN SPIDER BEETLE (Ptinus clavipes) IOWA - Marshall, Hancock (p. 237). A LONG-HORNED BEETLE (Xylotrechus annosus emotus) NEVADA - Ormsby (p. 237). A SCYTODID SPIDER (Loxosceles rufescens) PENNSYLVANIA - Centre (p. 237). SPOTTED ALFALFA APHID (Theorhaphis maculata) NORTH DAKOTA - Cass (p. 234).

HAWAII INSECT REPORT

Pastures - A GRASS WEBWORM (Herpetogramma licarsialis) remains light in pastures on Maui, Kauai, and Oahu. Few adults noted during pasture survey at Hana, Maui; no eggs or larvae found. (Miyahira et al.).

Fruits - Clusters of adults (10-15) of a PLATASPID BUG (Coptosoma xanthogramma) noted on terminals of young citrus plants at Hilo, Hawaii. (Yoshioka).

Ornamentals - HEMISPHERICAL SCALE (Saissetia coffeae) heavy, as many as 20 per leaflet, on ornamental cycads at Hilo, Hawaii. Parasitism by a PTEROMALID WASP (Scutellista cyanea) moderate. (Yoshioka).

Beneficial Insects - Adults of a TEPHRITID FLY (Tetraeuresta obscuriventris) heavy on flowers of elephants-foot (Elephantopus mollis) and other weeds and shrubs at Kukuiohono golf course and in pastures at Kalaheo, Kauai. (Sugawa). Recoveries of BRACONIDS (Opius spp.) made for first time on island of Hawaii from material collected at Papaikou. Initial release of these parasites of Melanagromyza phaseoli (bean fly) on island made in July 1969. (Yoshioka).

General Pests - Larvae and adults of KOA HAOLE LOOPER (Anacamptodes fragilaria) heavy on koa haole (Leucaena glauca) in 200 acres of ranch land at Poipu, Kauai; caused severe defoliation in some areas. (Sugawa). Loud stridulations of a LONGHORN GRASSHOPPER (Euconocephalus nasutus) at night continue to annoy residents in various areas on Oahu. Populations appear heaviest in Waipahu area. (Funasaki). CROTON CATERPILLAR (Achaea janata) larvae heavy on castorbean throughout Molokai. (Fujimoto).

Weather of the week continued from page 232.

storms and a few tornadoes occurred over the South about midweek as more heavy snow fell in the North. Lansing, Michigan, received 16 inches of snow Wednesday afternoon and Thursday and 11 inches at Midway Airport set a new 24-hour snowfall for Chicago. Winds, gusting to 40 to 55 m.p.h., filled the air with snow, reducing the visibility, and drifting the snow badly. Transportation came to a standstill. This storm was especially deep. At midnight Thursday the pressure at the center had dropped to 971 mbs (28.67 inches). Buffalo, New York, registered 28.86 inches at noon Thursday the lowest pressure in April in 100 years of records. Washington, D.C., registered 28.99 inches, setting a new record-low sea-level pressure for the month of April. The previous low-record was 29.09 inches which occurred on April 13, 1961. The big storm pounded the Northeast all day Thursday with gusts ranging from 50 to 70 m.p.h. or higher as the snow and rain continued. At Grandfather Mountain in North Carolina, the gusts reached 115 m.p.h. The strong winds caused considerable roof and glass damage in the Trenton, New Jersey, vicinity. The storm moved northeastward into Canada's Maritime Provinces and clear to partly cloudy skies prevailed over most of the Nation on Saturday and Sunday with light rains occurring in the Far Northwest, the upper Mississippi River Valley, and the Florida Peninsula.

TEMPERATURE: Following the big Easter storm, record-breaking cold for so late in the season occurred in parts of the Northeast. Philipsburg, Pennsylvania, registered 1° below zero on Monday morning. In sharp contrast, mild weather continued in Florida where Orlando registered 92° on Tuesday and 91° on Wednesday. Most of the Southeast registered afternoon temperatures in the high 70's and 80's. The strong northerly winds brought cold temperatures over the East far southward. The temperature at Raleigh, North Carolina, dropped from 72° Thursday afternoon to 32° Friday morning. As the big storm moved into Canada, cool temperatures pushed southward. Asheville, North Carolina, registered 30° Saturday morning. A warming trend occurred in the Midwest. Mobridge, South Dakota, registered 60° Saturday in contrast to 41° the previous afternoon. Weekly temperatures averaged below normal over most of the Nation. Much of the area from north-eastern New Mexico to Lower Michigan averaged 8° to 11° cooler than normal. Washington, the central valleys and the southern two-thirds of California's coast, and the Florida Peninsula averaged above normal. Miami, Florida, averaged 10° warmer than normal. (Summary supplied by Environmental Data Service, ESSA.)

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Part XXVIII

Additional copies of Parts I through XXVIII of this bibliography are available from Economic Insect Survey and Detection.

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Cooperative
**ECONOMIC INSECT
REPORT**



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SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT**HIGHLIGHTS**Current Conditions

GREENBUG heavy on wheat in Kansas; declining on small grain in southwest Oklahoma. (p. 245).

ALFALFA WEEVIL larvae heavy on crimson clover in Florida; damage showing on terminals in Tennessee. (p. 246). PEA APHID heavy on alfalfa in some areas of Oklahoma and Arizona. (p. 246).

Several PESTS troublesome on tobacco in Florida. (p. 247). GREEN PEACH APHID troublesome on various crops in several areas. (pp. 247-248).

WHITE-FRINGED BEETLE larvae damaged tobacco in Florida. (p. 252).

Predictions

SPRING CANKERWORM expected to be heavy if conditions remain favorable in Nebraska. (p. 250). RANGE CATERPILLAR egg survey indicates potential for heavy infestation later in year in New Mexico. (p. 252).

Detection

New State records include 6 ANTS from Utah (p. 246) and a DEER FLY from South Dakota (p. 251).

For new county records see page 253.

Special Reports

Distribution of Spotted Alfalfa Aphid. Map. (p. 254).

Periodical Cicada - Outlook for May and June 1970. (pp. 255-256).

Important Insects, Mites, and Snails Most Frequently Intercepted at United States Ports of Entry in Fiscal Year 1968. (pp. 257-274).

Some First Occurrences of Season

ALFALFA WEEVIL larvae in Missouri and Arkansas; PALE WESTERN CUTWORM hatching in Wyoming; RANGE CATERPILLAR eggs in New Mexico; ALFALFA CATERPILLAR larvae in Oklahoma; STABLE FLY adults in Nebraska; and HORN FLY adults in Alabama.

Reports in this issue are for week ending April 10 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance.....245

Insects Affecting

Corn, Sorghum, Sugarcane.....	245	General Vegetables.....	247
Small Grains.....	245	Deciduous Fruits and Nuts.....	248
Turf, Pastures, Rangeland.....	246	Citrus.....	248
Forage Legumes.....	246	Other Trop. & Subtrop. Fruits....	249
Soybeans.....	247	Ornamentals.....	249
Tobacco.....	247	Forest and Shade Trees.....	250
Miscellaneous Field Crops.....	247	Man and Animals.....	250
Potatoes, Tomatoes, Peppers.....	247	Households and Structures.....	251
Cole Crops.....	247		

Beneficial Insects.....251

Federal and State Plant Protection Programs.....251

Hawaii Insect Report.....252

Detection.....253

Light Trap Collections.....253

Corrections.....253

Distribution of Spotted Alfalfa Aphid. Map.....254

Periodical Cicada - Outlook for May and June 1970.....255

Important Insects, Mites, and Snails Most Frequently Intercepted at United States Ports of Entry in Fiscal Year 1968.....257

WEATHER OF THE WEEK ENDING APRIL 14

HIGHLIGHTS: A weekend blizzard dumped heavy snow over parts of South Dakota. Dust storms occurred over parts of the central and southern Great Plains.

PRECIPITATION: Generous rain fell in along the Washington coast early and late in the week. Totals in the Olympic Peninsula ranged from 4 to 9 inches. Rain also fell early in the week in the Northeast and the Florida Peninsula. At noon Tuesday, a storm was centered over southern Manitoba. Blustery winds gusted to 60 m.p.h. or more over parts of the Dakotas and Nebraska -- 81 m.p.h. on Wednesday morning and 75 m.p.h. in the afternoon at Devils Lake, North Dakota, causing clouds of dust over the city. Heavy showers fell in southern Texas Thursday and moved to the Deep South on Friday. The weekend brought snow flurries from the Great Lakes to the northern Appalachians. A weekend storm moved southward along the eastern slopes of the northern and central Rocky Mountains and the adjacent Great Plains. It intensified bringing a return of winter. Snow and cold rain fell in the Dakotas and Nebraska on Saturday accompanied by strong northerly winds. Visibility was reduced to zero along the South Dakota-Nebraska border as 60 m.p.h. winds filled the air with snow. Snowfall from this storm was heaviest in South Dakota. Aberdeen measured 17 inches on the ground at noon Monday, April 13. Light to serious storms occurred from Nebraska to New Mexico late in the week.

TEMPERATURE: High pressure, cloudless skies, and mild temperatures prevailed over most of the eastern half of the Nation early in the week. At noon Tuesday, a Low was centered over southern Manitoba with a cold front extending southwestward to the coast of California near Los Angeles. Brisk southerly winds warmed the Great Plains ahead of the front. The temperature at Bismarck, North Dakota, climbed to 85 degrees Tuesday afternoon, higher than had ever been recorded so early in the season. The following morning, however, after the frontal passage, the strong northwesterly winds dropped the temperature at Bismarck to 37° and it failed to rise above 52° in the afternoon. The warm section of the storm moved eastward with the mercury at Milwaukee, Wisconsin, reaching 74° Wednesday afternoon. Weather of the week continued on page 253.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMYWORM (Pseudaletia unipuncta) - MISSOURI - Second and third instars on fescue pastures in Bollinger County. (Munson).

GREENBUG (Schizaphis graminum) - NEBRASKA - Surveys negative in 53 wheatfields in Keith, Perkins, Chase, Dundy, and Hitchcock Counties. No migrants captured in suction trap at Lincoln, Lancaster County. (Keith). KANSAS - Range per linear foot of wheat by county as follows: Comanche 200-2,000, Clark 10-1,200, Barber 2-40, Pratt up to 2, Meade up to 20, and Ford up to 40. Predators in most fields; up to 20 mummified aphids per linear foot in Comanche and Clark Counties. (Martinez). Surveys negative in central, south-central, southeast, east-central, and northeast areas. (Redding). OKLAHOMA - Declining in small grains in southwest area. Highest counts 70-80 per linear foot in Tillman County. Highest count in Jackson County, 50 per linear foot. Range per linear foot by county: Texas 20-30, Noble 15-20, Payne 2-3 near Lake Carl Blackwell. Very light in Washita County. (Okla. Coop. Sur.). ARIZONA - Controls applied on grains at Stanfield and Maricopa, Pinal County. (Ariz. Coop. Sur.). NEVADA - S. graminum, Rhopalosiphum sp., and R. maidis (corn leaf aphid) heavy on barley with leaf yellowing in Virginia Valley, Clark County. (Zoller).

ARMY CUTWORM (Chorizagrotis auxiliaris) - NEBRASKA - Late instars light, less than 1 per linear foot, in most wheat in Keith, Perkins, Chase, Dundy, and Hitchcock Counties. (Keith). COLORADO - Larvae of this species and Agrotis orthogonia (pale western cutworm) light, 0-1 per linear foot of wheat in Larimer, Weld, and Morgan Counties. (Johnson).

SPOTTED ALFALFA APHID (Therioaphis maculata) - NEW MEXICO - Medium on alfalfa in Guadalupe County. Controls applied to few fields. (Baca). OKLAHOMA - Ranged 10-30 per square foot of crown on alfalfa in Jackson County. Very light, 0-5 per 10 sweeps, in scattered east-central areas. (Okla. Coop. Sur.).

TOBACCO BUDWORM (Heliothis virescens) - FLORIDA - Larvae light on shade-grown tobacco at Quincy, Gadsden County. (Tappan).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - ILLINOIS - Winter larval survival higher than usual. Mortality less than 10 percent in southeast, south, and west-southwest sections. Preliminary surveys indicate 15 percent mortality in west section. (Sur. Bull., Apr. 3). MARYLAND - Fall larval surveys indicated populations lower than usual in all sections of State. (U. Md., Ent. Dept.).

SOUTHWESTERN CORN BORER (Diatraea grandiosella) - TENNESSEE - Overwintering larval survival counts in Weakley County indicate about 12 percent survived in plots with stubble undisturbed through winter and none in plots with stubble disked in fall. (Pless, Cherry).

SMALL GRAINS

AN APHID (Rhopalosiphum padi) - OKLAHOMA - Average per linear foot of wheat by county: Tillman 20 and Payne 5. (Okla. Coop. Sur.).

PALE WESTERN CUTWORM (Agrotis orthogonia) - NEBRASKA - Range per linear foot of wheat by county as follows: Keith 1-3, Perkins, and Chase 1-2, and Dundy 0-1. (Keith). WYOMING - Hatching on small grains at Torrington, Goshen County. (Neys).

WINTER GRAIN MITE (Penthaleus major) - KANSAS - Light on wheat in Butler, Marion, Dickinson, Geary, Pottawatomie, Jackson, and Atchison Counties. (Redding).

TURF, PASTURES, RANGELAND

PERIODICAL CICADA (Magiccada septendecim) - MARYLAND - First nymphs of season recovered from turf at 2 locations. Averaged 1 per square yard in Hyattsville, Prince Georges County. Considerable turf damage caused by small animals feeding on nymphs in upper 4-6 inches of soil at Bethesda, Montgomery County. (U. Md., Ent. Dept.).

ASIATIC GARDEN BEETLE (Maladera castanea) - MARYLAND - Larvae averaged 6 in 5 square feet of lawn at home in Hyattsville, Prince Georges County. (U. Md., Ent. Dept.).

ANTS - UTAH - Formica perpilosa and Monomorium viridum peninsulatum collected June 13 and Pheidole bicarinata longula on June 12 in Garfield County by G.F. Knowlton and D.W. Davis. Formica pruinosa collected at Cornish, Cache County, May 8; F. subnitens in Utah County May 24; and F. obscuripes ravida in Cache County July 7, by G.F. Knowlton. Determinations by R.E. Gregg. All collections made during 1969. These are new State records. (Knowlton).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - VIRGINIA - Second instars light on alfalfa in Charlotte County April 7. (Hendrick). First instars and adults light in Powhatan and Hanover Counties April 3 and 7. (Innes). OHIO - Adults 30 per 100 sweeps of alfalfa in Wooster County. Eggs per square foot, 1 in Wooster County, 5 in Erie County. (Flessel). INDIANA - Larvae ranged 0-14 (average 25) per square foot throughout 3 southern districts. (Meyer). ILLINOIS - Early instars on alfalfa in southern areas; feeding minor. (Sur. Bull.). MISSOURI - First larvae of season on alfalfa in southeast, south-central, and southwest areas; mostly first instars. Adults light. (Munson, Hanning). OKLAHOMA - Light on alfalfa in Wagoner (1 adult per 100 sweeps) and Muskogee (4 adults and 3 larvae per 100 sweeps) Counties. (Okla. Coop. Sur.). ARKANSAS - Larval feeding signs heavy on alfalfa in Phillips County. (Barnes, Boyer). First larvae of season averaged 6 per 100 sweeps in Washington County. (Boyer). MISSISSIPPI - Larvae averaged 166 per 20 stems of alfalfa in Pontotoc County. (Sartor). TENNESSEE - Larvae feeding on alfalfa in Henry, Weakley, Gibson, Dyer, Lake, and Obion Counties. First, second, and third instars on terminals in Fayette, Hardeman, Madison, and Tipton Counties. About 10-15 percent of terminals showing injury. (Emerson et al.). ALABAMA - Many larvae on bur- and crimson clovers and vetch in Montgomery, Macon, and Lee Counties. Larvae prefer burclover. (McQueen). FLORIDA - Larvae heavy, 5-6 per plant, on 5-10 acres of crimson clover on farm at Quincy, Gadsden County. (Tappan). Determined by D.H. Habeck. This is a new county record. Late instars 4 in 100 sweeps of recently cut alfalfa at Gainesville, Alachua County. (Mead).

CLOVER HEAD WEEVIL (Hypera meles) - ALABAMA - Larvae appearing on seed heads of crimson clover in central areas. (McQueen).

PEA APHID (Acyrtosiphon pisum) - ARIZONA - Averaged 1,400 per 100 sweeps of alfalfa at Yuma, Yuma County. (Ariz. Coop. Sur.). NEW MEXICO - Medium on alfalfa in Guadalupe County. Controls applied to few fields. (Baca). OKLAHOMA - Heavy on alfalfa in Washita County. Range per 10 sweeps: 200-400 in Muskogee, Okmulgee, and Okfuskee Counties, and 55-85 in Wagoner and Tulsa Counties. Ranged 5-100 per square foot of crown in Jackson County and 80-90 per square foot in Tillman County. (Okla. Coop. Sur.). MISSOURI - Average per 10 sweeps of alfalfa: Southwest area 100, Howell County 40, Lawrence County 33. (Hanning). ARKANSAS - Ranged 15-20 per 100 sweeps of crimson clover in Pope County; ranged 5-10 per 100 sweeps of alfalfa in Washington County. (Boyer).

ALFALFA CATERPILLAR (Colias eurytheme) - VIRGINIA - Larvae light on alfalfa in Charlotte County. (Hendrick). OKLAHOMA - Counts of 1 or 2 half-grown larvae per 100 sweeps in most east-central area alfalfa; first of season. (Okla. Coop. Sur.). ARIZONA - Larvae of this species and Spodoptera exigua (beet armyworm) averaged 15 per 100 sweeps of alfalfa at Yuma, Yuma County. (Ariz. Coop. Sur.).

ALFALFA LOOPER (*Autographa californica*) - OREGON - Pheromone trap survey negative in Walla Walla Valley and near Adams and Athena in Umatilla County. (Burkhardt). Adults flying in the Willamette Valley. (Goeden).

TARNISHED PLANT BUG (*Lygus lineolaris*) - OKLAHOMA - Adults ranged 1-10 per 10 sweeps in alfalfa in Tulsa, Wagoner, Muskogee, Okmulgee, and Okfuskee Counties. (Okla. Coop. Sur.).

SOYBEANS

BEAN LEAF BEETLE (*Ceratomyza trifurcata*) - MISSISSIPPI - Reduction of counts in trash samples bordering soybean fields in Oktibbeha County apparently indicates movement out of overwintering sites. (Sartor). TENNESSEE - Many hibernating adults collected from surface trash samples in Obion County. (Emerson, Locke).

TOBACCO

GREEN PEACH APHID (*Myzus persicae*) - FLORIDA - Heavy on shade-grown tobacco in beds and fields at Quincy, Gadsden County. Building up. (Tappan).

CUTWORMS - FLORIDA - Primarily *Feltia subterranea* (granulate cutworm) light on shade-grown tobacco at Quincy, Gadsden County. (Tappan).

FLEA BEETLES - FLORIDA - Troublesome on shade-grown tobacco in plant beds and fields at Quincy, Gadsden County. (Tappan).

VEGETABLE WEEVIL (*Listroderes costirostris obliquus*) - FLORIDA - Light on tobacco in beds and fields at Quincy, Gadsden County. (Tappan).

MOLE CRICKETS (*Scapteriscus* spp.) - FLORIDA - Minor problem in shade-grown tobacco plant beds at Quincy, Gadsden County. (Tappan).

MISCELLANEOUS FIELD CROPS

GREEN PEACH APHID (*Myzus persicae*) - ARIZONA - Colonies increasing in few safflower fields at Yuma, Yuma County. (Ariz. Coop. Sur.).

POTATOES, TOMATOES, PEPPERS

GREEN PEACH APHID (*Myzus persicae*) - NEW MEXICO - Heavy on chilli seedlings in San Juan County. (Heninger). FLORIDA - Adults moderate on 12 percent of 1,000 eggplants on farm near Tampa, Hillsborough County. (Simmons).

POTATO APHID (*Macrosiphum euphorbiae*) - NEW JERSEY - Overwintering egg counts increased over 1969. (Ins.-Dis. Newsltr.).

COLE CROPS

CABBAGE LOOPER (*Trichoplusia ni*) - FLORIDA - Larvae caused heavy damage to collards on experimental plots at Bradenton, Manatee County; plants on regular insecticide schedule. (Poe). Eggs and larvae light on cabbage at Sanford, Seminole County; adults increasing in blacklight traps. (Greene).

DIAMONDBACK MOTH (*Plutella xylostella*) - FLORIDA - All stages heavy on collards and mustard greens at Bradenton, Manatee County. (Poe).

GENERAL VEGETABLES

ASPARAGUS BEETLE (*Crioceris asparagi*) - NEW JERSEY - Adults per 100 asparagus stalks per field indicate population higher statewide than 1969. (Ins.-Dis. Newsltr.).

SPOTTED ASPARAGUS BEETLE (*Crioceris duodecimpunctata*) - NEW JERSEY - Adults averaged 0.5 per 100 asparagus stalks in Cumberland, Salem, and Gloucester Counties. (Ins.-Dis. Newsltr.).

GREEN PEACH APHID (*Myzus persicae*) - NEVADA - Light to medium on spinach in Moapa Valley, Clark County. (Zoller).

BULB MITE (*Rhizoglyphus echinopus*) - CALIFORNIA - Counts of 10 per stem on onion plants at Brawley, Imperial County. (Cal. Coop. Rpt.).

DECIDUOUS FRUITS AND NUTS

LESSER PEACH TREE BORER (*Synanthedon pictipes*) - FLORIDA - Adults, larvae, and pupae moderate to heavy on untreated peach trees at Gainesville, Alachua County. (Whitcomb).

GRAPE MEALYBUG (*Pseudococcus maritimus*) - OREGON - Infested unsprayed check plot of Anjou pear near Medford, Jackson County. New infested area. (Gentner, Westgard).

GREEN PEACH APHID (*Myzus persicae*) - NEW MEXICO - Damaged fruit trees at Las Cruces, Dona Ana County. (N.M. Coop. Rpt.).

CITRUS

CITRUS RED MITE (*Panonychus citri*) - ARIZONA - Collected in Maricopa and Pima Counties on citrus, week ending March 13. These are new county records. (Ariz. Coop. Sur.).

CALIFORNIA RED SCALE (*Aonidiella aurantii*) - ARIZONA - Additional infestations found at Tucson, Pima County, and in Mesa area, Maricopa County. (Ariz. Coop. Sur.).

CITRUS MEALYBUG (*Planococcus citri*) - CALIFORNIA - Averaged 10 per limb on Valencia orange trees at Santa Barbara, Santa Barbara County. (Cal. Coop. Rpt.).

Citrus Insect Situation in Florida - End of March - CITRUS RUST MITE (*Phyllocoptura oleivora*) infested 75 (norm 60) percent of groves; economic in 44 (norm 40) percent. Population remained above normal and in high range. Increase expected on leaves and fruit. Highest districts west, south, east, and central. CITRUS RED MITE (*Panonychus citri*) infested 47 (norm 43) percent of groves; economic in 16 (norm 17) percent. Population near normal and in low range. Gradual increase expected to start in mid-April and result in scattered heavy infestations in all districts. Highest districts west and north. TEXAS CITRUS MITE (*Eutetranychus banksi*) infested 23 (norm 35) percent of groves; economic in 4 (norm 15) percent. Population at lowest March level in past 11 years. Although increase expected, population will remain low through April. Highest district central. SIX-SPOTTED MITE (*Eotetranychus sexmaculatus*) infested 8 (norm 9) percent of groves; economic in 1 (norm 1) percent. Expected to remain near current low level until late April, then gradually increase. GLOVER SCALE (*Lepidosaphes gloverii*) infested 82 (norm 79) percent of groves; economic in 10 (norm 19) percent. Population will continue at current moderate level which is slightly below normal for March. Highest districts north and west. PURPLE SCALE (*L. beckii*) infested 68 (norm 65) percent of groves; economic in 7 (norm 10) percent. Little change expected from present moderate and slightly subnormal level. Highest district north. CHAFF SCALE (*Parlatoria pergandii*) infested 49 (norm 65) percent of groves; economic in 2 (norm 12) percent. Below normal and in low range. Slight increase expected. Highest district south. BLACK SCALE (*Saissetia oleae*) infested 10 (norm 29) percent of groves; economic in 2 (norm 11) percent. Present very low population is lowest since 1963. Will remain low and unimportant in all districts. YELLOW SCALE (*Aonidiella citrina*) infested 65 (norm 65) percent of groves; economic in 5 (norm 12) percent. Slightly below normal and low. Little change expected. Highest district north. An ARMORED SCALE (*Unaspis citri*)

infested 25 percent of groves; moderate or heavy in 10 percent. Population higher than in any prior March. Strong spring increase started. WHITEFLIES infested 61 (norm 61) percent of groves; economic in 35 (norm 15) percent. Populations of larval and pupal forms highest for March in 19 years of record. Will change in April to very high population of adults. APHIDS infested 26 (norm 24) percent of groves; economic in less than 1 (norm 1) percent. Population near normal and in low range. Will increase through mid-April. (W.A. Simanton Citrus Expt. Sta. Lake Alfred).

Quarterly Citrus Insect and Mite Outlook in Florida - April through June - This outlook is based on the assumption that weather beyond the period of the current U.S. Weather Bureau 30-day Outlook will be normal. Therefore, the forecasts given below cannot be viewed with the same degree of confidence as those in the "Insects and Disease Summary" usually released twice each month.

CITRUS RUST MITE population expected to remain in high range in April, decline briefly in late May, and again increase to high level in June. Heavy infestations expected in 30 to 40 percent of groves. CITRUS RED MITE gradual increase will resume at mid-April and continue until end of June. Population will reach normal high level in June and about 15 percent of groves will harbor heavy infestations. TEXAS CITRUS MITE will remain at low to moderate level despite gradual increase through June. Few groves in scattered locations expected to develop heavy infestations. SIX-SPOTTED MITE will occur in about 8 percent of groves before mid-June then quickly decrease. Less than 1 percent of groves will have important infestations. BLACK SCALE will start to increase in May, populations expected to remain below average and at moderate level. GLOVER SCALE, PURPLE SCALE, YELLOW SCALE, and CHAFF SCALE will gradually increase from April through June. Very few heavy infestations likely to develop in this period. Glover scale expected to approach or enter high range, purple scale and yellow scale to attain moderate level, and chaff scale to remain in low range. Unaspis citri expected to occur in more groves and to intensify and spread in groves already infested. WHITEFLY adults will be unusually numerous in April, then decrease. Larval forms expected to increase rapidly in May and reach abnormally high level in June. MEALYBUGS will show sudden increase in May and enter high range about mid-June. APHIDS will decrease in April and remain at abnormally low level. (W.A. Simanton).

OTHER TROP. & SUBTROP. FRUITS

OLIVE SCALE (Parlatoria oleae) - CALIFORNIA - Medium on olive fruit in 5-acre planting at Lincoln, Placer County. (Cal. Coop. Rpt.).

WESTERN BROWN STINK BUG (Euschistus impictiventris) - ARIZONA - Appeared on olive trees at Tucson, Pima County, March 14. (Ariz. Coop. Sur.).

ORNAMENTALS

AN APHID (Myzus varians) - CALIFORNIA - Nymphs and adults medium on clematis at Davis, Yolo County. This is a new county record. (Cal. Coop. Rpt.).

BAGWORM (Thyridopteryx ephemeraeformis) - ALABAMA - Eggs hatching in overwintered bags as far north as Lee and Montgomery Counties. (McQueen).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - ARIZONA - Main problem of rose growers in most areas of State. No satisfactory control available to growers of show roses. (Ariz. Coop. Sur.).

FOREST AND SHADE TREES

SEQUOIA PITCH MOTH (Vespamima sequoiae) - CALIFORNIA - Larvae heavy in pine trees at San Juan Bautista, San Benito County. (Cal. Coop. Rpt.).

A PYRALID MOTH (Herculia phaezalis) - CALIFORNIA - Larvae medium in twigs of Monterey pine trees at Encinitas, San Diego County. (Cal. Coop. Rpt.).

FLATHEADED FIR BORER (Melanophila drummondi) - OREGON - Adults common on tips of ornamental pines and resting on cottonwood leaves at Portland, Multnomah County, March 31. Unusually early and represents earliest emergence record. (Gray, Westcott).

A SPIDER MITE (Oligonychus milleri) - CALIFORNIA - Heavy on Pinus halepensis trees at Camp Holton in Little Tujunga Canyon and light at Lake View Terrace, Los Angeles County. (Cal. Coop. Rpt.).

SPRING CANKERWORM (Paleacrita vernata) - MINNESOTA - Females heavy in Saint Paul, Ramsey County. (Minn. Pest Rpt.). NEBRASKA - Males first observed at light on March 5 at Lincoln, Lancaster County. (Keith). Female observed at Beatrice, Gage County, March 12. (McClure). Flights continue throughout State. Expect heavy brood if conditions remain favorable. (Keith).

FALL CANKERWORM (Alsophila pometaria) - MICHIGAN - Collected 3 males April 5 in blacklight trap in Livingston County; apparently active 3 weeks later than usual. (Janes).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - OKLAHOMA - Early instars on wild plum in east-central area and Payne County. Also on peach tree in Mayes County. (Okla. Coop. Sur.).

WESTERN TENT CATERPILLAR (Malacosoma californicum ssp.) - OREGON - First instar tents of M. c. pluviale in Portland area, Multnomah County, and at Salem, Marion County. (Goeden, Koesan). ARIZONA - M. c. fragile larvae per tree ranged 3-16 on Carolina cherry, 3-18 on flowering peach, and 3-20 on cottonwood at Tucson, Pima County. (Ariz. Coop. Sur.).

OAK LEAF TIER (Croesia semipurpurana) - WEST VIRGINIA - Eggs ranged up to 97 per 15-inch branch sample from 12 sample areas at Watoga State Park, Pocahontas County, March 24. (W. Va. Ins. Sur.).

ELM LEAF BEETLE (Pyrrhalta luteola) - NEW MEXICO - Feeding on new foliage of elm trees in Lea County. (Mathews).

BIRCH LEAF MINER (Fenusa pusilla) - OREGON - First adults of season at Troutdale, Multnomah County, March 31. (Goeden).

MAN AND ANIMALS

SCREW-WORM (Cochliomyia hominivorax) - No cases reported in U.S. April 5-11. Total of 49 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico March 29 to April 4 as follows: Sonora 43, Chihuahua 4, Tamaulipas 2. Total of 5 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 8,868,000; Mexico 128,346,000. (Anim. Health Div.).

COMMON CATTLE GRUB (Hypoderma lineatum) - COLORADO - Averaged 6 per head on untreated rangeland cattle in north-central areas. (Hantsbarger). OKLAHOMA - Adults light, averaged 0.5 per head, in Payne and Noble Counties. (Okla. Coop. Sur.).

HORN FLY (*Haematobia irritans*) - ALABAMA - Adults light, ranged 1-15 per animal, on many range cattle in Barbour, Crenshaw, Pike, and Montgomery Counties. Expected to increase with warmer weather. (McQueen).

STABLE FLY (*Stomoxys calcitrans*) - NEBRASKA - First adult of season March 5 in feedlot near Waverly in Lancaster County. (Hermanussen).

A DEER FLY (*Chrysops indus*) - SOUTH DAKOTA - Collected near Gary, Deuel County, by E.U. Balsbaugh, June 3, 1969. Determined by L.L. Pechuman. This is a new State record. (Balsbaugh).

MOSQUITOES - FLORIDA - *Aedes atlanticus* principal species biting man inhabiting wooded nursery-residential area at Oneco, Manatee County. *Psorophora ferox*, *Wyeomyia mitchellii*, and *Wyeomyia vanduzeei* also taken in bite collections in area. *Culex nigripalpus* and *C. restuans* larvae also common. (Mead). ARKANSAS - Larval surveys indicated light local and scattered populations of *Culiseta* spp. (12-15 late instars per square foot) in Lonoke County in mid-March. (Meisch et al.). NEVADA - *Aedes dorsalis* adults medium in Moapa Valley, Clark County. (Zoller).

CATTLE LICE - OKLAHOMA - Mainly *Haematopinus eurysternus* (short-nosed cattle louse) remains heavy on cattle in Mayes and Ottawa Counties. (Okla. Coop. Sur.).

IOWA - *Linognathus vituli* (long-nosed cattle louse) light in 3 cattle herds in Benton, Boone, and Story Counties. (Iowa Ins. Sur.).

BROWN RECLUSE SPIDER (*Loxosceles reclusa*) - NEBRASKA - Collected from home in Beatrice, Gage County, March 26. (Keith). TENNESSEE - Specimens collected in Greene and Monroe Counties. These are new county records. (Williams).

HOUSEHOLDS AND STRUCTURES

BROWN SPIDER BEETLE (*Ptinus clavipes*) - IOWA - Collected at Corning, Adair County, April 2 and at Ottumwa, Wapello County, April 3. These are new county records. (Iowa Ins. Sur.).

BENEFICIAL INSECTS

CONVERGENT LADY BEETLE (*Hippodamia convergens*) - TENNESSEE - Adults light in small grain and alfalfa. (Emerson et al.). OKLAHOMA - Populations heavy on wheat in Texas County. In all wheat and alfalfa fields in Jackson County. Light in most alfalfa in east-central area. Few adults of *Coleomegilla fuscilabris* (a lady beetle) in same area. (Okla. Coop. Sur.).

A BRACONID (*Lysiphlebus testaceipes*) - OKLAHOMA - Remains extremely common in small grains in southwest and west-central areas. Still main cause of decrease in greenbug populations. (Okla. Coop. Sur.).

BIG-EYED BUGS (*Geocoris* spp.) - TENNESSEE - Light in small grain surveyed in western areas. (Gordon, White).

DAMSEL BUGS (*Nabis* spp.) - OKLAHOMA - Light to moderate in wheat in southwest and west-central areas and in alfalfa in east-central area. (Okla. Coop. Sur.).

HONEY BEE (*Apis mellifera*) - OHIO - Population buildups estimated to be 30 days later than usual in State. (Stephens).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

IMPORTED FIRE ANT (*Solenopsis saevissima richteri*) - FLORIDA - Adults taken from 2 small mounds near Brooker, Alachua County. (Banks). Reinfestation of county. (Fla. Coop. Sur.). TEXAS - Collected in Coastal Bermuda grass pasture 6 miles

north of Poteet, Atascosa County, by H.L. Dalus, March 22. Specimens taken in nursery at Waco, McLennan County, by D.J. Markwardt and Dezaport March 31. Determinations by V.H. Owens, confirmed by D.R. Smith. These are new county records. (PPD).

PINK BOLLWORM (Pectinophora gossypiella) - CALIFORNIA - Released total of 2,269,500 sterile moths in Coachella Valley. Total of 5,417,500 moths released to date. (PPD).

PISTACHIO SEED CHALCID (Megastigmus pistaciae) - CALIFORNIA - Light in Pistacia sp. seeds collected from trees located at San Luis Rey, San Diego County, in December and held for emergence. Seven female wasps emerged. This is a new area of infestation. (Cal. Coop. Rpt.).

RANGE CATERPILLAR (Hemileuca oliviae) - NEW MEXICO - Egg clusters plentiful on grass stems in Union, Colfax, and Harding Counties. Infestation potential great for late in year. (N.M. Coop. Rpt.).

WHITE-FRINGED BEETLES (Graphognathus spp.) - FLORIDA - Larval counts 3-4 per plant on 8 acres of newly set flue-cured tobacco at farm near Jennings, Hamilton County. (Andrews). Determined by D.H. Habeck. Entire planting severely damaged; chemical treatment and replanting necessary. (Fla. Coop. Sur.).

HAWAII INSECT REPORT

Fruits and Nuts - FLORIDA RED SCALE (Chrysomphalus aonidum) heavy and an ARMORED SCALE (Phenacaspis cockerelli) moderate on 50 coconut trees at Kihei, Maui. (Ah Sam). COCONUT LEAF ROLLER (Hedylepta blackburni) larvae and pupae light on older fronds of 11 coconut trees at Keehi Lagoon Beach Park, Oahu. (Kawamura).

Ornamentals - Nymphs and adults of an APHID (Anuraphis middletonii) moderate on roots of 3-inch seedlings in 0.5 acre of asters at Wailua, Kauai. (Sugawa).

Forest and Shade Trees - All stages of a PLATASPID BUG (Coptosoma xanthogramma) light on flowers and branch terminals of 33 wiliwili (Erythrina sp.) trees at Tantalus and trace on about 100 wiliwili trees at Keehi Lagoon Beach Park, Oahu. (Kawamura). Adults of a CONIFER APHID (Cinara carolina) light (1 per 5 terminals) in 20 acres of loblolly pine (Pinus taeda) at Olinda, Maui. (Miyahira).

Man and Animals - MOSQUITOES - Total collected in March from 55 light traps on Oahu; Aedes vexans nocturnus (vexans mosquito) 62, and Culex pipiens quinquefasciatus (southern house mosquito) 798. Aedes catches ranged zero to high of 20 at Waipahu, Oahu, Culex catches per trap ranged zero to high of 75 at Waiahole. (Mosq. Contr. Br., State Dept. of Health).

Beneficial Insects - An ENCYRTID WASP (Tachinaephagus zealandicus) parasitized 53 Chrysomya spp. pupae collected from baited trap in Honolulu, Oahu. T. zealandicus purposely introduced in 1967 from California and released on island of Hawaii to aid in control of HOUSE FLY (Musca domestica). Although no releases made on Oahu, T. zealandicus recovered for first time in State in light trap at University of Hawaii campus in late December 1968 and early January 1969. (Funasaki).

Miscellaneous Pests - Larvae of CROTON CATERPILLAR (Achaea janata) heavy on castorbeans at Auwahi, Pukalani, Kahului, and Lahaina, Maui. At Kahului, all 131 collected eggs parasitized by Trichogramma semifumatum (a minute egg parasite). During March surveys for GIANT AFRICAN SNAIL (Achatina fulica), total of 436 snails picked up and destroyed at Poipu, Kauai; none found at Wahiawa. At Kahaluu, Hawaii, no live snails detected; surveillance continues in this area. (Sugawa, Yoshioka).

DETECTION

New State Records - UTAH - ANTS - Formica obscuripes ravida and F. pruinosa Cache County; F. perpilosa, Monomorium viridum peninsulatum, and Pheidole bicarinata longula Garfield County; F. subnitens Utah County (p. 246). A DEER FLY (Chrysops indus) SOUTH DAKOTA - Deuel County (p. 251).

New County Records - ALFALFA WEEVIL (Hypera postica) FLORIDA - Gadsden (p. 246). An APHID (Myzus varians) CALIFORNIA - Yolo (p. 249). BROWN SPIDER BEETLE (Ptinus clavipes) IOWA - Adair, Wapello (p. 251). BROWN RECLUSE SPIDER (Loxosceles reclusa) TENNESSEE - Greene, Monroe (p. 251). CITRUS RED MITE (Panonychus citri) ARIZONA - Maricopa, Pima (p. 248). IMPORTED FIRE ANT (Solenopsis saevissima richteri) TEXAS - Atascosa, McLennan (pp. 251-252).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville - 4/3-9, BL - Armyworm (Pseudaletia unipuncta) 4, beet armyworm (Spodoptera exigua) 8, black cutworm (Agrotis ipsilon) 1, fall armyworm (Spodoptera frugiperda) 1, granulate cutworm (Feltia subterranea) 16. MISSISSIPPI - Stoneville, 4/1-9, 2BL, precip. 1.93, Armyworm 113, black cutworm 18, salt-marsh caterpillar (Estigmene acrea) 3, variegated cutworm (Peridroma saucia) 50, yellow-striped armyworm (Prodenia ornithogalli) 4. TEXAS - Waco - 4/2-9, BL - Armyworm 88, corn earworm (Heliothis zea) 1, granulate cutworm 2, variegated cutworm 30, yellow-striped armyworm 1.

CORRECTIONS

CEIR 19(29):542 and 20(10):136-137 - ALFALFA WEEVIL (Hypera postica) - OKLAHOMA - Delete Oklahoma County, May 20.

CEIR 20(10):131 - EGYPTIAN ALFALFA WEEVIL (Hypera brunneipennis) - ARIZONA - Larvae averaged 500 per sweep ... should read ... Larvae averaged 500 per 100 sweeps ...

CEIR 20(11):131 - POTATO TUBERWORM (Phthorimaea operculella) ... should read TOMATO PINWORM (Keiferia lycopersicella) ... (McQueen).

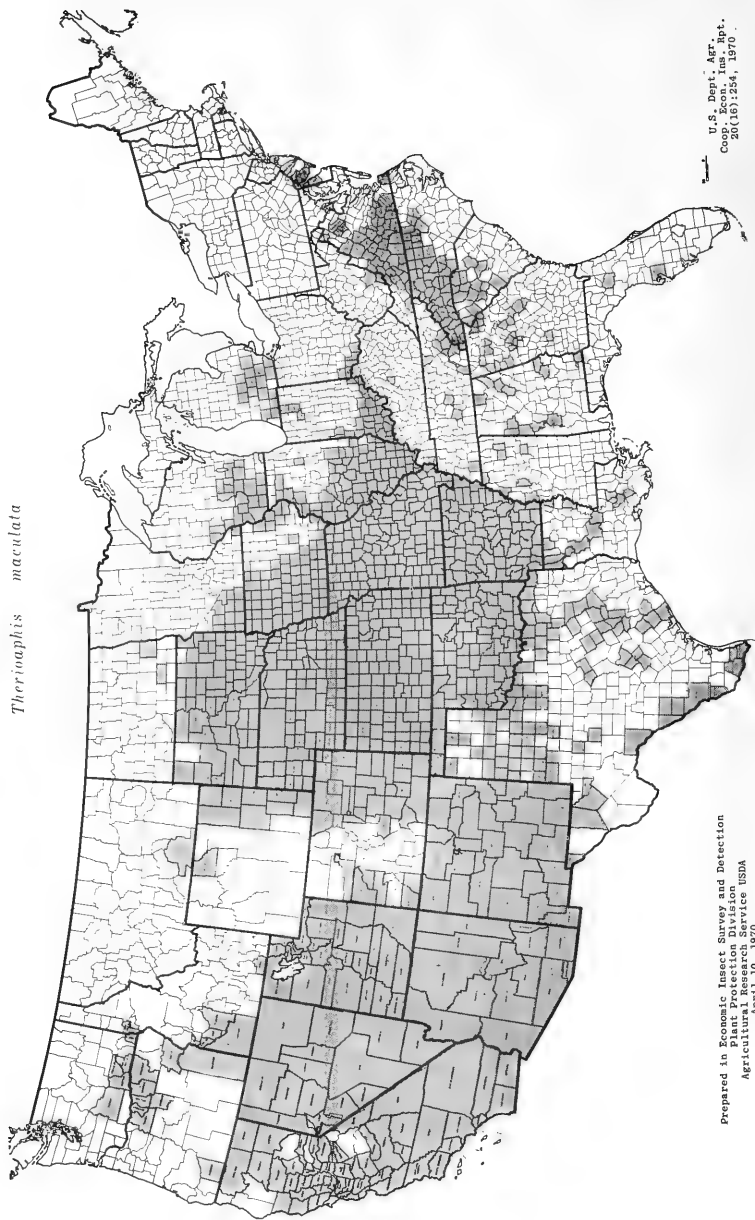
CEIR 20(13):203 - OMNIVOROUS LEAF TIER (Cnephasia longana) ... damaging cranberries ... should read ... damaging caneberries ...

Weather of the week continued from page 244.

noon, 16° warmer than the previous day. Temperatures over the West did not change so much nor so frequently. In general, maximums ranged from the 50's in the North to the 80's in the South. Temperatures in the southwestern deserts reached the 90's on most afternoons. Temperatures averaged slightly below normal in the Far Northwest, in southern Texas, and from the Great Lakes to the middle and southern Atlantic coast and 3° to 8° above normal over the northern and central Great Plains. (Summary supplied by Environmental Data Service, ESSA.)

Distribution of Spotted Alfalfa Aphid

Therioaphis maculata



Prepared in Economic Insect Survey and Detection
Plant Protection Division
Agricultural Research Service USDA
April 30, 1970

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Periodical Cicadas - Outlook for May and June 1970

Brood X of periodical cicadas (17-year race), the most widespread and abundant of the broods, is scheduled to appear this year over most of the northeast quarter of the Nation. It will be most abundant in 3 foci. Large numbers will appear suddenly about the last week of May. For approximately 6 weeks it will fill the countryside with its remarkable song, mate, lay its eggs in twigs, and pass away as suddenly as it appeared.

Brood XXX, the 13-year race of periodical cicadas, is also scheduled to appear this year in northeast Louisiana. However, there is some doubt as to the existence of this brood. This gives anyone in this area the opportunity to contribute to the knowledge of this brood.

As these insects are difficult to determine since the group was revised, Dr. R. C. Froeschner, Federal taxonomist, is anxious to receive specimens for determination. These may be sent to Dr. Froeschner, Department of Entomology, U.S. National Museum of Natural History, Smithsonian Institution, Washington, D.C. 20560. We are interested in obtaining all records possible, particularly the date of appearance, and your help will be appreciated. If you hear or see this insect, please submit the record of the exact location and date to Dr. Froeschner. Please include specimens if possible.

For a table of coincidence of broods of periodical cicadas see following page.

Brood X

Periodical Cicadas

17-year race

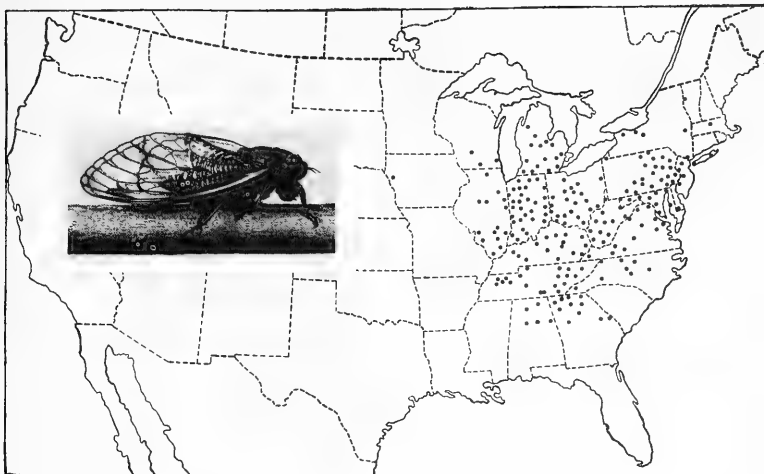


Table of Coincidence of Broods of Periodical Cicadas

	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII	XIII	XIV	XV	XVI	XVII
XVIII		1945				1932				1919				1906			
XIX			1946				1933				1920				1907		
XX				1947				1934				1921				1908	
XXI	1961				1948				1935				1922				1909
XXII		1962				1949				1936				1923			
XXIII			1963				1950				1937				1924		
XXIV				1964				1951				1938				1925	
XXV	1978				1965				1952				1939				1926
XXVI		1979				1966				1953				1940			
XXVII			1980				1967				1954				1941		
XXVIII				1981				1968				1955				1942	
XXIX	1995				1982				1969				1956				1943
XXX		1996				1983				1970				1957			
XVIII			1997				1984				1971				1958		
XIX				1998				1985				1972				1959	
XX	2012				1999				1986				1973				1960
XXI		2013				2000				1987				1974			
XXII			2014				2001				1988				1975		
XXIII				2015				2002				1989				1976	
XXIV	2029				2016				2003				1990				1977
XXV		2030				2017				2004				1991			
XXVI			2031				2018				2005				1992		
XXVII				2032				2019				2006				1993	
XXVIII	2046				2033				2020				2007				1994
XXIX		2047				2034				2021				2008			
XXX			2048				2035				2022				2009		

IMPORTANT INSECTS, MITES, AND SNAILS MOST FREQUENTLY INTERCEPTED
AT UNITED STATES PORTS OF ENTRY IN FISCAL YEAR 1968

This list was abstracted from the records compiled by the Plant Quarantine Division, ARS, USDA. These plant pests were intercepted at ports of entry from July 1, 1967, through June 30, 1968.

Only those pests intercepted 10 or more times during the year are included here. The insect, mite, and snail pests are tabulated separately. A total of 44,454 plant pests were submitted from ports of entry during the year. Of those identified during the year, 11,346 were considered of enough significance to be tabulated, compared with 11,407 the previous year. This does not include the noneconomic or the incompletely determined pests, of which a total of 390 interceptions were indexed for the files but were not added to the figures in the summary.

The complete interception list, which includes all insects, mites, snails, bacteria, fungi, nematodes, and viruses of known or potential plant quarantine significance to the United States, may be obtained from Plant Quarantine Division, Federal Center Building, Hyattsville, Maryland 20782.

<u>Insects</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Acrolepia assectella</u> (Zeller) (Yponomeu- tidae)	<u>Allium ampeloprasum</u> (Leek)	Belgium, France, Germany, Italy, Japan, Netherlands, Spain	26
<u>Adoretus sinicus</u> Burmeister (Scara- baeidae)	Aircraft Baggage Flowers (mixed) Quarters (of ship)	Asia (country-?), Guam, Hawaii, Hong Kong, Japan, Johnston Island, Okinawa, Unknown	49
<u>Aeneolamia reducta</u> (Lallemand) (CeroPi- dae)	Aircraft	Dominican Republic, Jamaica(?), Panama, Venezuela, Unknown	11
<u>Aethus indicus</u> (Westwood) (Cydniidae)	Aircraft Cargo	Asia (country-?), Japan, Okinawa, Philippines, Vietnam	42
<u>Aiolopus thalassinus</u> tamulus (Fabricius) (Acrididae)	Aircraft Cargo	Asia (country-?), Japan, Philippines, Vietnam, Wake Island	11
<u>Aleurocanthus woglumi</u> Ashby (Aleyrodidae)	<u>Citrus aurantifolia</u> (lime) leaf <u>C. aurantium</u> (sour orange) leaf <u>C. paradisi</u> (grape- fruit) leaf <u>C. sinensis</u> (sweet orange) leaf <u>Citrus sp.</u> (leaf)	Colombia(?), Dominican Republic, Mexico, Nicaragua, Venezuela	22
<u>Aleurothrixus floccosus</u> (Maskell) (Aleyrodidae)	<u>Citrus limon</u> (lemon) leaf <u>C. sinensis</u> (sweet orange) leaf <u>Citrus sp.</u> (leaf) <u>Guaajacum officinale</u> (leaf)	Dominican Republic, Mexico, Venezuela	48

<u>Insects</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Anastrepha ludens</u> (Loew) (Tephritidae)	<u>Calocarpum sapota</u> (sapote)	El Salvador, Guatemala, Honduras, Mexico	299
	<u>Chrysophyllum cainito</u> (star-apple)	Panama	
	<u>Citrus aurantifolia</u> (lime)		
	<u>C. aurantium</u> (sour orange)		
	<u>C. paradisi</u> (grape- fruit)		
	<u>C. reticulata</u> cv. (cultivar orange)		
	<u>C. sinensis</u> (sweet orange)		
	<u>Citrus</u> sp. (fruit)		
	<u>Cydonia oblonga</u> (quince)		
	<u>Malus sylvestris</u> (apple)		
	<u>Mangifera indica</u> (mango)		
	<u>Manilkara achras</u> (sapodilla)		
	<u>Prunus persica</u> (peach)		
	<u>Psidium guajava</u> (guava)		
	<u>Punica granatum</u> (pomegranate)		
	<u>Pyrus communis</u> (pear)		
<u>Anastrepha mombin- praeoptans</u> Sein (Tephritidae)	<u>Crataegus</u> sp. (hawthorn)	Antigua, Barbados, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Haiti, Honduras, Jamaica, Mexico, Nevis, Nicaragua, Panama,	477
	<u>Mangifera indica</u> (mango)		
	<u>Manilkara achras</u> (sapodilla)		
	<u>Psidium guajava</u> (guava)		
	<u>Spondias mombin</u> (yellow mombin)	Puerto Rico, Peru, St. Kitts, Trinidad,	
	<u>S. purpurea</u> (purple mombin)	Venezuela	
	<u>Terminalia catappa</u> (tropical almond)		
<u>Anastrepha serpentina</u> (Wiedemann) (Tephritidae)	<u>Calocarpum sapota</u> (mamey sapote)	El Salvador, Guatemala, Mexico, Trinidad	18
	<u>Citrus sinensis</u> (sweet orange)		
	<u>Manilkara achras</u> (sapodilla)		
	<u>Psidium guajava</u> (guava)		
	<u>Pyrus communis</u> (pear)		
<u>Anastrepha striata</u> Schiner (Tephritidae)	<u>Psidium guajava</u> (guava)	El Salvador, Guatemala	10
<u>Ancognatha scara- baeoides</u> Burmeister (Scarabaeidae)	Aircraft	Colombia, Unknown	13
	<u>Chrysanthemum</u> sp. (cut flowers)		
	<u>Dianthus caryophyllus</u> (carnation) cut flower		
	Flowers (unidentified)		
	Mail <u>Ornithogalum thyrsoides</u> (Cape chinchinchee)		

<u>Insects</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Anomala orientalis</u> Waterhouse (Scarabaeidae)	Aircraft	Asia (country-?) Japan, Vietnam, Unknown	44
<u>Anomala orientalis</u> Waterhouse (?) (Scarabaeidae)	Aircraft	Asia (country-?) Japan	10
<u>Araecorynus cumingi</u> (Jekel) (Anthribidae)	Aircraft Baggage <u>Canavalia cathartica</u> (mauna loa) Seed - unidentified	Hawaii	13
<u>Arhopalus rusticus</u> (Linnaeus) (Cerambycidae)	Wood (crates)	Italy	14
<u>Aspidiotus destructor</u> Signoret (Diaspididae)	<u>Areca catechu</u> (betel palm) <u>Cocos nucifera</u> (coconut) Leaf - unidentified Orchid (plant) <u>Terminalis catappa</u> (tropical almond)	Brazil, Costa Rica, El Salvador, Haiti, Jamaica, Japan, Mexico, Panama, Philippines, Saipan	23
<u>Asterobemisia avellanae</u> (Signoret) (Aleyrodidae)	<u>Rubus</u> sp. (leaf)	France, Unknown	60
<u>Blapstinus punctulatus</u> Solier (Tenebrionidae)	<u>Cucumis melo</u> (melon) <u>Vitis</u> sp. (grape)	Chile	12
<u>Brachycaudus helichrysi</u> (Kaltenbach) (Aphididae)	Aircraft <u>Allium</u> sp. (plant) <u>Aster</u> sp. (leaf) <u>Bellis</u> sp. (cut flower) <u>Citrus</u> sp. (leaf) Flowers (mixed) <u>Gladiolus</u> sp. (cut flowers) <u>Mentha</u> sp. (leaf)	Canada, Ecuador, Germany, Israel, Mexico, Unknown	10
<u>Bruchus ervi</u> Froelich (Bruchidae)	<u>Cicer arietinum</u> (chickpea) <u>Lens culinaris</u> (lentil) seed <u>Phaseolus vulgaris</u> (dried bean) Stores	Germany, Greece, Israel, Italy, Jordan, Turkey, Yugoslavia	13
<u>Bruchus lentis</u> Froelich (Bruchidae)	<u>Lens culinaris</u> (lentil) seed Stores	Germany, Greece, Israel, Italy, Mexico (?), Unknown	14

<u>Insects</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Cacoecimorpha pronubana</u> (Hubner) (Tortricidae)	<u>Citrus sinensis</u> (sweet orange) <u>Dianthus caryophyllus</u> (carnation) cut flower <u>Laurus nobilis</u> (laurel) leaf <u>Punica granatum</u> (pomegranate) <u>Rosa</u> sp. (cut flower)	England, France, Italy Portugal, Spain, Yugoslavia	10
<u>Callidium rufipenne</u> Motschulsky (Cerambycidae)	Cargo Cargo hold (of ship) Dunnage	Japan, Unknown	28
<u>Carpophilus lugubris</u> Murray (Nitidulidae)	<u>Capsicum</u> sp. (pepper) <u>Cydonia oblonga</u> (quince) <u>Malus sylvestris</u> (apple) <u>Prunus persica</u> (peach) <u>Zea mays</u> (corn)	Ecuador, Mexico	38
<u>Carpophilus obsoletus</u> Erichson (Nitidulidae)	Aircraft <u>Allium cepa</u> (onion) <u>A. sativum</u> (garlic) <u>Allium</u> sp. (fruit) Cargo hold (of ship) Debris (with cargo). <u>Swietenia</u> sp. (mahogany logs) <u>Tectona</u> sp. (teak logs) <u>Theobroma cacao</u> (cacao) <u>Tulipa</u> sp. (bulb)	Europe (country-?) Formosa, Germany, Ghana, Haiti, Italy, Ivory Coast, Japan, Philippines, Vietnam	17
<u>Carpophilus pilosellus</u> Motschulsky (Nitidulidae)	Aircraft Cargo Debris <u>Dioscorea</u> sp. (yam) Orchid (plant)	Brazil, Jamaica, Mexico, Panama(?)	11
<u>Caryedon serratus</u> (Olivier) (Bruchidae)	Aircraft <u>Alhagi maurorum</u> (seed) <u>Arachis hypogaea</u> (peanut) Cargo hold (of ship) <u>Cassia</u> sp. (seed) Debris (in cargo hold) <u>Tamarindus indica</u> (tamarind) seed	Africa (country-?), Cape Verde Islands, Hawaii, India, Mexico, Saudi Arabia, Unknown	16
<u>Ceratitis capitata</u> (Wiedemann) (Tephritidae)	Aircraft <u>Annona muricata</u> (soursop) <u>Capsicum</u> sp. (pepper) <u>Carica papaya</u> (papaya) <u>Citrus paradisi</u> (grapefruit)	Angola, Argentina, Azores, Brazil, Costa Rica, Cyprus, Czechoslovakia, England (?), France, Greece, Hawaii, Israel, Italy, Kenya, Malta, Panama, Peru, Portugal, Spain, Unknown	142

<u>Insects</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Ceratitis capitata</u> (continued)	<u>C. reticulata</u> cv. (cultivar orange) <u>C. sinensis</u> (sweet orange) <u>Citrus</u> sp. (fruit) <u>Coffea arabica</u> (Arabian coffee) <u>Crateagus</u> sp. (fruit) <u>Cydonia oblonga</u> (quince) <u>Eriobotrya japonica</u> (loquat) <u>Eugenia malaccensis</u> (mountain apple) <u>Ficus carica</u> (fig) Fruit - unidentified <u>Malus sylvestris</u> (apple) <u>Opuntia humifusa</u> (pricklypear) <u>Persea americana</u> (avocado) <u>Prunus armeniaca</u> (apricot) <u>P. domestica</u> (plum) <u>P. persica</u> (peach) <u>Psidium guajava</u> (guava) <u>Punica granatum</u> (pomegranate) <u>Pyrus communis</u> (pear) <u>Terminalia catappa</u> (tropical almond)		
<u>Ceroplastes rubens</u> Maskell (Coccidae)	<u>Alyxia olivaeformis</u> (maile) leaf <u>Anthurium</u> sp. (leaf)	Hawaii	17
<u>Cicadella viridis</u> (Linnaeus) (Cicadellidae)	Aircraft Cargo	Asia (country-?) Japan, Okinawa, Philippines	31
<u>Coccus viridis</u> (Green) (Coccidae)	<u>Alpinia purpurata</u> (red ginger) leaf <u>Codiaeum variegatum</u> (croton) leaf <u>Coffea arabica</u> (Arabian coffee) leaf <u>Gardenia jasminoides</u> (gardenia) leaf <u>Gerbera</u> sp. (leaf & stem) <u>Ixora</u> sp. (cutting) <u>Pleione maculata</u> (leaf) <u>Plumeria</u> sp. (leaf)	Bahamas, Haiti, Hawaii, India, St. Kitts, Trinidad, Tahiti, Unknown	35
<u>Conotelus mexicanus</u> Murray (Nitidulidae)	<u>Allium ampeloprasum</u> (leek) <u>A. cepa</u> (onion) <u>Aster</u> sp. (cut flower)	Hawaii, Mexico	69

<u>Insects</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Conotelus mexicanus</u> (continued)	<u>Beta vulgaris</u> var. <u>cicla</u> (swiss chard) <u>Chrysanthemum</u> sp. (cut flowers) <u>Gardenia jasminoides</u> (cut flowers) <u>Lactuca sativa</u> (lettuce) <u>Lathyrus</u> sp. (cut flowers) <u>Phaseolus vulgaris</u> (green bean) <u>Plumeria</u> sp. (cut flowers) <u>Raphanus sativus</u> (radish) <u>Ruta</u> sp. (foliage) <u>Zea mays</u> (corn)		
<u>Conotrachelus aguacatae</u> Barber (Curculionidae)	<u>Persea americana</u> (avocado)	Guatemala, Honduras, Mexico	13
<u>Coptosoma xanthogramma</u> (White) (Plataspidae)	Aircraft Baggage Flowers (mixed) <u>Malus sylvestris</u> (apple)	Hawaii, West Pacific, Unknown	14
<u>Cryptoblabes gnidiella</u> (Milliere) (Phycitidae)	<u>Citrus aurantifolia</u> (lime) <u>C. limon</u> (lemon) <u>C. reticulata</u> cv. (cultivar orange) <u>C. sinensis</u> (sweet orange) <u>Eriobotrya japonica</u> (loquat) <u>Ficus carica</u> (fig) <u>Palm</u> (leaf) <u>Punica granatum</u> (pomegranate)	Bermuda, Greece, Italy, Lebanon, Morocco, Portugal (?), Spain, Unknown	42
<u>Cryptophlebia leucotreta</u> (Meyrick) (Olethreutidae)	<u>Capsicum</u> sp. (pepper) <u>Citrus sinensis</u> (sweet orange) <u>Citrus</u> sp. (fruit) <u>Punica granatum</u> (pomegranate) <u>Zea mays</u> (corn)	Angola, Ivory Coast, Kenya, Liberia, Nigeria, Senegal, South Africa, Unknown	15
<u>Cryptorhynchus mangiferae</u> (Fabricius) (Curculionidae)	<u>Mangifera indica</u> (mango)	Australia, Guam, Hawaii, India, Kenya, Philippines,	70
<u>Cryptotermes brevis</u> (Walker) (Kalotermitidae)	Baggage <u>Bambusa</u> sp. (bamboo) Cargo Mail Quarters (of ship) Wood	Bahamas, Cuba, Hawaii, Philippines	14

<u>Insects</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Curculio elephas</u> (Gyllenhal) (Curculionidae)	<u>Castanea sativa</u> (chestnut)	Greece, Italy, Portugal, Spain, Yugoslavia	68
<u>Cylas formicarius</u> <u>elegantulus</u> (Summers) (Curculionidae)	<u>Ipomoea batatas</u> (sweetpotato) Quarters (of ship)	Antigua, Cuba, Dominican Republic, Ecuador, Haiti, Jamaica, Mexico, Montserrat, Puerto Rico	40
<u>Dacus dorsalis</u> Hendel (Tephritidae)	<u>Calophyllum</u> <u>inophyllum</u> (kamani) <u>Carica papaya</u> (papaya) <u>Eugenia jambos</u> (rose apple) <u>E. malaccensis</u> (mountain apple) <u>Ficus carica</u> (fig) <u>Litchi chinensis</u> (lychee) <u>Mangifera indica</u> (mango) Musa sp. (banana) <u>Persea americana</u> (avocado) <u>Psidium guajava</u> (guava) <u>Punica granatum</u> (pomegranate) <u>Terminalia catappa</u> (tropical almond)	Hawaii	57
<u>Dacus oleae</u> (Gmelin) (Tephritidae)	<u>Olea europaea</u> (olive)	Crete, Greece, Italy, Lebanon, Spain, Unknown	60
<u>Dialeurodes</u> <u>kirkaldyi</u> (Kotinsky) (Aleyrodidae)	<u>Gardenia taitensis</u> (leaf) Gardenia sp. (leaf) <u>Jasminum sambac</u> (pikake) leaf Plumeria sp. (leaf)	Hawaii, Japan, Philippines, Tahiti	11
<u>Draeculacephala</u> <u>clypeata</u> Osborn (Cicadellidae)	Aircraft	Colombia(?)	10
<u>Epinotia aporema</u> (Walsingham) (Olethreutidae)	<u>Crotalaria</u> sp. (cut flower) <u>Cucurbita maxima</u> (squash) <u>Phaseolus vulgaris</u> (string bean) <u>Vicia faba</u> (faba bean) <u>Vigna sinensis</u> (cowpea)	Chile, Colombia, Ecuador, Guatemala, Mexico, Peru, Puerto Rico, Venezuela	16

<u>Insects</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Frankliniella formosae</u> Moulton (Thripidae)	Flowers: <u>Chrysanthemum morifolium</u> , <u>Chrysanthemum</u> sp., <u>Dahlia</u> sp., <u>Delphinium</u> sp., <u>Dianthus</u> sp., <u>Gardenia</u> sp., <u>Gerberia</u> sp., <u>Gladiolus</u> sp., <u>Lilium</u> sp., <u>Rosa</u> sp., <u>Zinnia</u> sp., and unidentified flowers)	Asia (country-?) Korea, Japan	83
<u>Furcaspis oceanica</u> Lindinger (Diaspididae)	<u>Cocos nucifera</u> (coconut)	Kwajalein	14
<u>Geniates panamensis</u> Arrow (Scarabaeidae)	Aircraft	Central America (country-?), Panama, Unknown	39
<u>Geotomus pygmaeus</u> (Dallas) (Cydnidae)	Aircraft	Asia (country-?), Okinawa(?), Thailand, Vietnam	10
<u>Gryllotalpa africana</u> Palisot de Beauvois (Gryllotalpidae)	Aircraft Cargo <u>Vitis</u> sp. (grape seedlings)	Asia (country-?), Italy, Japan, Philippines, Singapore	26
<u>Gryllus bimaculatus</u> DeGeer (Gryllidae)	Aircraft Baggage Cargo Cargo hold (of ship) Mail	Asia (country-?), Hong Kong, Ireland, Italy, Japan, Libya, Okinawa, Philippines, Thailand, Vietnam, Unknown	89
<u>Gryllus capitatus</u> Saussure (Gryllidae)	Aircraft Baggage <u>Cucumis melo</u> (melon) Mail	Chile, Ecuador, Peru, South America (country-?), Unknown	11
<u>Haptoncus luteolus</u> Erichson (Nitidulidae)	<u>Ananas comosus</u> (pineapple) Debris (grain residue) Mail <u>Saccharum officinarum</u> (sugarcane) <u>Sorghum dochna</u> var. <u>technicum</u> (broom corn) <u>Viola</u> sp. (logs) <u>Zea mays</u> (corn)	Brazil, Dominican Republic, Mexico, Puerto Rico, St. Kitts, South America (country-?)	11
<u>Heterobostrychus aequalis</u> (Water- house) (Bostri- chidae)	Aircraft <u>Bambusa</u> sp. (bamboo) Cargo Cargo hold (of ship) Dunnage Mail Wood (crates)	Asia (country-?), Ceylon, Colombia, Formosa, India, Madagascar, Malaysia, Pakistan, Philippines, Singapore, Thailand, Vietnam, Unknown	415

<u>Insects</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Hybosorus illigeri</u> Reiche (Scarabaeidae)	Aircraft Baggage	Cuba, Costa Rica(?), Dominican Republic(?), El Salvador(?), Haiti(?), Jamaica, Panama, Puerto Rico, Venezuela(?), Unknown	25
<u>Hypothenemus hampei</u> (Ferrari) (Scolytidae)	<u>Coffea arabica</u> (Arabian coffee) <u>Coffea sp.</u> (coffee seed)	Africa (country-?), Angola, Brazil, Cameroon, Ethiopia, Ghana, Indonesia, Ivory Coast, Liberia, Malaysia, South America (country-?), South Africa, Tahiti	27
<u>Laspeyresia splendana</u> (Hubner) (Olethreutidae)	<u>Castanea sativa</u> (chestnut) <u>Quercus sp.</u> (oak seed)	Greece, Italy, Portugal, Rumania, Spain, Unknown	52
<u>Laspeyresia strobilella</u> (Linnaeus) (Olethreutidae)	<u>Picea sp.</u> (spruce cone) <u>Pinus sp.</u> (pine cone)	Austria, France, Germany, Hungary, Israel(?), Italy, Netherlands, Norway, Scotland, Switzerland, Yugoslavia	26
<u>Liogenys macropelma</u> Bates (Scarabaeidae)	Aircraft	Coasta Rica(?), Panama, Venezuela, Unknown	58
<u>Lobesia botrana</u> (Schiffermuller) (Olethreutidae)	<u>Vitis sp.</u> (grape)	Canary Islands, Greece, Israel, Italy, Jordan, Syria, Yugoslavia, Unknown	26
<u>Lobiopa insularis</u> (CasteInau) (Nitidulidae)	<u>Aechmea sp.</u> (plant) Aircraft Bromeliad (plant) <u>Malus sylvestris</u> (apple) <u>Mangifera indica</u> (mango) Orchid (plants) <u>Psidium guajava</u> (guava) <u>Terminalia catappa</u> (tropical almond) <u>Zea mays</u> (corn)	Bahamas, Jamaica, Mexico, Peru, Puerto Rico	15
<u>Mamestra brassicae</u> (Linnaeus) (Noctuidae)	<u>Apium graveolens</u> var. dulce (celery) <u>Brassica campestris</u> (Chinese cabbage) <u>B. oleracea</u> var. botrytis (cauliflower) <u>B. oleracea</u> var. capitata (cabbage) <u>Lactuca sativa</u> (lettuce) Vegetables (mixed)	Belgium, England, France, Germany, Italy, Japan, Netherlands, Portugal	22

<u>Insects</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Maruca testualis</u> (Geyer) (Pyraustidae)	Aircraft <u>Cajanus cajan</u> (pigeon peas) Fruit - unidentified <u>Phaseolus vulgaris</u> (string bean) <u>Sesbania grandiflora</u> (cut flowers) <u>Stronglyodon</u> <u>macrobotrys</u> (jade vine)	Guam, Hawaii, India, Panama, Puerto Rico, Surinam	38
<u>Melolontha melolontha</u> (Linnaeus) (Scarabaeidae)	Aircraft Cargo	France	20
<u>Minthea rugicollis</u> (Walker) (Lyctidae)	<u>Bambusa</u> sp. (bamboo) Wood (crates)	Asia (country-?), Ceylon, China, Formosa, India, Philippines, Vietnam, Zanzibar	10
<u>Modicogryllus confirmatus</u> (Walker) (Gryllidae)	Aircraft Cargo	Asia (country-?), Japan, Midway(?), Okinawa, Philippines, Vietnam, Wake Island	33
<u>Morganella longispina</u> (Morgan) (Diaspididae)	<u>Citrus grandis</u> (pummelo) <u>C. reticulata</u> cv. (cultivar orange) <u>C. sinensis</u> (sweet orange)	Fiji(?), Hong Kong, Japan, Tahiti, New Zealand, Unknown	27
<u>Neoconocephalus triops</u> (Linnaeus) (Tettigoniidae)	Aircraft Baggage Mail	Asia (country-?), Cuba, Dominican Republic, Japan, Panama, Venezuela, Unknown	15
<u>Neophyllaphis araucariae</u> Takahashi (Aphididae)	<u>Araucaria excelsa</u> (Norfolk Island pine)	Hawaii	13
<u>Nephotettix apicalis</u> (Motschulsky) (Cicadellidae)	Aircraft Cargo	Asia (country-?) Japan, Okinawa(?),	17
<u>Nephotettix impicticeps</u> Tshihara (Cicadellidae)	Aircraft Cargo Mail	Asia (country-?), Hong Kong, Japan, Midway, Philippines, Thailand	21
<u>Orthotomicus erosus</u> (Wollaston) (Scolytidae)	Wood (bark)	France (?), Italy, Portugal	11
<u>Ostrinia nubilalis</u> (Hubner) (Pyraustidae)	<u>Capsicum</u> sp. (pepper) <u>Citrus sinensis</u> (sweet orange) <u>Diospyros kaki</u> (kaki persimmon)	France, Hungary, Italy, Japan, Netherlands(?), Switzerland	17

<u>Insects</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Ostrinia nubilalis</u> (Hubner) (continued)	<u>Lycopersicon</u> <u>esculentum</u> (tomato) <u>Phaseolus vulgaris</u> (beans) <u>Solanum melongena</u> (eggplant) <u>Zea mays</u> (corn)		
<u>Parlatoria cinerea</u> Doane & Hadden (Diaspididae)	<u>Citrus aurantifolia</u> (lime) <u>C. grandis</u> (pummelo) <u>C. limon</u> (lemon) <u>C. paradisi</u> (grape-fruit) <u>C. reticulata</u> cv. (cultivar orange) <u>C. sinensis</u> (sweet orange)	Brazil, Ecuador, El Salvador, France, Formosa, Honduras, Hong Kong, Mexico, New Zealand, Peru, Spain, Tahiti, Trinidad	53
<u>Parlatoria zizyphus</u> (Lucas) (Diaspididae)	<u>Citrus aurantifolia</u> (lime) <u>C. grandis</u> (pummelo) <u>C. limon</u> (lemon) <u>C. paradisi</u> (grape-fruit) <u>C. reticulata</u> cv. (cultivar orange) <u>C. sinensis</u> (sweet orange) <u>Citrus</u> sp. (fruit, leaf & peel)	Asia (country-?), Australia(?), Colombia, Formosa, France, Guinea, Greece, Haiti, Hawaii, Hong Kong, India, Israel, Italy, Jamaica, Malta, Morocco, Okinawa, Philippines, Spain, Sudan, Thailand, Tunisia, Vietnam, Unknown	205
<u>Pectinophora gossypiella</u> (Saunders) (Gelechiidae)	<u>Gossypium hirsutum</u> (upland cotton) <u>Gossypium</u> sp. (cotton) <u>Hibiscus esculentus</u> (okra)	Africa (country-?), American Virgin Islands, Barbados, Brazil, Dominican Republic, Haiti, Hawaii, India, Italy(?), Jamaica, Mexico, Unknown	57
<u>Phaneroptera furcifera</u> Stal (Tettigoniidae)	Aircraft Baggage	Asia (country-?), Hawaii, West Pacific	11
<u>Pheidole megacephala</u> (Fabricius) (Formicidae)	Aircraft <u>Alpinia purpurata</u> (cut flowers) Baggage Bromeliad (plants) Cargo <u>Carica papaya</u> (papaya) <u>Codiaeum</u> sp. (leaf) <u>Coix</u> sp. (seed) Flowers (mixed) <u>Lansium domesticum</u> (langsat) Orchid (plants) Palm (plant) <u>Platyserium</u> sp. (plant) Soil	Australia, British Honduras, Costa Rica, Guam, Formosa, Hawaii, Honduras, Japan(?), Martinique, Philippines, St. Kitts, Samoa	21

<u>Insects</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Pityogenes chalcographus</u> (Linnaeus) (Scolytidae)	Dunnage Wood (bark)	Europe (country-?) Norway, Sweden	13
<u>Planococcus lilacinus</u> (Cockerell) (Pseudococcidae)	<u>Alpinia purpurata</u> (cut flowers) <u>Annona reticulata</u> (custard-apple) <u>A. squamosa</u> (sweetsop) <u>Garcinia mangostana</u> (mangosteen) <u>Lansium domesticum</u> (langsat) <u>Tamarindus indica</u> (tamarind pod) <u>Vanda joaquin</u> (cut flowers)	Guam, Philippines	18
<u>Plebeiogryllus guttiventris</u> (Walker) (Gryllidae)	Aircraft Cargo Cargo hold (of ship)	Asia (country-?), India, Japan, Okinawa, Philippines, Thailand, Vietnam, West Pacific, Unknown	93
<u>Plemeliella abietina</u> (Seitner) (Cecidomyiidae)	<u>Picea abies</u> <u>P. alba</u> (seed) <u>P. excelsa</u> (seed) <u>P. sitchensis</u> (seed) <u>Picea</u> sp. (seed)	Austria, Denmark, Finland, Germany, Italy	16
<u>Popillia japonica</u> Newman (Scarabaeidae)	Aircraft Automobile Cargo	Asia (country-?), Japan, Okinawa(?), Unknown	44
<u>Popillia lewisi</u> Arrow (Scarabaeidae)	Aircraft	Asia (country-?), Japan, Okinawa, West Pacific, Unknown	47
<u>Prays oleela</u> (Fabricius) (Yponomeutidae)	<u>Olea europaea</u> (olive)	Greece, Italy, Lebanon	10
<u>Pseudoaonidia trilobitiformis</u> (Green) (Diaspididae)	<u>Citrus aurantifolia</u> (lime) <u>C. grandis</u> (pummelo) <u>C. limon</u> (lemon) <u>Citrus</u> sp. (fruit) <u>Mangifera indica</u> (mango)	Brazil, El Salvador, Japan, Philippines, Tahiti	10
<u>Rhagoletis cerasi</u> (Linnaeus) (Tephritidae)	<u>Prunus avium</u> (mazzard cherry) <u>Prunus</u> sp. (cherry)	England, France, Germany, Israel, Italy, Portugal	23
<u>Silba virescens</u> Macquart (Lonchaeidae)	<u>Ficus carica</u> (fig)	Azores, Greece, Israel, Italy, Malta, Spain, Unknown	27

<u>Insects</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Simplicia niphona</u> Butler (Noctuidae)	Aircraft	Asia (country-?), Japan	18
<u>Sinoxylon conigerum</u> Gerstaecker (Bostrichidae)	Cargo Cargo hold <u>Haematoxylon campechianum</u> (logwood) Wood (crates)	Africa (country-?), Asia (country-?), Ceylon, Haiti, India, Italy, Pakistan, Vietnam, Unknown	51
<u>Spodoptera litura</u> (Fabricius) (Noctuidae)	Aircraft	Asia (country-?) Formosa, Guam, Japan, Philippines, Vietnam, West Pacific	64
<u>Spodoptera mauritia</u> (Boisduval) (Noctuidae)	Aircraft	Asia (country-?), Guam, Japan, Philippines, Thailand, Wake Island, West Pacific, Unknown	51
<u>Spodoptera pecten</u> Guenee (Noctuidae)	Aircraft	Asia (country-?), Guam, Japan, Midway, Philippines, Vietnam, Wake Island	51
<u>Stenoma catenifer</u> Walsingham (Stenomidae)	<u>Persea americana</u> (avocado)	Argentina(?), Chile Colombia, Ecuador, El Salvador, Guatemala, Mexico, Panama, Peru, Trinidad, Venezuela	66
<u>Taeniothrips hawaiiensis</u> (Morgan) (Thripidae)	Flowers: (<u>Camellia</u> sp., <u>Chrysanthemum</u> sp., <u>Dianthus</u> sp., <u>Ervatamia</u> sp., <u>Gardenia jasminoides</u> , <u>Gardenia</u> sp., <u>Jasminum</u> sp., <u>Plumeria</u> <u>acuminata</u> , <u>Polianthes</u> <u>tuberosa</u> , <u>Rosa</u> sp., <u>Strongylodon</u> <u>macrobotrys</u>)	Asia (country-?), Guam, Hawaii, Japan	67
<u>Teleogryllus mitriatus</u> (Burmeister) (Gryllidae)	Aircraft Cargo	Asia (country-?), Japan, Okinawa, Philippines, Vietnam, Unknown	56
<u>Tetrapriocera longicornis</u> (Olivier) (Bostrichidae)	Aircraft Cargo hold (of ship) Quarters (of ship) Wood (log)	Bahamas, Dominican Republic(?), Greece(?), Haiti, Unknown	18
<u>Thrips major</u> Uzel (Thripidae)	Flowers: (<u>Dianthus caryo-</u> <u>phyllus</u> , <u>Erica</u> sp., <u>Rosa</u> sp., and cut flowers)	Denmark, Europe (country-?), Norway, Poland, Sweden	16

<u>Insects</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Trogoderma granarium</u> Everts (Dermestidae)	<u>Acacia senegal</u> (gum arabic and gum hashabi) <u>Anogeissus latifolia</u> (gum ghatti) Bagging: (Used burlap bagging and wrappers on cotton waste and wool) Cargo: (At large with beeswax, cotton piece goods, flax-waste, goat skins, ground nut cake, licorice root, shellac, and wool) Cargo hold: (At large and under paint scales) <u>Cajanus cajan</u> (pigeon pea) <u>Cassia</u> sp. (senna pods) <u>Cicer arietinum</u> (chickpea) seed <u>Coffea arabica</u> (Arabian coffee) <u>Cuminum cyminum</u> (cumin) seed <u>Cyamopsis tetragonoloba</u> (guar gum) Debris (in hold and storeroom) <u>Oryza sativa</u> (rice) <u>Pistacia</u> sp. (pistache nut) <u>Pisum sativum</u> (pea) seed <u>Prunus cerasifera</u> (myrobalan plum) <u>Sterculia urens</u> (gum karaya) Stores (storeroom with dry stores)	Africa (country-?), Asia (country-?), Belgium, Ethiopia, France, India, Indonesia, Iran, Iraq, Lebanon, Malaysia, Pakistan, Saudi Arabia, Singapore, Sudan, Syria, United Arab Republic, Unknown	225
<u>Tryporyza incertulas</u> (Walker) (Schoenobiidae)	Aircraft	Asia (country-?), Japan, Philippines, West Pacific	32
<u>Unaspis yanonensis</u> (Kuwana) (Diaspididae)	<u>Citrus aurantifolia</u> (Lime) <u>C. aurantium</u> (sour orange) <u>C. grandis</u> (pummelo) <u>C. limon</u> (lemon) <u>C. medica</u> (citron) <u>C. paradisi</u> (grape-fruit) <u>C. reticulata</u> cv. (cultivar orange) <u>C. sinensis</u> (sweet orange) <u>Citrus</u> sp. (fruit)	Asia (country-?), Australia, Formosa, Hong Kong, Japan, Okinawa	667

<u>Insects</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Utehthesia pulchella</u> (Linnaeus) (Arctiidae)	Aircraft	Asia (country-?), Japan, Philippines, West Pacific	24
<u>Vinsonia stellifera</u> (Westwood) (Coccidae)	Citrus sp. (leaf) <u>Cocos nucifera</u> (coconut) leaf Eugenia sp. (leaf) <u>Mangifera indica</u> (mango) leaf Orchids: (Acineta humboldtii, Brassavola digbyana, Brassica sp., Cattleya sp., Epidendrum cochlea- tum, Epidendrum sp., Oncidium sp., Pleurothallis sp., and mixed orchid plants)	British Honduras, Costa Rica, El Salvador, Guatemala, Jamaica, Laos, Panama, Puerto Rico, St. Croix, Surinam, Trinidad, Venezuela	45
<u>MITES</u>			
<u>Retracrus johnstoni</u> Keifer (Eriophyidae)	<u>Chamaedorea</u> sp. (leaf)	Mexico	106
<u>Tenuipalpus japonicus</u> Nishio (Tenuipalpidae)	<u>Diospyros kaki</u> (kaki persimmon)	Japan	12
<u>Tetranychus viennensis</u> Zacher (Tetranychidae)	<u>Malus sylvestris</u> (apple)	Australia, China, Europe (country-?), Germany, Greece, Japan, Korea, Luxembourg, Soviet Union, Unknown	45
<u>SNAILS</u>			
<u>Achatina fulica</u> Bowdich (Achatinidae)	Baggage Cargo <u>Prunus</u> sp.	Formosa, Hawaii, Okinawa, Thailand, Vietnam	15
<u>Bradybaena similaris</u> (Ferussac) (Bradybaenidae)	<u>Allium ampelo- prasum</u> (leek) <u>Apium graveolens</u> var. <u>dulce</u> (celery) <u>Brassica oleracea</u> var. <u>capitata</u> (cabbage) Bromiliad (plant) Cargo <u>Heliconia</u> sp. (flower)	Bermuda, Brazil, Formosa, Hawaii, Japan, Okinawa, Vietnam	11

<u>Snails</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>		
<u>Cochlicella</u> <u>barbara</u> (Linnaeus) (Helicidae)	<u>Amaryllis</u> sp. (plant)	Algeria, Australia, Crete, Greece, France, Italy, Japan, Morocco, Spain, Tunisia	26		
	<u>Apium graveolens</u> var. <u>dulce</u> (celery)				
	Baggage				
	<u>Cichorium</u> sp. (seed)				
	<u>Lactuca sativa</u> (lettuce)				
	<u>Lens culinaris</u> (lentil)				
	<u>Rosmarinus</u> sp. (plant)				
	<u>Spinacia oleracea</u> (spinach) seed				
	<u>Apium graveolens</u> var. <u>dulce</u> (celery)			Azores, Bermuda, Crete, France, Greece, Morocco, Portugal, Spain, Yugoslavia, Unknown	20
	Automobile				
Cargo					
<u>Citrus</u> sp. (leaf)					
<u>Crassula</u> sp. (plant)					
<u>Dianthus</u> sp. (carnation plant)					
<u>Lycopersicon</u> <u>esculentum</u> (tomato)					
<u>Palm</u> (leaf)					
<u>Petroselinum</u> <u>crispum</u> (parsley)					
<u>Phaseolus vulgaris</u> (bean)					
Plant - unidentified					
<u>Quercus suber</u> (cork) bark					
Stores					
<u>Ballis</u> sp. (plant)	England, France, Greece, Italy, Libya, Spain	23			
<u>Brassica oleracea</u> var. <u>capitata</u> (cabbage)					
Cargo					
<u>Cucurbita maxima</u> (squash) seed					
<u>Cynara scolymus</u> (artichoke)					
<u>Fragaria</u> sp. (strawberry plant)					
Herbs (dried)					
<u>Onobrychis</u> <u>viciaefolia</u> (seed)					
<u>Rosmarinus</u> sp. (plant)					
Soil					
<u>Triticum</u> sp. (wheat) seed					
Cargo			Italy, Portugal, Tunisia, Turkey	11	
<u>Cichorium</u> sp. (seed)					
<u>Dianthus</u> sp. (carnation plant)					
<u>Hydrangea</u> sp. (plant)					
<u>Rosmarinus</u> sp. (plant)					
<u>Spinacia oleracea</u> (spinach) seed					

<u>Snails</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Helicella</u> <u>cretica</u> (Ferussac) (Helicidae)	<u>Apium graveolens</u> <u>var. dulce</u> (celery) Cargo Herbs - unidentified <u>Lactuca sativa</u> (lettuce) Plants - unidentified Seed - unidentified Stores <u>Vicia faba</u> (faba bean)	Algeria, Crete, France, Greece, Italy, Libya, Tunisia, Turkey, Unknown	19
<u>Helicella</u> <u>derbentina</u> (Andrzejowski) (Helicidae)	Cargo	Turkey	14
<u>Helicella</u> <u>maritima</u> (Draparnaud) (Helicidae)	Baggage Cargo <u>Cichorium endivia</u> (endive) <u>Lactuca sativa</u> (lettuce) <u>Phaseolus</u> sp. (seed) <u>Prunus persica</u> (peach) Soil Stores	Azores, France, Italy, Libya, Portugal, Spain, Turkey, Yugoslavia(?)	16
<u>Helicella</u> <u>variabilis</u> (Draparnaud) (Helicidae)	<u>Allium ampeloprasum</u> (leek) Baggage <u>Brassica oleracea</u> <u>var. botrytis</u> (cauliflower) Cargo <u>Citrus sinensis</u> (sweet orange) <u>Daucus carota</u> var. <u>sativa</u> (carrot) <u>Foeniculum vulgare</u> (fennel) <u>Rosa</u> sp. (rose) Stores	France, Israel, Italy, Spain, Turkey, Yugoslavia, Unknown	17
<u>Helix aperta</u> Born (Helicidae)	<u>Apium graveolens</u> var. <u>dulce</u> (celery) Baggage <u>Brassica oleracea</u> var. <u>botrytis</u> (cauliflower) <u>B. oleracea</u> var. <u>capitata</u> (cabbage) <u>Cynara scolymus</u> (artichoke) <u>Foeniculum vulgare</u> (fennel) <u>Lactuca sativa</u> (lettuce) Mail <u>Spinacia oleracea</u> (spinach) Stores	Belgium, Europe (country-?), Italy, Spain	36

<u>Snails</u>	<u>Host</u>	<u>Country of Origin</u>	<u>Number of Interceptions</u>
<u>Helix aspersa</u> Müller (Helicidae)	<u>Asparagus</u> sp. (leaf) Baggage <u>Brassica oleracea</u> var. <u>botrytis</u> (cauliflower) <u>B. oleracea</u> var. <u>capitata</u> (cabbage) Cargo <u>Castanea</u> sp. (chestnuts) Herbs - unidentified <u>Lactuca sativa</u> (lettuce) Leaf - unidentified <u>Mentha</u> sp. (plant) ORCHID (plant) <u>Phaseolus vulgaris</u> <u>Rosa</u> sp. (dried rose petals) Soil Stores	Australia, Azores, Europe (country-?), France, Germany, Greece, Italy, Mexico, Monaco, Morocco, New Zealand(?), Portugal, South Africa, Spain, Yugoslavia, Unknown	47
<u>Otala vermiculata</u> (Müller) (Helicidae)	<u>Allium ampelo-</u> <u>prasum</u> (leek) Automobile Baggage <u>Brassica oleracea</u> var. <u>botrytis</u> (cauliflower) Cargo <u>Foeniculum vulgare</u> (fennel) <u>Lactuca sativa</u> (lettuce) Mail <u>Petroselinum</u> <u>crispum</u> (parsley) <u>Pinus</u> sp. (pine cone) Stores	Belgium, Greece, Italy, Monaco, Netherlands, Portugal, Spain, Yugoslavia, Unknown	58
<u>Pallifera</u> <u>costaricensis</u> (Morch) (Philomycidae)	Bromeliad (plant) <u>Chamaedorea</u> sp. (leaf)	Honduras, Mexico, Nicaragua	11
<u>Theba pisana</u> (Müller) (Helicidae)	<u>Allium ampeloprasum</u> (leek) <u>Althaea</u> sp. (hollyhock seed) <u>Amaryllis</u> sp. (plant) Baggage <u>Brassica oleracea</u> var. <u>capitata</u> (cabbage) <u>Capsicum</u> sp. (pepper) Cargo <u>Citrus</u> sp. (plant) Fruit - unidentified <u>Gladiolus</u> sp. (leaf) <u>Lactuca sativa</u> (lettuce) <u>Lens culinaris</u> (lentil) <u>Petroselinum crispum</u> (parsley) <u>Rosmarinus</u> sp. (stem) Seed - unidentified Stores	Africa (country-?), Australia, Bermuda, Crete, England, France, Greece, Israel, Italy, Libya, Monaco, Morocco, Portugal, Saipan, United Arab Republic, Unknown	72

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Cooperative
**ECONOMIC INSECT
REPORT**

Issued by

PLANT PROTECTION DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE



AGRICULTURAL RESEARCH SERVICE

PLANT PEST CONTROL DIVISION

SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

All reports and inquiries pertaining to this release, including the mailing list, should be sent to:

Survey and Detection Operations
Plant Pest Control Division
Agricultural Research Service
United States Department of Agriculture
Federal Center Building
Hyattsville, Maryland 20782

COOPERATIVE ECONOMIC INSECT REPORT**HIGHLIGHTS**Current Conditions

CORN LEAF APHID heavy in New Mexico and Texas. GREENBUG heavy in Oklahoma Panhandle. SPOTTED ALFALFA APHID heavy and damaging in New Mexico, Texas, and Oklahoma. (p. 277).

SUGARCANE BEETLE expected to be heavy in some Alabama counties. (p. 278).

ALFALFA WEEVIL damaging in Texas. (pp. 278-279).

VEGETABLE WEEVIL heavy on tobacco in Georgia. (p. 280).

A DARKLING BEETLE damaged bee boards in Idaho. (p. 283).

No SCREW-WORM cases reported in the United States from December 16, 1969, through April 19, 1970. (p. 283). Last confirmed case occurred December 15, 1969. This is longest period on record the Southwest has been free of this pest. Single case confirmed in Imperial County, California, April 20 is first report for 1970.

Detection

For new county records see page 286.

Special Reports

BOLL WEEVIL survival survey for spring of 1970 shows higher numbers than the spring of 1969 in the north delta of Mississippi. Counts were lower in all areas of the Carolinas, southern Tennessee, south and central delta and hill section of Mississippi, northeastern Louisiana, and central Texas. (pp. 287-290).

Some First Occurrences of Season

BLACK CUTWORM moths and VARIEGATED CUTWORM in Ohio. MEADOW SPITTLEBUG in Indiana and Illinois. TOMATO FRUITWORM in Texas. PEAR PSYLLA eggs in New York and Michigan. AMERICAN DOG TICK in Maryland.

Reports in this issue are for week ending April 17 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance.....277

Insects Affecting

Corn, Sorghum, Sugarcane.....278	General Vegetables.....280
Small Grains.....278	Deciduous Fruits and Nuts.....281
Forage Legumes.....278	Citrus.....282
Cotton.....280	Ornamentals.....282
Tobacco.....280	Forest and Shade Trees.....282
Potatoes, Tomatoes, Peppers.....280	Man and Animals.....283
Beans and Peas.....280	Households and Structures.....284
Cole Crops.....280	Stored Products.....284

Beneficial Insects.....284

Federal and State Plant Protection Programs.....284

Hawaii Insect Report.....285

Detection.....286

Corrections.....286

Light Trap Collections.....286

Boll Weevil Survival Survey - Spring 1970.....287

WEATHER BUREAU'S 30-DAY OUTLOOK

MID-APRIL TO MID-MAY 1970

The Weather Bureau's 30-day outlook for mid-April to mid-May is for temperatures to average below seasonal normals west of the Continental Divide and also over the middle and north Atlantic Coast States and western portions of the northern Plains. Above normal temperatures are indicated for the Gulf Coast States and Florida as well as the upper Great Lakes region. Elsewhere near normal temperatures are in prospect. Precipitation is expected to exceed normal over the Great Basin, the central and south Pacific coast and northern and central portions of the Great Plains and Mississippi Valley. Subnormal amounts are indicated for the southern Plains, the gulf coast region, Florida, and northern New England. In unspecified areas near normal precipitation is expected.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price \$5.00 a year.

WEATHER FOR THE WEEK ENDING APRIL 20

HIGHLIGHTS: Last week was cloudy, cool, and wet over most of the West and cloudy, mild, and rainy over the East. Two heavy snowstorms whitened the northern Great Plains. Tornadoes struck a dozen States in the South.

PRECIPITATION: On Monday morning, April 13, a large storm centered over the western edge of the central Great Plains brought heavy snow accompanied by strong winds over the northern and central Great Plains and upper Mississippi River Valley. Vigorous thunderstorms, some with hail and high winds, occurred in the lower Mississippi River Valley. By midday Monday, snow had accumulated to 17 inches at Aberdeen, South Dakota, and to 2 feet at Chamberlain. As this storm moved eastward, another storm dumped heavy snow in the Oregon Cascades and in the Sierras in northern California. Strong winds raised clouds of dust and sand in the Great Basin. Milford, Utah, measured gusts of 72 m.p.h. By Tuesday this storm was causing heavy snow in the central Rocky Mountains. Snow accumulated to 10 inches at Rapid City, South Dakota, by Wednesday morning and by Thursday morning 18 inches lay on the ground at Minot, North Dakota. Winds gusted to 65 m.p.h. in downtown El Paso, Texas, Tuesday afternoon. Weather of the week continued on page 286.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMY CUTWORM (Chorizagrotis auxiliaris) - COLORADO - Larvae of this and Agrotis orthogonia (pale western cutworm) 0-1 per linear foot of wheat in Larimer, Weld, and Morgan Counties. (Johnson, Apr. 10). C. auxiliaris larvae now 0-2 per linear foot of wheat in Weld, Logan, Sedgwick, Phillips, Yuma, and Washington Counties. (Johnson, Pilcher).

ARMYWORM (Pseudaletia unipuncta) - NORTH DAKOTA - Moths appeared in Billings County. (Brandvik, Kaatz, Apr. 10).

ASTER LEAFHOPPER (Macrosteles fascifrons) - FLORIDA - Adults 7 in 100 sweeps of alfalfa at Gainesville, Alachua County. (Mead).

BEEF LEAFHOPPER (Circulifer tenellus) - CALIFORNIA - Control began at Taft, Kern County, March 31. About 9,721 rangeland acres harboring spring nymphs treated. Flatlands closest to cultivation receiving priority. Rapidly drying hosts required second helicopter to maintain pretreatment schedules. (Cal. Coop. Rpt.).

CORN LEAF APHID (Rhopalosiphum maidis) - NEW MEXICO - Buildup heavy on Eddy County barley. (Marek). TEXAS - Heavy, 10-20 per leaf, locally near La Pryor, Zavala County, on sorghum-Sudan grass hybrid 6 to 8 inches high. (Gardner). Moderate on barley at Bakersfield, Pecos County. (Neeb). OKLAHOMA - Ranged 3-10 per linear foot on wheat in Pottawatomie County. (Okla. Coop. Sur.).

GREENBUG (Schizaphis graminum) - TEXAS - Decreased throughout Rolling Plains; heavy in some areas of panhandle on small grains; damaged emerging grain sorghum in several southern counties March 30 to April 10. (Green et al.). Up to 77 per plant on small grain sorghum at Lancaster, Dallas County, April 14. Varied from field to field but found in all fields inspected. Leaves showing some red spotting where large colonies found. No parasites or predators. Winged forms present, indicating movement into field. Moderate on barley near Bakersfield, Pecos County. Barley throughout Bakersfield sprayed for control. (Turney, Neeb). Light and localized on 3 to 6-inch grain sorghum near Crystal City, Zavala County. Mostly on edge of fields; apparently moving into fields. (Gardner). OKLAHOMA - Up to 1,500 per linear foot in scattered wheatfields in Texas County. Up to 20 per linear foot in Major and Pottawatomie Counties. Ranged 5-20 per sweep in Grant, Noble, Payne, and Alfalfa Counties. Parasitism still high in most areas but not reported from panhandle. (Okla. Coop. Sur.). KANSAS - Range per row foot of wheat by county: Comanche 1-400 and Clark 0-200. Noneconomic in Meade, Edwards, Kiowa, Barber, Kingman, Harper, Sumner, Cowley, Greenwood, Elk, Wilson, Montgomery, Labette, and Cherokee Counties. Predators and parasites heavy on all infested wheat. (Martinez, Redding). NEBRASKA - Two specimens in suction trap at Lincoln, Lancaster County, April 15-16. No activity observed on wheat. (Keith).

POTATO PSYLLID (Paratrioza cockerelli) - CALIFORNIA - Heavy on potato plantings at Edison, Kern County. (Cal. Coop. Rpt.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - NEW MEXICO - Alfalfa in Socorro County treated. (Armijo). TEXAS - Heavy, damaged alfalfa in Wilbarger County. (Boring, Apr. 10). OKLAHOMA - Ranged 400-1,500 per square foot of crown on alfalfa checked in Tillman and Harmon Counties. Heavy in Mayes County. Up to 30 per square foot in Payne County. (Okla. Coop. Sur.).

TOBACCO BUDWORM (Heliothis virescens) - ALABAMA - Numerous adults in flight in cotton field in Monroe County. Recently emerged from pupation since no larvae in hundreds of sweeps of clover and vetch throughout south and central areas. (McQueen).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (*Ostrinia nubilalis*) - NEW YORK - Found 25 larvae in stalks of sweet corn at Poughkeepsie, Dutchess County, April 8. Overwintered survival about normal. Significant moth flight will begin in late May. (N.Y. Wkly. Rpt., Apr. 13). SOUTH DAKOTA - Percent larval survival by county: Lincoln ranged 60-90 (averaged 75) and Union ranged 80-100 (averaged 87.5). (Jones).

BLACK CUTWORM (*Agrotis ipsilon*) - OHIO - Moths first emerged April 14 at Wooster, Wayne County. (Rings).

CORN FLEA BEETLE (*Chaetocnema pulicaria*) - NEW YORK - Expect practically no corn flea beetles or Stewart's bacterial wilt on early sweet corn in mid-Hudson area in 1970. (N.Y. Wkly. Rpt., Apr. 13).

SUGARCANE BEETLE (*Euetheola rugiceps*) - ALABAMA - Adults killed 2-5 percent of 6 to 8-inch corn in large field within newly cleared fence line area in Monroe County. Several hundred adults about well lighted buildings in Montgomery and Autauga Counties. Heavy adult population explosion expected in Dallas, Autauga, and Montgomery Counties. Adults numerous in Mobile County. (Brackin et al.).

CHINCH BUG (*Blissus leucopterus*) - TEXAS - Light to heavy, widespread throughout Jackson County on young grain sorghum. Many infested fields treated. (Wilson).

YELLOW SUGARCANE APHID (*Sipha flava*) - TEXAS - Generally light on grain sorghum in east Willacy County. (Deer).

SMALL GRAINS

PALE WESTERN CUTWORM (*Agrotis orthogonia*) - COLORADO - First to third instars 0-5 (averaged 0-1) per linear foot of wheat in Weld, Logan, Sedgwick, Phillips, Yuma, and Washington Counties. Controls used in one field. (Johnson, Pilcher). WYOMING - Larvae 0-2 (averaged less than 1) per linear foot in 4 wheatfields in Platte and Laramie Counties. Larvae small and difficult to find. (Parshall). NEBRASKA - No damage in southwest district. Activity reduced by cold weather. (Keith).

ENGLISH GRAIN APHID (*Macrosiphum avenae*) - CALIFORNIA - Ten per leaf scattered over barley field at Oildale, Kern County. (Cal. Coop. Rpt.). TEXAS - Light on heads of wheat near Floresville, Wilson County. (Bippert).

AN APHID (*Rhopalosiphum padi*) - TEXAS - Infested several acres of small grain in Dallas and Denton Counties. Parasitism by small wasp noted in Dallas County. (Turney). OKLAHOMA - Ranged 4-20 per sweep of oats checked in Noble County. (Okla. Coop. Sur.).

WINTER GRAIN MITE (*Penthalaeus major*) - KANSAS - Moderate to heavy on wheat in Labette and Wilson Counties. Light on wheat in Kingman, Sumner, Greenwood, and Montgomery Counties. (Redding). OKLAHOMA - Heavy on wheat at Morrison, Noble County. Heavy in margins of some wheat in Kay County. (Okla. Coop. Sur.).

BROWN WHEAT MITE (*Petrobia latens*) - KANSAS - Light on wheat in Edwards, Kiowa, Comanche, Barber, Clark, and Meade Counties. (Martinez).

FORAGE LEGUMES

ALFALFA WEEVIL (*Hypera postica*) - IDAHO - First eggs of season on alfalfa near Wilder, Canyon County. (Homan). CALIFORNIA - *Hypera* sp. larvae heavy on 40-acre alfalfa planting at Ripon, San Joaquin County. (Cal. Coop. Rpt.). TEXAS - Alfalfa weevil damaging alfalfa and clovers in many south, central, and north areas. Collected in Milam, McLennan, Falls, Colorado, Frio, and Zavala Counties for new county records. (Green et al., Apr. 10). Larvae and adults currently medium to

heavy on Tarrant County alfalfa; much damage. (Turney, Matthies). ARKANSAS - Larvae 44 in 100 sweeps in Washington County in field with 6 in 100 sweeps last week. Only 1 adult in 100 sweeps. (Boyer). Larvae 60-380 in 100 sweeps with few adults in Mississippi County. (Dumas). MISSISSIPPI - Larvae 118 per 20 stems of alfalfa in Pontotoc County. (Sartor). ALABAMA - Pupating on burclover, vetch, and white, crimson, and other clovers throughout south and central areas. (McQueen). FLORIDA - Larvae 6 per 100 sweeps on second-growth alfalfa at Gainesville, Alachua County. (Mead). TENNESSEE - First to third instars in east and central areas. Little damage present. (Burns, Edwards, et al.). MISSOURI - Larvae ranged 3-16 per square foot in south-central area. Adults mating and ovipositing in all fields checked here. (Munson). ILLINOIS - Larvae found as far north as Jasper County (2 per 100 sweeps) and Jackson County (10 per 100 sweeps). Highest, 42 per 100 sweeps, in Pulaski County; not serious. Damage light. Adults as far north as Champaign County (27 per 100 sweeps). (Ill. Ins. Rpt.). INDIANA - Cool weather slowed development. Larvae taken by Tullgren funnel extraction mostly second instar. Daytime collections yielded no more than 4 adults per 5 sweeps in southwest district; adults 0-2 per 5 sweeps after dark in Jackson and Lawrence Counties. (Meyer). OHIO - Counts at Castalia, Erie County, showed 10 eggs per square foot April 16, below 1969 counts of 25 per square foot. Majority of eggs oviposited recently, indicating spring oviposition begun in northern area. (Flessel). VIRGINIA - First instars very light in alfalfa field in Campbell County. (Allen). MARYLAND - Hatching retarded due to unseasonably cool spring. (U. Md., Ent. Dept.).

CLOVER LEAF WEEVIL (Hypera punctata) - ILLINOIS - Larvae found as far north as Cumberland County; averaged 4 per square foot. Highest count, 84 per square foot, in Pulaski County. Damage less than 2 percent where counts high. (Ill. Ins. Rpt.).

GREEN CLOVERWORM (Plathypena scabra) - ALABAMA - Larvae 1 per sweep on crimson clover, Yuchi clover, and other legumes throughout south and central areas. (McQueen). OKLAHOMA - First 2 larvae of season on alfalfa in Alfalfa County April 8. (Okla. Coop. Sur.).

PEA APHID (Acyrtosiphon pisum) - TEXAS - Moderate to heavy on Pecos County alfalfa. Some fields sprayed. Light to medium on Tarrant County alfalfa; no damage. (Neeb, Turney). OKLAHOMA - Heavy on Mayes County alfalfa. Moderate to heavy in Harmon and Tillman Counties. Ranged 100-500 per square foot in Grant, Kay, Noble, and Alfalfa Counties; 5-15 per square foot in Pottawatomie County. (Okla. Coop. Sur.). KANSAS - Ranged 100-600 per 15 sweeps of alfalfa in Elk, Montgomery, Wilson, Cowley, Sedgwick, and Sumner Counties. (Redding). MISSOURI - Increasing in south-central area. Ranged 10-80 per 10 sweeps of alfalfa. (Munson). INDIANA - Immatures 0-1 per 5 sweeps in south-central and southwest districts. One alate taken in Tullgren funnel extraction from Gibson County sample. (Meyer).

COWPEA APHID (Aphis craccivora) - NEW MEXICO - Alfalfa in Socorro County treated. (Armijo). Damaging alfalfa in Valencia County. (Romo).

TARNISHED PLANT BUG (Lygus lineolaris) - FLORIDA - Adults 25 and nymphs 4 in 100 sweeps of alfalfa at Gainesville, Alachua County. (Mead). ALABAMA - Nymphs heavy and adults light on crimson clover throughout south and central areas. Ranged 2-8 per sweep in roadside and field clover where seed heads developing. Numbers per acre appear normal and numerous adults should be present to move to nearby cotton when clover begins to mature and cotton begins to fruit. (McQueen). INDIANA - Adults averaged 3 per 5 sweeps in 50 percent of fields in southwest district. None in remainder of southwest nor in south-central. (Meyer).

MEADOW SPITTLEBUG (Philaenus spumarius) - INDIANA - First instars in half of fields checked in southwest district, in one field in south-central, and in no fields in southeast. Square-foot samples yielded up to 23 nymphs in southwest district, averaging 9 per square foot in fields where found. (Meyer). ILLINOIS - Hatching in Cumberland County; no spittle masses yet. (Ill. Ins. Rpt.).

BROWN WHEAT MITE (*Petrobia latens*) - NEW MEXICO - Damaging alfalfa in Eddy and Socorro Counties. Fields in Socorro County treated. (Marek, Armijo).

COTTON

BOLL WEEVIL (*Anthonomus grandis*) - ALABAMA - Cotton up to stand on 1 of 21 farms in 6 counties. One weevil collected from this farm in Dallas County. (McQueen).

COTTON FLEAHOPPER (*Pseudatomoscelis seriatus*) - TEXAS - Large numbers in isolated fields of small cotton in lower Rio Grande Valley. (Deer).

COTTON APHID (*Aphis gossypii*) - ALABAMA - Nymphs 1-50 on 50-80 percent of stand on one farm in Dallas County. Winged forms plentiful. No parasites or predators. (McQueen).

A SPIDER MITE (*Tetranychus* sp.) - TEXAS - Damage to small cotton in lower Rio Grande Valley. Some treatment required in isolated fields. (Deer).

TOBACCO

VEGETABLE WEEVIL (*Listroderes costirostris obliquus*) - GEORGIA - Larvae light to heavy in plant beds across tobacco belt. (French). Adults heavy on transplants in Brantley County field. (Loyd).

YELLOW-STRIPED ARMYWORM (*Prodenia ornithogalli*) - GEORGIA - Light in several Lanier County fields. (Strickland, French).

CABBAGE LOOPER (*Trichoplusia ni*) - GEORGIA - Light in Lanier County. (Strickland, French).

POTATOES, TOMATOES, PEPPERS

TOMATO FRUITWORM (*Heliothis zea*) - TEXAS - Appearing in fields beginning to fruit in lower Rio Grande Valley. (Deer).

TOBACCO FLEA BEETLE (*Epitrix hirtipennis*) - CALIFORNIA - Adults medium on leaves of 5-acre tomato planting at Ontario, San Bernardino County. (Cal. Coop. Rpt.).

BEANS AND PEAS

ALFALFA LOOPER (*Autographa californica*) - WASHINGTON - First capture of adults April 7 by pheromone attractant traps in pea-growing area around Walla Walla, Walla Walla County. (Halfhill).

COLE CROPS

IMPORTED CABBAGEWORM (*Pieris rapae*) - NEBRASKA - First adult April 13 in Lancaster County. (Keith).

THRIPS - NEW MEXICO - Problem as populations increase on Eddy County cabbage. (Marek).

GENERAL VEGETABLES

VARIEGATED CUTWORM (*Peridroma saucia*) - OHIO - Moths first emerged April 15 at Wooster, Wayne County. (Rings).

GREEN PEACH APHID (*Myzus persicae*) - MARYLAND - Spring buildup on spinach delayed by cool weather. (U. Md., Ent. Dept.).

THRIPS - NEW MEXICO - Seed onions in Mesilla Valley required treatment. (N.M. Coop. Rpt.).

DECIDUOUS FRUITS AND NUTS

PLUM CURCULIO (Conotrachelus nenuphar) - ALABAMA - Adults emerged from hibernation. On wild plums and in orchards throughout south and central areas. Egg laying much lighter than in 1969 on wild plums on roadsides and field borders; only 2-15 percent of plums affected. Some egg laying on peach and plums in commercial orchard in Autauga County. (McQueen). GEORGIA - Adults heavy on unsprayed fruit trees in Peach County. (Payne).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - TEXAS - Heavy on individual peach, plum, and cherry trees in Rusk and Limestone Counties. Small number of infested trees in Rusk County. (Coster, Brown, Apr. 10). OKLAHOMA - Larvae about one-third grown; very common on wild plum in Major County. (Okla. Coop. Sur.). GEORGIA - Heavy on wild cherry trees over south area. (Womack, French). VIRGINIA - Small larvae feeding on apple foliage in Montgomery County April 12. Tents on wild cherry in Roanoke County April 16. (Allen). MARYLAND - Newly hatched larvae active throughout central, south, and Eastern Shore counties. (U. Md., Ent. Dept.). WEST VIRGINIA - First larvae in Fayette County April 6 in New River Gorge. Tents ranged 9-25 per wild cherry. First noted in Kanawha County April 9 and in Monongalia County April 15. (For. Ins.-Dis. Sur.). PENNSYLVANIA - First hatch of season. Only two egg masses on over 150 wild cherry trees at Chamber Hill, Dauphin County. These trees heavily infested last few years. Many old egg masses observed. (Sleesman, Apr. 9). OHIO - Newly hatched larvae on wild cherry in Adams County. New leaves beginning to appear and tent size less than 2 inches in diameter. (Roach, Apr. 14).

APPLE GRAIN APHID (Rhopalosiphum fitchii) - INDIANA - Hatching on apple in La Porte and Tippecanoe Counties. (Matthew). OHIO - First observed April 11 on green tips of partly opened apple buds at Columbus, Franklin County. On 7 of 10 Jonathan apple buds April 14 at Carroll, Fairfield County. (Holdsworth). PENNSYLVANIA - Few newly hatched nymphs on apple buds in Pike County. (Gesell, Apr. 13).

PEAR PSYLLA (Psylla pyricola) - NEW YORK - Adults active April 8-9. Some eggs laid in Ulster County. Adults in Monroe County. (N.Y. Wkly. Rpt.). MICHIGAN - Overwintered adults on pear April 9 in southwest area; mating common in Berrien County. Eggs currently moderate to heavy on pear in Berrien and Van Buren Counties. (Thompson).

SAN JOSE SCALE (Aspidiotus perniciosus) - CALIFORNIA - Heavy on apple nursery stock at Willows, Glenn County. (Cal. Coop. Rpt.).

EUROPEAN RED MITE (Panonychus ulmi) - SOUTH CAROLINA - Larvae and nymphs on apples April 9 in Anderson County. (Nettles et al.). NEW YORK - Eggs appear abundant in Monroe County. (N.Y. Wkly. Rpt., Apr. 10). WASHINGTON - First-generation nymphs from overwintered eggs on apples in pink stage April 15 at Moxee, Yakima County. (Gregorich).

A SPIDER MITE (Tetranychus mcdanieli) - WASHINGTON - First overwintered adults on apples in pink stage April 7 at Yakima, Yakima County. (Gregorich).

PECAN NUT CASEBEARER (Acrobasis caryae) - ALABAMA - Larvae light on many pecan trees in Henry, Covington, Monroe, Dallas, Montgomery, and Autauga Counties. None entered new growth stems. Control efforts for this pest, aphids, and pecan diseases will begin in Dallas County on several hundred acres next week. (Alsbrook, Kirkpatrick, et al.).

APHIDS - ALABAMA - Monelliopsis spp. light on all pecan trees in 6 counties throughout south and central areas. Sufficient on few trees to produce honeydew residue. (Alsbrook et al.). Few alates of Myzocallis caryaefoliae (black pecan aphid), no nymphs, on few pecan trees in Monroe and Dallas Counties. (McQueen).

CITRUS

CITRUS RED MITE (Panonychus citri) - FLORIDA - Eggs and adults moderate on 33 percent of 300 nursery plants at Gibsonton, Hillsborough County. (Simmons).

ORNAMENTALS

A PTEROPHORID MOTH (Platyptilia antirrhina) - CALIFORNIA - Larvae 1 per stem in snapdragon plants at Oildale, Kern County. (Cal. Coop. Rpt.).

AN ARMORED SCALE (Phenacaspis cockerelli) - FLORIDA - Severe on 50 percent of 500 pigmy date palms (Phoenix roebelenii) in nursery at Bradenton, Manatee County. (Schmidt, Apr. 9).

A MEALYBUG (Pseudococcus aberrans) - CALIFORNIA - One adult and one immature per stem on Juniperus procumbens at Oildale, Kern County. This is a new county record. (Cal. Coop. Rpt.).

A MEALYBUG (Pseudococcus obscurus) - CALIFORNIA - Heavy on Buxus harlandi nursery stock at Chino, San Bernardino County. (Cal. Coop. Rpt.).

SPRUCE SPIDER MITE (Oligonychus ununguis) - CALIFORNIA - Eggs, nymphs, and adults, over 100 per limb, on Juniperus procumbens and 500 per limb on J. sabina var. tamariscifolia at Oildale, Kern County. (Cal. Coop. Rpt.).

FOREST AND SHADE TREES

ROUNDHEADED PINE BEETLE (Dendroctonus adjunctus) - NEVADA - Adults active in Spring Mountains, Clark County. Spring flight apparently occurred. (Long, Zoller).

WEEVILS - CALIFORNIA - One Scythropus californicus adult per needle on 3 acres of Monterey and ponderosa pines at Laytonville. Infested 37 acres of Monterey pine at Fort Bragg, Mendocino County. (Cal. Coop. Rpt.). ALABAMA - Adults of Pachylobius picivorus and Hylobius pales (pales weevil) left hibernation. Beginning to occur on pines in Mobile County. (Brackin, Seibels).

A CONIFER APHID (Cinara curvipes) - CALIFORNIA - Unusually abundant on white firs at Auburn, Placer County. (Cal. Coop. Rpt.).

TENT CATERPILLARS (Malacosoma spp.) - FLORIDA - Fully grown M. disstria (forest tent caterpillar) larvae crawling on streets and sidewalks, evidently seeking cocooning locations at Gainesville, Alachua County. (Hetrick). TENNESSEE - First Malacosoma spp. larvae and tents noted in east and central areas. No damage. (Gordon, Greene). CALIFORNIA - M. californicum californicum (western tent caterpillar) larvae and adults 500 per oak tree on library grounds at Fairfield, Solano County. (Cal. Coop. Rpt.).

CANKERWORMS - NORTH DAKOTA - Paleacrita vernata (spring cankerworm) males appeared at Medora, Billings County. (Brandvik, Kaatz, Apr. 10). MINNESOTA - P. vernata moth activity declined at St. Paul, Ramsey County. Expect much heavier populations in St. Paul. Spray program anticipated. (Minn. Pest Rpt.). MICHIGAN - Alsophila pometaria (fall cankerworm) counts increasing rapidly in blacklight traps. (Newman, Apr. 13).

AN OAK KERMES SCALE (Kermes galliformis) - SOUTH CAROLINA - Caused much damage to live oaks in 1969 at Beaufort, Beaufort County. Current heavy parasitism and heavy hail storm (knocked about half of scales off trees) possibly will give enough control in 1970. (Thomas, Apr. 15).

MAN AND ANIMALS

HORN FLY (*Haematobia irritans*) - ALABAMA - Ranged 200-500 per animal in herd of 100+ beef cows in Henry County; few or none in other herds. Large herd in Autauga County has 100+ per animal. Light on cattle in Henry, Covington, Monroe, Dallas, Montgomery, and Autauga Counties with high numbers in some herds. (McQueen). TEXAS - Medium to heavy, widespread over Jackson County. Spraying underway throughout county. (Wilson). OKLAHOMA - Ranged 50-100 per head on Payne County cattle and 25-60 per head in Major County. (Okla. Coop. Sur.).

STABLE FLY (*Stomoxys calcitrans*) - OKLAHOMA - Up to 5 per head on cattle checked in Payne County. (Okla. Coop. Sur.). NEBRASKA - Activity very light in Lancaster County. No flies on animals in 2 feedlots April 16, but few flies on resting areas. (Keith).

FACE FLY (*Musca autumnalis*) - CALIFORNIA - Thousands emerging from hibernation; clustering on walls, automobiles, and equipment. Ranged 1-20 on dairy cattle at Anderson, Shasta County. (Cal. Coop. Rpt.).

MOSQUITOES - TEXAS - Early flights of *Culex salinarius* and *Aedes sollicitans* March 2 and 6. Adults numerous at Sabine Pass. Landing rate 30 per minute March 19. One *Culex restuans* in light trap. *Anopheles crucians* numerous in light trap. *Culiseta inornata* active throughout March. (Jefferson County Mosq. Cont. Dist.).

BLACK FLIES - GEORGIA - Heavy; serious nuisance to cattle in Spalding and Long Counties. (Snoddy).

SCREW-WORM (*Cochliomyia hominivorax*) - No cases reported in U.S. April 12-18. Total of 81 cases reported in portion of Barrier Zone in Republic of Mexico as follows: Sonora 59, Chihuahua 4, Coahuila 1, Tamaulipas 17. Total of 10 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 8,858,000; Mexico 140,100,000. (Anim. Health Div.).

CATTLE GRUBS (*Hypoderma* spp.) - NORTH DAKOTA - Grubs 1-9 (averaged 5.6) per animal on 52 percent of 21 head at Dickinson, Stark County. Grubs 1-5 (averaged 2.7) per animal on 49 percent of 53 head at Bottineau, Bottineau County. No grubs on 32 head at Minot, Ward County. (Brandvik, Kaatz). WYOMING - *H. bovis* (northern cattle grub) larvae emerged April 8 from 3 calves at Gillette, Campbell County. *H. lineatum* (common cattle grub) emergence peaked from 3 calves at Gillette, Campbell County, last half of February. Emergence began February 3 and ended last week of March. (Lloyd). COLORADO - *H. lineatum* averaged 6 per head on untreated cattle from rangeland in north-central area. (Hantsbarger, Apr. 10). OKLAHOMA - *H. lineatum* adults active in many areas. (Okla. Coop. Sur.). TENNESSEE - *H. lineatum* grubs 2.5 per head on 4 of 38 cattle in Giles County week ending April 10. (Edwards et al.).

A DARKLING BEETLE (*Tribolium madens*) - IDAHO - Thousands of adults moving out of infested alfalfa leafcutting bee nests at Wilder, Canyon County. Damaged 90 percent of nearly 150 bee boards. (Homan).

AMERICAN DOG TICK (*Dermacentor variabilis*) - MARYLAND - First adults of season on dog at Fairland, Montgomery County. (U. Md., Ent. Dept.).

FOWL TICK (*Argas persicus*) - NEW MEXICO - Problem on chicken flocks in Socorro County. (Armijo).

BROWN RECLUSE SPIDER (*Loxosceles reclusa*) - TENNESSEE - Specimen collected in Giles County for a new county record. (Edwards, Johnson, et al.). MISSOURI - Specimen collected in Clarence, Shelby County, April 6 for a new county record. (Craig).

HOUSEHOLDS AND STRUCTURES

BROWN SPIDER BEETLE (Ptinus clavipes) - IOWA - Collected from a farm home at Manchester, Delaware County, for a new county record. (Gunderson).

EASTERN SUBTERRANEAN TERMITE (Reticulitermes flavipes) - WEST VIRGINIA - Swarms observed around several homes in Kanawha County April 16. (Cole).

STORED PRODUCTS

WHITE-MARKED SPIDER BEETLE (Ptinus fur) - MINNESOTA - Heavy in animal feed plant in Otter Tail County. Believed to have started from weed screenings moved into building. (Minn. Pest. Rpt.).

BENEFICIAL INSECTS

CONVERGENT LADY BEETLE (Hippodamia convergens) - TENNESSEE - Adults increased in small grain and alfalfa fields. (Gordon). ARKANSAS - One adult taken in 100 sweeps of alfalfa in Washington County; counts lower than previously noted. (Boyer). Unspecified adults 15-20 per 100 sweeps of alfalfa in Mississippi County. (Dumas).

DAMSEL BUGS (Nabis spp.) - ARKANSAS - Adults active in northwest and northeast areas; no reproduction. (Boyer, Dumas).

A BIG-EYED BUG (Geocoris punctipes) - ARKANSAS - Occasional adult taken on alfalfa in Washington County. (Boyer).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

CARIBBEAN FRUIT FLY (Anastepha suspensa) - FLORIDA - Populations remain low; however, increases indicated in few areas. McPhail traps used in selected areas to detect early buildups in commercial citrus. (PPD South. Reg., Mar.).

CEREAL LEAF BEETLE (Oulema melanopus) - OHIO - Adults 3 per 100 sweeps on 4-inch wheat in Franklin County. (Forrester, Apr. 14). Oats in central area expected to be hit hardest and to greater extent than in 1969. (Roach).

EUROPEAN CRANE FLY (Tipula paludosa) - WASHINGTON - Confirmed in 13 positive locations in Whatcom County. Cooperative surveys continuing south and east of Blaine. (PPD, Wash. Dept. of Agric.).

GIANT AFRICAN SNAIL (Achatina fulica) - FLORIDA - Survey during March limited to counting live and dead snails on infested properties. Fourteenth treatment applied March 23-24. (PPD South. Reg.).

GRASSHOPPERS - CALIFORNIA - Third and fourth instars of Oedaleonotus enigma 15-50 per square yard on native grasslands at Coalinga, Fresno County. Area borders cultivated crops. (Cal. Coop. Rpt.). IDAHO - O. enigma and Dissosteira carolina hatching, averaging less than 1 per square yard, in Indian Cove and Bruneau area, Owyhee County. (Evans). OKLAHOMA - Hatching in rangeland areas of Major, Woodward, Blaine, Kiowa, Comanche, Stephens, and Jefferson Counties. First and second instars of Ageneotettix deorum and 2 Melanoplus species seen. (Okla. Coop. Sur.).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - MISSISSIPPI - Light on farm at New Site, Prentiss County, for a new county record. Collected by Wilson and Gregory April 14. Determined by V.H. Owens; confirmed by D.R. Smith. (PPD). LOUISIANA - Appraisal survey revealed 550,000 acres need re-treating in Bossier City, Bossier Parish, and Shreveport, Caddo Parish. TEXAS - Survey of area adjacent to infestation in Louisiana negative. (PPD South. Reg., Mar.). Light on roadside at Riomedina, Medina County, for a new county record. Collected by H.L. Bales April 9. Determined by V.H. Owens; confirmed by D.R. Smith. (PPD).

JAPANESE BEETLE (Popillia japonica) - NORTH CAROLINA - Grubs heavy in soil at Raleigh-Durham Airport; averaged 4 per square foot in soil at Smith-Reynolds Airport, Winston-Salem, Forsyth County. (PPD South. Reg., Mar.). WEST VIRGINIA - Up to 22 larvae per square foot of sod April 13 in Fayette County lawns. (Hacker).

MEXICAN FRUIT FLY (Anastrepha ludens) - TEXAS - One female recovered from trap in Hidalgo County March 24. This is lowest recovery for March since 1957-1958 season. (PPD South. Reg.).

PINK BOLLWORM (Pectinophora gossypiella) - CALIFORNIA - Release of 3,285,000 sterile moths in Coachella Valley April 10-16. First release of 243,000 sterile moths in Bakersfield area, San Joaquin Valley, April 15. (PPD).

WEST INDIAN SUGARCANE ROOT BORER (Diaprepes abbreviatus) - FLORIDA - State personnel surveyed 1,807 acres in regulated area in Orange County during March. One live and two dead beetles recovered from check block. (PPD South. Reg.).

WHITE-FRINGED BEETLES (Graphognathus spp.) - GEORGIA - Light in tobacco field in Lanier County. (Strickland, French). MISSOURI - Two Graphognathus sp. larvae collected at Portageville, New Madrid County, April 9 for first larvae of season. (Thompson).

WHITE GARDEN SNAIL (Theba pisana) - CALIFORNIA - Six treated blocks completed two-thirds of third bait application. Three surveyed blocks completed 80.2 percent of survey phase. (Cal. Coop. Rpt.).

WOOLLY WHITEFLY (Aleurothrix floccosus) - CALIFORNIA - Second treatment within Inner Zone at San Diego, San Diego County, completed. About 20 percent of third treatment completed. Second treatment made to 216 fewer properties than in first, due primarily to trees removed from properties or highway rights-of-way. (Cal. Coop. Rpt.).

HAWAII INSECT REPORT

Turf and Pasture - Larvae of a GRASS WEBWORM (Herpetogramma licarsialis) light, 3 per square foot, in pasture of Kikuyu grass at Haiku, Maui. Trace to light, 0.5 per square foot, at Waihee; no noticeable damage. Adults generally light in golf course and pastures on windward Oahu; larvae trace. (Miyahira, Ah Sam, et al.). Larvae of LAWN ARMYWORM (Spodoptera mauritia acronyctoides) light to moderate, 5 per square foot, at Mililani Memorial Park, Oahu. (Kawamura).

General Vegetables - GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) heavy in 0.75 acre of snap beans at Captain Cook, Hawaii, despite intensive sprays. As many as 500 adults and pupae per mature leaf. (Kobayashi).

Ornamentals - HAWAIIAN THRIPS (Taeniothrips hawaiiensis) heavy, over 100 adults and nymphs per blossom, in backyard gardenias at Hilo, Hawaii. (Yoshioka).

Beneficial Insects - A BRACONID WASP (Agathis sp., near cincta), introduced from Texas in 1965 and released on Oahu to control KIAWE FLOWER MOTH (Ithome concolorella), subsequently recovered at Ewa and Waianae, Oahu. Recovered for first time on Kauai from field collected I. concolorella although no releases made on this island. (Sugawa).

DETECTION

New County Records - ALFALFA WEEVIL (Hypera postica) TEXAS - Colorado, Falis, Frio, McLennan, Milam, Zavala (p. 278). BROWN RECLUSE SPIDER (Loxosceles reclusa) TENNESSEE - Giles; MISSOURI - Shelby (p. 283). BROWN SPIDER BEETLE (Ptinus clavipes) IOWA - Delaware (p. 284). IMPORTED FIRE ANT (Solenopsis saevissima richteri) MISSISSIPPI - Prentiss; TEXAS - Medina (p. 284). A MEALYBUG (Pseudococcus aberrans) CALIFORNIA - Kern (p. 282).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville, 4/10-16, BL - Beet armyworm (Spodoptera exigua) 4, black cutworm (Agrotis ipsilon) 2, granulate cutworm (Feltia subterranea) 7, salt-marsh caterpillar (Estigmene acrea) 1, tobacco budworm (Heliothis virescens) 1, variegated cutworm (Peridroma saucia) 4, yellow-striped armyworm (Prodenia ornithogalli) 1. MISSISSIPPI - Stoneville, 4/10-16, 2BL, 46-80°F., precip. 1.6 - Armyworm (Pseudaletia unipuncta) 202, black cutworm 11, salt-marsh caterpillar 106, variegated cutworm 59, yellow-striped armyworm 3. MISSOURI - Portageville, 4/11-17 - Armyworm 3; Platte County, 4/10-15 - Armyworm 3. TEXAS - Waco, 4/10-16, BL - Armyworm 153, beet armyworm 2, black cutworm 24, cabbage looper (Trichoplusia ni) 2, corn earworm (Heliothis zea) 2, granulate cutworm 15, variegated cutworm 66, yellow-striped armyworm 5.

CORRECTIONS

CEIR 20(16):271 - Utethesia pulchella should be Utthesia pulchella.

Weather of the week continued from page 276.

As the weekend approached the big storm moved northeastward into Canada. The weekend brought another snowstorm to the northern Great Plains and heavy thunderstorms and killer tornadoes to the South. At midnight Saturday, 17 inches of snow lay on the ground at Rapid City and 1 to 3 feet elsewhere in the Black Hills. The cold front set off numerous severe thunderstorms and tornadoes from Texas to Illinois and Kentucky from late Friday to Sunday afternoon. Tornadoes in the Texas Panhandle late Friday and early Saturday killed 22 persons and injured 200 others. Early Sunday afternoon a tornado ripped through Corinth, Mississippi, killed 5 persons, injured 78, and destroyed 100 residences. Other tornado reports came from Missouri, Arkansas, Louisiana, Illinois, Kentucky, and Tennessee.

TEMPERATURE: Cold northerly winds kept the temperatures down over the West last week. Temperatures averaged below normal from the Pacific Ocean to the upper and middle Mississippi River Valley and in the South to western Texas. A large area from the Great Basin to the northern and central Great Plains averaged 9° to 15° colder than normal. Maximums in the southwestern deserts remained in the high 60's and low 70's on 1 or 2 days, and at midweek in the central portions of Arizona and New Mexico dropped to the freezing mark. Butte, Montana, registered 7° Thursday morning. This was one of the coldest temperatures of the week. The weekend brought slightly warmer temperatures to the Far Northwest and cooler weather to the Northeast. Above-normal average temperatures prevailed from central Texas to Lower Michigan and eastward to the Atlantic Ocean except the middle Atlantic coast averaged slightly below normal. Parts of the Deep South averaged 3° to 7° warmer than normal. The highest temperatures of the year occurred at Catulla and Laredo, Texas, Saturday when the mercury reached 100°. Maximums near or above 80° were common along the Gulf of Mexico on almost every day of the week and minimums were above freezing south of a line from southern Iowa to southern Pennsylvania. (Summary supplied by Environmental Data Service, ESSA.)

Boll Weevil Survival Surveys - Spring 1970

Spring collections of surface ground (woods) trash samples (two square yards per sample) have been completed in six Southern States. Wherever possible, samples were taken from the same locations that were sampled in the fall of 1969. The number of boll weevil (Anthonomus grandis) adults per acre of ground trash examined and the percent survival are reported in the following paragraphs. For details of the fall (1969) hibernation survey in these six States, see CEIR 20(3):31-33.

In NORTH and SOUTH CAROLINA, samples were taken March 18 through April 8 in the same four representative areas in which examinations were made in fall 1969. In each area 30 locations (farm sites) were sampled with 3 samples being taken at each location. The areas are as follows: South-central South Carolina (Orangeburg, Dorchester, and Bamberg Counties), Coastal Plain of South and North Carolina (Florence, Darlington, and Marlboro Counties, S.C., and Scotland County, N.C.), Piedmont section of South and North Carolina (Greenville, Anderson, and Spartanburg Counties, S.C., and Mecklenburg, Cleveland, and Union Counties, N.C.), and North-central North Carolina (Northampton, Nash, Wilson, and Edgecombe Counties). The average number of live weevils per acre in these areas was 188, 188, 108, and 108, respectively. Percent survival for these areas was 4.0, 4.1, 3.4, and 3.0, respectively. Percent survival was lowest in North-central North Carolina and highest in the Coastal Plain of South and North Carolina. In Florence County, South Carolina, an average of 323 weevils per acre was found for the spring of 1970, with a winter survival of 5.4 percent. The number of weevils surviving in Florence County is the lowest since 1940. (Taft, Hopkins).

Survey in TENNESSEE was made in Hardeman, Fayette, McNairy, and Hardin Counties. Spring samples were taken under adverse weather conditions during the last week of March. No samples were taken this spring in the Tennessee River Bottom as the area where fall samples were taken had been flooded. Spring counts indicate an average of 605 live weevils per acre, a survival of 33 percent. This compares with 2,420 weevils per acre and a 32-percent survival in spring 1969. Although the number of weevils per acre is lower this spring, there is a large enough population to result in much damage if conditions are favorable for a buildup. The critical period will be about the first week of July. (Locke).

Collections in MISSISSIPPI were started March 9 and all examinations completed by March 16. Three samples were taken at each location, and 7 or 8 locations were sampled in each county. Each area was made up of 2 counties and the State was divided into the following 4 areas: Area 1 - South Delta (Sharkey and Yazoo Counties), Area 2 - Central Delta (Washington and Leflore Counties), Area 3 - North Delta (Coahoma and Panola Counties), and Area 4 - Hill Section (Holmes and Monroe Counties). Forty-five samples were taken from 15 locations in each of the 4 areas. The average number of weevils per acre in Areas 1, 2, 3, and 4 was 270, 0, 270, and 378, respectively. The State average was 229 compared with 810 in 1969, 540 in 1968, 1,525 in 1967, 1,425 in 1966, 995 in 1965, 289 in 1964, 13 in 1963, and 1,132 in 1962. The State average percent survival was 7.39 compared with 29.27 in 1969, 8.57 in 1968, 51.60 in 1967, 19.45 in 1966, 22.19 in 1965, 9.68 in 1964, 0.2 in 1963, and 13.59 in 1962. (Pfrimmer).

Collections in northeast LOUISIANA were made March 9-24. Collections were made at 45 locations in the 5-parish area as follows: Madison 20 locations, Tensas 10 locations, and 5 locations each in East Carroll, West Carroll, and Richland Parishes. A total of 135 samples was taken. The average number of weevils per acre of trash was 1,453 in Madison Parish, 1,271 in Tensas Parish, 161 in East Carroll Parish, 161 in West Carroll Parish, and 484 in Richland Parish, or an average of 1,044 for the 5-parish area. Based on the 3,557 live boll weevil adults found per acre of ground trash in the fall of 1969, winter survival in the

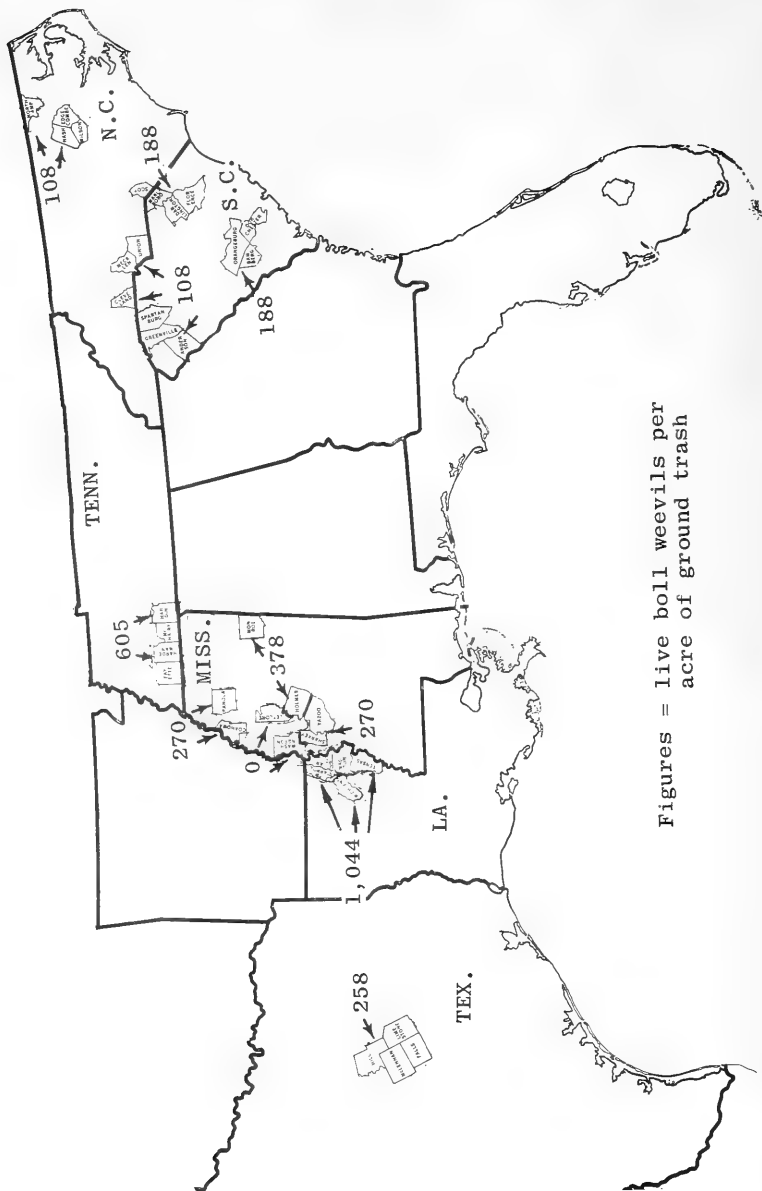
5-parish area was 29 percent. In Madison Parish there have been 10 years since 1945 that the number of weevils per acre was lower than in spring 1970. The total rainfall recorded in the area from November 24, 1969, to March 24, 1970, the period between the fall and spring ground trash collections, was 19.84 inches. In this same period there were 40 days when the minimum temperature was 32° or below and 13 days when the minimum temperature was 25° or less. The lowest temperature recorded was 15° on January 9. There were 4 days when the maximum temperature did not exceed 32°. (Cleveland et al.).

In central TEXAS, spring collections were begun March 11 and completed March 27 in Falls, Hill, Limestone, and McLennan Counties. Three samples were taken from each location and 6 or 7 locations were sampled in each county; 75 samples were taken from 25 locations in the 4 counties. The average number of weevils found per acre was 403 in Falls County, 403 in Hill County, 134 in Limestone County, and 115 in McLennan County, with an area average of 258. This compared with 1,210, 2,688, 1,075, and 1,613 found in these respective counties in the fall of 1969, with an area average of 1,647 weevils per acre. Percent survival for 1970 was 15.7 compared with 70 in 1969, 14.4 in 1968, 26.5 in 1967, 24.8 in 1966, 100 in 1965, 18.8 in 1964, 25.4 in 1963, 33.1 in 1962, 33.7 in 1961, and 31.1 in 1960. In the 11 years the survey has been conducted, only in 1964 was the indicated spring survival lower than in 1970. Fewer weevils were found in the spring of 1970 than any year except 1964. Percent survival was lower in 1970 than any year except 1968. Winter weather was mild with subfreezing temperatures on only 23 days. A minimum of 18° was recorded on January 7. Rainfall for the period December 1, 1969, through March 27, 1970, totaled 11.38 inches, or 1.85 inches above normal for the period. (Cowan).

BOLL WEEVIL SURVIVAL SURVEYS - SPRING 1970

Area (County and State)	Number of Weevils per Acre	
	1969	1970
<u>NORTH and SOUTH CAROLINA</u>		
South-central South Carolina (Orangeburg, Bamberg, and Dorchester Counties).	403	188
Coastal Plain of South and North Carolina (Florence, Darlington, and Marlboro Counties, S.C., Scotland County, N.C.).	1,775	188
Piedmont of South and North Carolina (Anderson, Greenville, and Spartanburg Counties, S.C.; Mecklenburg, Cleveland, and Union Counties, N.C.).	780	108
North-central North Carolina (Nash, Wilson, Edgecombe, and Northampton Counties).	161	108
<u>TENNESSEE</u>		
McNairy, Hardin, Hardeman, and Fayette Counties	726	605
<u>MISSISSIPPI</u>		
South Delta (Sharkey and Yazoo Counties (area 1)).	2,106	270
Central Delta (Washington and Leflore Counties (area 2)).	648	0
North Delta (Coahoma and Panola Counties (area 3)).	54	270
Hill Section (Holmes and Monroe Counties (area 4)).	432	378
<u>LOUISIANA</u>		
Northeastern (Madison, Tensas, East Carroll, West Carroll, and Richland Parishes).	2,133	1,044
<u>TEXAS</u>		
Central (Falls, Hill, Limestone, and McLennan Counties).	2,842	258

BOLL WEEVIL SURVIVAL SURVEYS - SPRING 1970



Figures = live boll weevils per acre of ground trash

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**ECONOMIC INSECT
REPORT**



Issued by

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AGRICULTURAL RESEARCH SERVICE

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SURVEY AND DETECTION OPERATIONS

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

Overwintered BEET LEAFHOPPER heavier than in 1969 in Oregon. (p. 293). BROWN WHEAT MITE damaged winter wheat and barley in Nevada. (p. 294).

ALFALFA WEEVIL spring counts heavy for first time since 1966 in northwest Arkansas, and caused complete crop loss in Pontotoc County, Mississippi. (pp. 294-295).

Larvae of a TORTRICID MOTH heaviest on filberts in several years in Oregon. (p. 298). NORTHERN FOWL MITE increasing in Arkansas. (p. 300). A GRASS BUG, heavy on wheatgrass in Utah. (p. 301).

Predictions

EUROPEAN CORN BORER population expected to be heavy in Maryland in 1970. (p. 293). Heavy flight of JUNE BEETLES in Wisconsin. (p. 294). Annoyance by woodland MOSQUITOES expected by May 1 on Maryland Eastern Shore. (p. 300).

Detection

New State records include IVY APHID from Oklahoma and a PHYLLOXERA from Arizona. (p. 298).

For new county records see page 302.

Special Reports

Insects Not Known to Occur in the Continental United States
Groundnut Bruchid (Caryedon serratus (Olivier)). (pp. 303-304).

Techniques to Determine Losses. Selected References 1969. Part V. (pp. 305-306).

Some First Occurrences of Season

IMPORTED CABBAGEWORM larvae in Georgia. CODLING MOTH in Washington. ELM LEAF BEETLE eggs in Oklahoma and Alabama. AMERICAN DOG TICK in Minnesota.

Reports in this issue are for week ending April 24 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance.....293

Insects Affecting

Corn, Sorghum, Sugarcane.....293	Cucurbits.....296
Small Grains.....294	General Vegetables.....296
Turf, Pastures, Rangeland.....294	Deciduous Fruits and Nuts.....296
Forage Legumes.....294	Other Trop. & Subtrop. Fruits.....298
Soybeans.....296	Small Fruits.....298
Cotton.....296	Ornamentals.....298
Potatoes, Tomatoes, Peppers.....296	Forest and Shade Trees.....298
Cole Crops.....296	Man and Animals.....299

Beneficial Insects.....300

Federal and State Plant Protection Programs.....300

Hawaii Insect Report.....302

Detection.....302

Light Trap Collections.....302

Insects Not Known to Occur in the Continental United States

Groundnut Bruchid (*Caryedon serratus* (Olivier)).....303

Techniques to Determine Losses. Selected References 1969. Part V.....305

WEATHER FOR THE WEEK ENDING APRIL 27

HIGHLIGHTS: Cool weather continued over the West and warm weather persisted over the East. Little or no rain fell in the Southwest and along the gulf coast. Most other areas received precipitation on several days.

PRECIPITATION: Unsettled weather occurred over much of the Nation early in the week. Rain and snow fell in the Pacific Northwest. Snow from the Dakotas to the Great Lakes spread eastward to the Northeast by midweek. Clear skies prevailed over most of the southern half of the country. A storm developed over southern Nevada and northern Arizona on Tuesday and, after dumping 8 inches of snow at Austin, Nevada, moved across Colorado to the central Great Plains, intensified, and caused a variety of miserable weather including heavy snow, thunderstorms, hail, gales, and blowing dust. Snow fell in Wyoming--7 inches at Rawlins--and western Nebraska--6 inches at Chadron in as many hours--and scattered hail fell in eastern Nebraska, Iowa, and northern Illinois. Spots in northern Illinois became covered with several inches of hail Wednesday forenoon. Winds gusted to 82 m.p.h. between Nashville and Knoxville, Wednesday afternoon. The heavy rains Thursday evening caused minor flooding in Ohio and brought some streams in Kentucky to near bankfull. The rains in the Northeast ended a 2-week dry spell. In general, weekly totals were less than 1 inch over the northwest quarter of the Nation, except 1 to more than 2 inches along the Washington and Oregon coast--1 to 2 inches over the northeast quarter, no rain or only light sprinkles from the southwestern deserts to Kansas and along the gulf coast, and 2 to more than 4 inches from northeastern Texas to the Ohio River Valley and the central and southern Appalachians.

TEMPERATURE: Winter temperatures continued over most of the West and the northern half of the Nation east of the Rocky Mountains early in the week. Subfreezing temperatures occurred as far south as the central portions of Arizona and New Mexico. Leadville, Colorado, registered 6° early Tuesday morning. In contrast, summer warmth prevailed across the Deep South. The mercury reached 100° at Laredo, Texas, Monday afternoon. The 80° line crossed Oklahoma on Monday and Tuesday afternoons and temperatures climbed to the low 80's in

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMYWORM (*Pseudaletia unipuncta*) - ILLINOIS - Moths now flying. (Sur. Bull). OHIO - First moths emerged April 23 at Wooster, Wayne County. (Rings).

ARMY CUTWORM (*Chorizagrotis auxiliaris*) - WYOMING - Ranged 0-3 (averaged 0.4) per square foot in 6 alfalfa fields of Washakie, Big Horn, and Hot Springs Counties. (Parshall). NEBRASKA - Averaged about 1 larva per yard in wheatfields checked in Deuel County April 16. Very little feeding. (Sall).

BEEF LEAFHOPPER (*Circulifer tenellus*) - WYOMING - Cooperative survey of wasteland adjacent to sugarbeet areas of Washakie and southern Big Horn Counties April 21-22. Total of 179 beet leafhoppers in 1,562 square-foot samples of weed hosts; averaged 0.12 compared to 0.11 per square foot in 1969. Hosts sparse and small due to cool, wet spring. (Lowry, Petersen, et al.). OREGON - Overwintered adults heavier than in 1969 in east Malheur County. Averaged 0.28 per square foot of winter hosts, chiefly peppergrass and flixweed. Highest, 0.62 per square foot, at Vale and Adrian. (Goeden, Apr. 17).

CORN EARWORM (*Heliothis zea*) - ARIZONA - Damaged young 15-acre field of sorghum at Somerton, Yuma County. Worst damage on end of field near weedy overgrown ditchbank. (Ariz. Coop. Sur.).

CORN LEAF APHID (*Rhopalosiphum maidis*) - ARIZONA - Averaged 20 per boot in field of 5-inch sorghum in north Gila Valley, Yuma County. (Ariz. Coop. Sur.).

GREENBUG (*Schizaphis graminum*) - ARIZONA - This and *Rhopalosiphum maidis* (corn leaf aphid) increased greatly in headed out barley and wheat. Averaged 200 per row foot in east half of Salt River Valley; 1,000 per row foot general on edges of these fields. Heads relatively uninfested. Lacewings, lady beetles, syrphid flies, braconids, and nabids active on aphid colonies. Majority of these crops appears to have made it. About 1 winged greenbug per plant on emerging sorghum adjacent to barley and wheat April 15. Surveyed Tempe, Mesa, Gilbert, Higley, Queen Creek, south Phoenix, and Laveen areas in Maricopa County. Both species built upon milo, corn, and Johnson grass at Yuma, Yuma County. (Ariz. Coop. Sur., Apr. 17). One greenbug per 5 plants 3-5 inches high in 3 sorghum fields in south Gila Valley, Yuma County. (Ariz. Coop. Sur.). TEXAS - Maximum number of greenbugs per row foot of wheat April 7, 15, 16, and 20 in panhandle counties: Hansford 500; Carson 300; Sherman, Moore, Roberts, Ochiltree, Gray, and Armstrong 200; Lipscomb and Hutchinson 100; Hartley 30; Potter 15; Hemphill 10; and Dallam, Donley, Hall, and Wheeler 5. (Daniels). Medium to heavy on young grain sorghum in Live Oak and Gonzales Counties. (Cole). KANSAS - Noneconomic on wheat in Barton, Russell, Lincoln, Saline, McPherson, Marion, Dickinson, Osborne, Clay, Geary, Morris, Butler, Harvey, and Sedgwick Counties. Predators and parasites present. (Martinez, Redding).

SPOTTED ALFALFA APHID (*Therioaphis maculata*) - OKLAHOMA - Heavy numbers and inadequate control in several southwest counties. As high as 2,000 per square foot in Greer County. Heavy in Kingfisher County. Light to moderate in Garvin and Washita Counties. (Okla. Coop. Sur.).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (*Ostrinia nubilalis*) - MARYLAND - Pupation begun in Dorchester, Wicomico, Talbot, Queen Annes, and Caroline Counties. Less than 1 percent pupated, delayed due to cool weather. Borer populations expected to be heavy this season. (U. Md., Ent. Dept.). WISCONSIN - Percent larval survival by county: Chippewa 70; Clark 75; Oconto 84; and Pierce, Marathon, Lincoln, Brown, and Manitowoc 90 or more. Populations generally low but heavy in Oconto County field. Infested every stalk in part of the field planted to 84-day corn and about 30 percent of the part planted to 90-day corn. (Wis. Ins. Sur., Apr. 17).

SUGARCANE BEETLE (Euethoela rugiceps) - ALABAMA - Adults very heavy over widespread area of Mobile County. Attracted to lights, especially in south area. Increasing at lights as far north as Lee and Autauga Counties. (Seibels et al.).

SMALL GRAINS

PALE WESTERN CUTWORM (Agrotis orthogonia) - COLORADO - Larvae, 2-5 per foot of drill row of wheat at Barnesville, Weld County. Light, 0-1 per foot, in most areas of Weld, Larimer, and Boulder Counties. (Aldredge, Johnson). NEBRASKA - Small larvae averaged about 1 per linear foot in several fields in Deuel County April 16. Damage negligible. (Sall).

ENGLISH GRAIN APHID (Macrosiphum avenae) - TEXAS - Light in wheat heads in Rusk and Morris Counties. (Coster).

BROWN WHEAT MITE (Petrobia latens) - OKLAHOMA - Heavy on dryland wheat in Jackson County. (Okla. Coop. Sur.). NEVADA - General and medium with some heavy infestations on about 3,000 acres of winter wheat and barley 4-6 inches high at Lovelock, Pershing County. Heavily infested plants injured. Irrigation used as control. (Ferraro, Martinelli).

TURF, PASTURES, RANGELAND

SCARABS - GEORGIA - Cotinis nitida (green June beetle) larvae heavy in Wayne County pastures. (Deal). ALABAMA - Phyllophaga spp. (May beetles) heavy over widespread area of Mobile County. Nuisance at lights in south area. Light numbers of adults emerging as far north as Lee and Montgomery Counties. (Seibels et al.). WISCONSIN - Phyllophaga spp. adults in soil for more than 7 days. Heavy flight anticipated. (Wis. Ins. Sur.).

A WIREWORM (Limonium infuscatus) - IDAHO - Collected in bluegrass crowns at Post Falls, Kootenai County. About 1 larva per 5 square feet of crown April 14. (Stranahan).

A GROUND PEARL (Margarodes meridionalis) - ARIZONA - More damage to grasses appearing in lawns at Phoenix, Maricopa County. (Ariz. Coop. Sur., Apr. 17). ALABAMA - Numerous "pearls" collected from centipede grass sod sample from Geneva County. (Collins).

WESTERN HARVESTER ANT (Pogonomyrmex occidentalis) - UTAH - Nests extremely numerous 5 miles south of Fairview, Sanpete County. Generally 10 to 12-foot clearings about nests and usually 30-33 feet between denuded areas. (Roberts, Parker, Apr. 20).

SOUTHERN FIRE ANT (Solenopsis xyloni) - CALIFORNIA - Adults medium on native grasses at Armona, Kings County. (Cal. Coop. Rpt.).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - NEVADA - First larvae of season in Douglas and southern Washoe Counties. Extremely light, variable, and spotted. Cool and unfavorable weather retarded development and alfalfa growth. (Adams et al.). UTAH - Adults active on warm days at Logan, Cache County. (Knowlton, Apr. 20). COLORADO - Adults very light on alfalfa in Larimer, Boulder, and Weld Counties. No eggs. Active on Western Slope. (Bulla, Johnson). WYOMING - Overwintered adults active and mating in Washakie, Big Horn, and Hot Springs Counties. Ranged 0-6 (averaged 1.5) per square foot in 6 alfalfa fields checked. (Parshall). TEXAS - Heavy enough for controls on 2 farms in Bowie County. (Coster et al.). ARKANSAS - Larvae increased greatly in Washington County; ranged 700-800 in 100 sweeps. Many first and second instars. First spring since alfalfa weevil was first found in 1966 that numbers have been high in northwest area. (Boyer). Larvae 600-1,300 per 100 sweeps in Mississippi County. (Dumas). MISSISSIPPI - Pupation about 20

percent. Complete crop loss in several areas of this county. (Sartor). TENNESSEE - H. postica damage very light in Gibson County. Damaged 25-30 percent of tips in Dyer County. (Johnson). MISSOURI - Nearly full-grown larvae 7-31 (averaged 22.2) per 10 sweeps in New Madrid County; adults 0-3 (averaged 1.2). An 80-acre field of prebloom alfalfa treated. Younger larvae 5-160 (averaged 138.4) per 10 sweeps in Cape Girardeau County; adults 0-12 (averaged 3.2). Larvae in field in 10-inch alfalfa 16-48 (averaged 27) per 10 sweeps in Ste. Genevieve County; adults 0-6 (averaged 3.2). (Hanning). ILLINOIS - Larvae 0-400 per 100 sweeps in south area. Bathyplectes spp. adults present. (Ill. Ins. Rpt.). VIRGINIA - H. postica adults averaged 10 per 100 sweeps with few samples of 23 per 100 sweeps in Montgomery County. Larvae very few and in second instar. (Pienkowski). Medium to heavy in some fields in Charlotte County; up to 400 second and third instars per 25 sweeps in one field. (Hendrick). Larvae 3-4 on 25 percent of tips examined in Botetourt County. Second instars very light, 40 per 100 sweeps, in Page County. (Allen). Second to fourth instars and overwintered adults light locally in Powhatan County. (Innes). MARYLAND - First larvae of season on 6 to 8-inch alfalfa near Cambridge, Dorchester County. Hatching appears 2 weeks or more late this season compared with previous years. (U. Md., Ent. Dept.). NEW YORK - First 3 adults on sticky boards in Tompkins County April 14. (N.Y. Wkly. Rpt.).

EGYPTIAN ALFALFA WEEVIL (Hypera brunneipennis) - ARIZONA - Disappearing from alfalfa at Yuma, Yuma County; averaged 15 per 100 sweeps. (Ariz. Coop. Sur., Apr. 17).

CLOVER LEAF WEEVIL (Hypera punctata) - OKLAHOMA - Larvae moderate to heavy; damaged alfalfa in southwest and west-central areas. (Okla. Coop. Sur.). WISCONSIN - Moderate injury by first instars appearing on new alfalfa growth. (Wis. Ins. Sur., Apr. 17).

PEA APHID (Acyrtosiphon pisum) - ARIZONA - Averaged 2,000 per 100 sweeps of alfalfa April 13-17 at Yuma, Yuma County, and currently 360 at Safford, Graham County. (Ariz. Coop. Sur.). TEXAS - Heavy on crimson clover in Gregg County. Estimated at 250 per square foot at one roadside location. Killing out spots of alfalfa in Motley County. Controls applied. (Coster, Boring). OKLAHOMA - Moderate to heavy in several northwest, north-central, and northeast counties and in few west-central, central, south-central, and southwest counties. (Okla. Coop. Sur.). ARKANSAS - Still increasing in alfalfa in northwest area; ranged 1,200-1,500 per 100 sweeps. (Boyer). KANSAS - Range per 10 sweeps of alfalfa by county: Barton 5-250; Saline and Sedgwick 0-70; Butler 0-60; Russell 5-20; Lincoln 10-50; Dickinson, McPherson, and Marion 0-30; Osborne, Morris, and Harvey 0-15. Predators and parasites present. (Martinez, Redding). NEBRASKA - Very light, 10-15 per 20 sweeps, on alfalfa in 3 Lancaster County fields. (Keith). WISCONSIN - Very low; hatch may be incomplete. (Wis. Ins. Sur.). VIRGINIA - Very few adults on Montgomery County alfalfa. (Pienkowski). Adults 4-20 per 100 sweeps in Botetourt, Page, and Frederick Counties. (Allen).

LYGUS BUGS (Lygus spp.) - ARIZONA - Average per 100 sweeps of alfalfa: 350 at Yuma April 13-17 and currently, 50 adults at Somerton, Yuma County, and 40 at Safford, Graham County. (Ariz. Coop. Sur.). COLORADO - Active on alfalfa on Western Slope. (Bulla). WYOMING - Adults active, less than 1 per square foot, on alfalfa in Washakie, Big Horn, and Hot Springs Counties. (Parshall). TEXAS - Light on crimson clover in Gregg County. (Coster). VIRGINIA - L. lineolaris (tarnished plant bug) adults numerous on Montgomery County alfalfa. Adults 12 per 100 sweeps in Page and Botetourt Counties. (Allen).

NOCTUID MOTHS - TEXAS - Plathypena scabra (green cloverworm) and Prodenia ornithogalli (yellow-striped armyworm) light on crimson clover in Gregg County. (Coster). OREGON - Autographa californica (alfalfa looper) adults 1-3 per pheromone trap at 6 sites in northeast Umatilla County April 7. (Halfhill).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - ARIZONA - Average per 100 sweeps of alfalfa: 70 at Somerton, Yuma County, and 200 at Safford, Graham County. (Ariz. Coop. Sur.).

SOYBEANS

BEAN LEAF BEETLE (Cerotoma trifurcata) - ALABAMA - Adults emerged from hibernation in heavy numbers on volunteer soybeans in several fields at Demopolis, Marengo County. Very heavy infestations have occurred on several thousand acres past 2 years in west area. (Yates et al.).

COTTON

BOLL WEEVIL (Anthonomus grandis) - TEXAS - One adult in Wilbarger County. (Boring).

BEEET ARMYWORM (Spodoptera exigua) - ARIZONA - Damaged young seedlings at Parker, Yuma County. Treated. (Ariz. Coop. Sur.).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - ARIZONA - Ten per 100 cotyledons at Somerton, Yuma County. (Ariz. Coop. Sur.).

POTATOES, TOMATOES, PEPPERS

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - ALABAMA - Adults emerged from hibernation and deposited first eggs on potatoes in Lee County. (Payne et al.).

COLE CROPS

IMPORTED CABBAGEWORM (Pieris rapae) - GEORGIA - Young larvae in Spalding County cabbage. (Dupree). UTAH - Adults active April 13 at Brigham City, Box Elder County. (Knowlton). OREGON - Adults flying April 1-7 at Klamath Falls, Klamath County. (Schuh).

CABBAGE LOOPER (Trichoplusia ni) - ALABAMA - Larvae light and localized. Larvae up to half grown with occasional pupa in part of commercial cabbage planting in Mobile County. (Bolton et al.).

CABBAGE APHID (Brevicoryne brassicae) - ALABAMA - Extremely heavy on cabbage and collards in Lee, Chambers, Clay, and Randolph Counties. (Barwood).

CABBAGE MAGGOT (Hylemya brassicae) - NEW JERSEY - Adults flying. (Ins.-Dis. Newsltr.).

CUCURBITS

MELON APHID (Aphis gossypii) - ARIZONA - Treated to prevent spread of virus to cantaloup plantings at Yuma, Yuma County. (Ariz. Coop. Sur., Apr. 17).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - ARIZONA - Averaged 10 per 100 cantaloup leaves at Somerton, Gadsden, and Gila Valley, Yuma County. (Ariz. Coop. Sur.).

GENERAL VEGETABLES

ONION MAGGOT (Hylemya antiqua) - NEW JERSEY - Adults flying. (Ins.-Dis. Newsltr.).

DECIDUOUS FRUITS AND NUTS

PEAR PSYLLA (Psylla pyricola) - NEW YORK - Egg laying still light in Ulster County, started April 16 on early blocks in Oswego County, and first eggs found April 14 in Monroe County. (N.Y. Wkly. Rpt.). UTAH - Adults active and eggs numerous in unsprayed pear orchard at Ogden, Weber County. Most pear orchards known to be infested, sprayed 2-3 weeks ago. (Davis, Knowlton, Apr. 10). Hatched

in area April 13. (Davis). WASHINGTON - First hatch April 14 at Tieton, Yakima County. (Johnson, Allan). CONNECTICUT - Adults and few eggs at New Haven, New Haven County; East Lyme, New London County; and Storrs, Tolland County. (Savos, Apr.-21).

APHIDS - CALIFORNIA - Brachycaudus persicae (black peach aphid) up to 100 per unit checked locally on peach flowers and leaves at Chico, Butte County. (Cal. Coop. Rpt.). ARIZONA - Hysteronera setariae (rusty plum aphid) general on apricot and plum trees in Salt River Valley, Maricopa County. (Ariz. Coop. Sur., Apr. 17). COLORADO - Myzus persicae (green peach aphid) light to moderate, 95 percent of eggs hatched by April 14 on peach on Western Slope. Overwintered eggs light, averaging 3-10 per 100 buds. Peaches nearing full bloom in Mesa County area. (Bulla). WISCONSIN - Rhopalosiphum fitchii (apple grain aphid) hatch begun on Prunus spp. in west Dane County April 17 compared with April 7 of last year. Low compared with other years. (Wis. Ins. Sur.). MARYLAND - Aphis pomi (apple aphid) hatched and active throughout State. No buildup expected in commercial orchards. (U. Md., Ent. Dept.).

TORTRICID MOTHS - OREGON - Choristoneura rosaceana (oblique-banded leaf roller) larvae, 2-3 per unsprayed tree, on apple and prune at Milton-Freewater, Umatilla County. None found where delayed dormant spray applied. (Burkhart, Apr. 17). COLORADO - First adult of Argyrotaenia velutinana (red-banded leaf roller) in Mesa County peach orchard April 3. (Bulla). CONNECTICUT - A. velutinana adults flying at East Lyme, New London County. (Savos, Apr. 21).

TENT CATERPILLARS (Malacosoma spp.) - NEVADA - M. californicum fragile (western tent caterpillar) light to heavy on desert almond (Prunus fasciculata) at Goodsprings, Clark County (Zoller) and on shrubs at Caliente, Lincoln County (Miller). MISSOURI - Malacosoma sp. tents 0-18 (averaged 2) per wild cherry tree in Ste. Genevieve and Perry Counties. (Hanning). TENNESSEE - M. americanum (eastern tent caterpillar) tents numerous across State. (Harris, Gordon). VIRGINIA - M. americanum tents 2-10 per wild cherry tree in Roanoke, Botetourt, Augusta, Rockingham, Rockbridge, Page, Shenandoah, Warren, and Frederick Counties. (Allen). Spotted, light infestation averaging 2 tents per tree in Isle of Wight County. (Innes). WEST VIRGINIA - M. americanum first appeared in Wetzel County April 21. Seven small tents per tree on wild black cherry. (Hacker). Total defoliation expected on wild black cherry in Kanawha, Boone, Fayette, and Raleigh Counties. (Given). CONNECTICUT - M. americanum hatch began April 17 at Storrs, Tolland County. (Savos).

PEACH TREE BORER (Sanninoidea exitiosa) - NEW JERSEY - Damage extensive in mature block of peach in Gloucester County. (Ins.-Dis. Newsltr.).

SPRING CANKERWORM (Paleacrita vernata) - OKLAHOMA - All larval instars caused moderate damage to apple trees checked in Mayes County. (Okla. Coop. Sur.).

CODLING MOTH (Laspeyresia pomonella) - WASHINGTON - First male in sex lure trap April 20 at Buena, Yakima County. (Johnson, Hudson).

CALIFORNIA PEAR-SLUG (Pristophora abbreviata) - OREGON - Eggs 1-5 in leaf tissue on undersides of many young leaves on Bosc pear trees in unsprayed check plot at Jacksonville, Jackson County, April 8. (Gentner).

PEAR THRIPS (Taeniothrips inconsequens) - UTAH - Active on pear foliage and buds at Ogden, Weber County. (Knowlton, Apr. 15).

TWO-SPOTTED SPIDER MITE (Tetranychus urticae) - COLORADO - Migrating to peach trees from orchard cover crops on Western Slope. (Bulla).

PECAN NUT CASEBEARER (Acrobasis caryae) - TEXAS - Larvae feeding in pecan terminals of new growth statewide. First pupae in Maverick County April 23, much later than in previous years. Moth emergence and egg laying will be later in 1970 than in past few years. (Green).

A TORTRICID MOTH (Archips rosana) - OREGON - Larvae general on filberts throughout Yamhill County. Heaviest in 3 or 4 years. (Roberts).

OTHER TROP. & SUBTROP. FRUITS

OLEANDER SCALE (Aspidiotus nerii) - CALIFORNIA - General on olive tree nursery stock at Walnut Creek, Contra Costa County. (Cal. Coop. Rpt.).

SMALL FRUITS

GRAPE FLEA BEETLE (Altica chalybea) - ARIZONA - Damaged grape foliage in Maricopa and Pinal Counties past few weeks. Where controls used, problem eliminated. Currently damaged grape foliage at Hyder, Yuma County. Treated. (Ariz. Coop. Sur.).

CRANBERRY WEEVIL (Anthonomus musculus) - NEW JERSEY - Very late this year. Lighter than normal and only on wild blueberry as of April 23. (Ins.-Dis. Newsltr.).

ORNAMENTALS

IVY APHID (Aphis hederæ) - OKLAHOMA - Collected on English ivy at Stillwater, Payne County, December 12, 1969. Determined by L.M. Russell. This is a new State record. When found, infestation was heavy enough to cause dieback of tips. Cold weather in late December wiped out infestation. Light numbers reappeared in past 2 weeks. (Okla. Coop. Sur.).

ARMORED SCALES - OKLAHOMA - Unaspis euonymi (euonymus scale) laying eggs on Payne County euonymus. Crawlers should be active in few days and controls will be needed. (Okla. Coop. Sur.). GEORGIA - U. euonymi heavy on euonymus and Fiorinia theae (tea scale) heavy on camellias in Tift County. (Todd).

FLETCHER SCALE (Lecanium fletcheri) - NEW YORK - Immatures on yew at Mattituck, Laurel, Jamesport, and Moriches, and on English holly at Mattituck, Suffolk County, in mid-April. Building up; should cause more problems. (N.Y. Wkly. Rpt., Apr. 20).

FOREST AND SHADE TREES

A CONIFER SAWFLY (Neodiprion pratti pratti) - WEST VIRGINIA - Heavy defoliation will occur on scattered pitch and Virginia pines in Boone, Lincoln, and Wayne Counties. Hatch started April 22 in Boone County. About 60 eggs per 6-inch branch sample of pitch pine. (W. Va. Ins. Sur.).

A CECIDOMYIID MIDGE (Cecidomyia pininopis) - OREGON - Twig dieback on native lodgepole pine in Bandon and North Bend coastal areas of Coos County. Potential for damage to lodgepole pine Christmas tree plantations. (Keir).

A PHYLLOXERA (Pineus sylvestris) - ARIZONA - About 1,000 collected on black pine February 2, 1970, by M. Lebert in nursery at Phoenix, Maricopa County. Black pine shipped in from out of State. Determined by L.M. Russell. This is a new State record. (Halstead).

PINE LEAF CHERMID (Pineus pinifoliae) - VIRGINIA - Nymphs light on pine in Montgomery County; severe in Isle of Wight County. (Allen, Jones).

ADELGIDS (Adelges spp.) - NEW YORK - A. cooleyi (Cooley spruce gall aphid) adults overwintering on Douglas-fir in Suffolk County. A. abietis (eastern spruce gall aphid) infested adjoining block of Norway spruce. (N.Y. Wkly. Rpt., Apr. 20).

PINE SPITTLEBUG (Aphrophora parallela) - FLORIDA - Nymphs scattered on stems of loblolly pines in southeast Marion County April 8. (Griffin). Determined by L.A. Hetrick. This is a new county record and southernmost record. (Fla. Coop. Sur.).

DOUGLAS-FIR ENGRAVER (*Scolytus unispinosus*) - CALIFORNIA - Loss of many young Douglas-firs in 10-acre stand in McNeal Creek Plantations, Klamath National Forest. Infestation due to thinning operation and resultant sun scald kill. (Dirkson, USFS).

SPRUCE SPIDER MITE (*Oligonychus ununguis*) - ARIZONA - Webbing and mite activity increasing on many juniper trees in Salt River Valley, Maricopa County. Heavy drenching spray of water used as control. (Ariz. Coop. Sur., Apr. 17).

TENT CATERPILLARS (*Malacosoma* spp.) - NEVADA - *M. incurvum discoloratum* light to heavy and spotted on Fremont cottonwood in Moapa and Virgin Valleys, Clark County. Some trees not infested; others heavily infested and almost entirely defoliated. Slightly below normal in Moapa Valley. (Zoller). OHIO - First instars of *M. disstria* (forest tent caterpillar) on maple in Monroe County. Most eggs appear to have hatched. (Rose). Not as common as *M. americanum* (eastern tent caterpillar) but apparently abundant in this instance. (Roach). ALABAMA - First early instars of *M. disstria* feeding on oaks at Chickasaw, Mobile County. (Robinson, Seibels). WEST VIRGINIA - First hatch of *M. disstria* on maple in Wetzell County April 21. (Hacker).

SPRING CANKERWORM (*Paleacrita vernata*) - OKLAHOMA - Light on elms in Mayes and Payne Counties. (Okla. Coop. Sur.). NORTH DAKOTA - Females and males appeared April 7 at Fargo, Cass County. Emergence about week earlier than last year. (Anderson).

ELM LEAF BEETLE (*Pyrrhalta luteola*) - TEXAS - Overwintered adults appearing on elms in Rolling Plains area. (Boring). OKLAHOMA - Adults leaving hibernation and moving to elms in most areas. Eggs light in Payne County. (Okla. Coop. Sur.). ALABAMA - Adults emerged from hibernation statewide. Depositing eggs on elms. (Eich et al.).

ALDER FLEA BEETLE (*Altica ambiens*) - WASHINGTON - Adults very abundant on small alders April 15 at Friday Harbor, San Juan County. No eggs. (Baker).

MAN AND ANIMALS

SCREW-WORM (*Cochliomyia hominivorax*) - Total of 2 cases reported in U.S. April 19-25 as follows: CALIFORNIA - Imperial; TEXAS - Brooks. Total of 41 cases reported in portion of Barrier Zone in Republic of Mexico as follows: Sonora 28, Chihuahua 8, Coahuila 1, Tamaulipas 4. Total of 32 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 12,668,000; California 160,000; Mexico 148,800,000. (Anim. Health Div.).

HORN FLY (*Haematobia irritans*) - TEXAS - Light on Stephens County livestock. Light to heavy in Victoria County. (Boring, McCombs). OKLAHOMA - Ranged 25-200 per head of cattle in Payne County and 70-120 per head in Major County. Light in Garvin County. (Okla. Coop. Sur.). ARKANSAS - Few flies on cattle in northwest area. Development later than usual. (Simco). MISSISSIPPI - Breeding in Yazoo County; averaging 100 flies per cow and 500 per bull. (Sartor).

MUSCID FLIES - ALABAMA - *Fannia canicularis* (little house fly) very heavy in nearly all homes in thickly populated area in Blount County. Help requested for source of infestation. Large broiler house, feed mill, and hog parlor nearby. (Lloyd, McCall, et al.). ARKANSAS - Few *Musca domestica* (house fly) in caged layer houses. Problem as early as February in 1969. (Simco). GEORGIA - *M. domestica* increasing in swine and caged layer operations throughout State. (Nolan).

TABANID FLIES - GEORGIA - Annoying residents of coastal area. (Snoddy, Nolan). ALABAMA - First emergence of *Tabanus* sp. adults for season in Lee County. Attempted to feed on humans. (Hayes et al.).

MOSQUITOES - GEORGIA - Adults extremely heavy and biting in Clarke and Oconee Counties. (Brannen, Nolan). MARYLAND - Woodland species, Aedes canadensis and A. grossbecki, pupated on Eastern Shore; expected to emerge April 25. Annoyance expected to start May 1. Activity of A. cantator, A. grossbecki, and A. canadensis expected to be 7-10 days later on western shore counties. (U. Md., Ent. Dept.). MINNESOTA - Far below normal temperatures restricted development. Second instar A. vexans found. Single-brooded Aedes larvae in second and third instar. (Minn. Pest Rpt.).

ITCH MITE (Sarcoptes scabiei) - IOWA - Light to heavy on hogs on farm in Story County. Heaviest on gilts wintered on pasture in shed with dirt floors. (Iowa Ins. Sur.).

NORTHERN FOWL MITE (Ornithonyssus sylviarum) - ARKANSAS - Began rapid increase in northwest area. (Simco).

HARD-BACKED TICKS - WASHINGTON - Ixodes pacificus adults collected April 15 at Friday Harbor, San Juan County. Has been reported several times from same small rocky and brushy area. (Baker). OKLAHOMA - Amblyomma maculatum (Gulf Coast tick) heavy on cattle (mostly in ears) at Mill Creek, Johnston County. Two adults taken from dog at Chouteau, Mayes County. (Okla. Coop. Sur.). DELAWARE - First Dermacentor variabilis (American dog tick) of season on dogs in New Castle County last 2 weeks. (Burbutis). MINNESOTA - First D. variabilis activity of season in Washington County. (Minn. Pest Rpt.).

BROWN RECLUSE SPIDER (Loxosceles reclusa) - TENNESSEE - Collected in Weakley and Sumner Counties for new county records. (Johnson, McCloud).

BENEFICIAL INSECTS

LADY BEETLES - ARIZONA - Hippodamia convergens (convergent lady beetle) averaged 50 per 100 sweeps of alfalfa at Somerton, Yuma County. (Ariz. Coop. Sur.). ALABAMA - Coleomegilla maculata fuscilabris and H. convergens adults very heavy and larvae numerous throughout east-central area wherever aphids and other suitable food occurs. (Barwood et al.).

A BRACONID (Lysiphlebus testaceipes) - ARIZONA - Very active, 2 adults per aphid colony, in alfalfa, grain, and newly emerging sorghum in north Gila Valley, Yuma County. (Ariz. Coop. Sur.).

A MEGACHILID BEE (Osmia lignaria) - WASHINGTON - Heavy in and around home at Seattle, King County. Determined by M.T. James. This is a new county record. (Harris).

A DAMSEL BUG (Nabis sp.) - ARIZONA - Averaged 30 per 100 sweeps of alfalfa at Somerton, Yuma County. (Ariz. Coop. Sur.).

SYRPHID FLIES - VIRGINIA - Adults active in Montgomery County since April 18. (Allen, Pienkowski).

A PHYTOSEIID MITE (Metaseiulus occidentalis) - WASHINGTON - Eggs found April 16 at Glead, Yakima County; correlates well with egg laying of its prey Tetranychus mcdanieli (a spider mite). (Gregorich).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

BROWN-TAIL MOTH (Nygmia phaeorrhoea) - MAINE - Survey of coastal area and offshore islands continued during March; infestations ranged light (few scattered webs) to heavy (up to 1,000-1,500 webs per acre). Mortality check indicates very little winter kill or parasitism. Heavy infestations were found on 4 islands.

MASSACHUSETTS - Survey completed on Cape Cod in late March. No new infestations found nor any increase in size of known infestations at Provincetown, Dennis, or Sandy Neck. NEW HAMPSHIRE - Total of 193,395 acres surveyed with negative results through March. (PPD East. Reg.).

CEREAL LEAF BEETLE (Oulema melanopus) - WEST VIRGINIA - One adult per 100 sweeps of winter wheat in Wood County April 21. (Hacker). OHIO - Adults averaged 2.8 per 100 sweeps in 10 wheatfields in Ross, Licking, and Fairfield Counties. Wheat generally thin and averaged 8 inches tall. (Rose). MICHIGAN - First 2 adults on spring grass April 24 in Hillsdale Township, Hillsdale County. (Moore).

EUROPEAN CHAFER (Amphimallon majalis) - NEW YORK - Activity very evident throughout Monroe County April 6-10. (N.Y. Wkly. Rpt.).

EUROPEAN CRANE FLY (Tipula paludosa) - WASHINGTON - Delimiting surveys continue in Whatcom County. Positive southernmost collections of larvae at Birch Bay State Park, 6.5 miles south of Blaine. (PPD).

A GRASS BUG (Labops hesperius) - UTAH - Up to 150 per square foot in crested wheatgrass crowns in some Johnson Canyon and Alton areas of Kane County. Some adults, but largely nymphs, on crested and intermediate wheatgrasses at elevations of 5,800 to 7,200 feet. (Roberts, Apr. 20).

GRASSHOPPERS - NEBRASKA - Melanoplus differentialis eggs in coagulated stage under bunchgrasses April 23. (Andersen et al.).

MEXICAN FRUIT FLY (Anastrepha ludens) - MEXICO - First shipment of irradiated pupae (720,000) received at Tijuana, Baja California, from rearing-sterilization facility at Monterrey, Nuevo Leon. Pupae dyed and approximately 14,400 placed in each of 50 release stations in Tijuana April 9. Release stations located in host and shade trees in fruit-growing zones and near fruit markets. Number of McPhail traps decreased to 300 which is sufficient to obtain data on dissemination of sterile flies. Progress will be reported monthly; items of special interest will be reported when they occur. (PPD).

MORMON CRICKET (Anabrus simplex) - NEVADA - Hatching in Majuba and Rosebud Canyon areas, Pershing County. First instars light up to April 16. (Burnett, Dann).

PINK BOLLWORM (Pectinophora gossypiella) - CALIFORNIA - Release of 2,636,600 sterile moths in Coachella Valley April 17-23. Released 1,592,500 in Bakersfield area to date. (PPD). ARIZONA - Moths emerging from dry ground cages at Yuma, Yuma County. (Ariz. Coop. Sur.).

WOOLLY WHITEFLY (Aleurothrixus floccosus) - CALIFORNIA - Two new blocks infested at San Diego, San Diego County. Neither find will affect completion of treatment schedule. Survey of original Valencia Park bio-control area, which has received 3 chemical applications this year, revealed 100 percent kill. (Cal. Coop. Rpt.).

Weather of the week continued from page 292. southeastern Iowa on Wednesday. Temperatures east of the Rocky Mountains warmed rapidly late in the week reaching the 80's over much of mid-America by Sunday when Minneapolis and St. Paul, Minnesota, registered 85°. Weekly averages were below normal over most of the West and above normal over most of the East. Idaho and nearby parts of neighboring States averaged 8° to 13° colder than normal. Some localities in the Deep South and East averaged 6° or more warmer than normal. (Summary supplied by Environmental Data Service, ESSA.)

HAWAII INSECT REPORT

Corn - TUMID SPIDER MITE (Tetranychus tumidus) trace in large planting of sweet corn at Makaha, Oahu; severe infestations in this field last fall hampered harvest. (Kawamura).

General Vegetables - All stages of BEAN FLY (Melanagromyza phaseoli) heavy on yardlongbeans in community garden at Puunene, Maui. Numerous oviposition punctures in 75 percent of leaves; heavy damage of petioles. Still negligible in most commercial snap bean plantings on Oahu. (Miyahira, Kawamura). FULLER ROSE WEEVIL (Pantomorus cervinus) adults moderate, up to 12 per plant, in small backyard planting of snap beans at Makawao, Maui. Damaged 75 percent of older leaves. (Miyahira). CARMINE SPIDER MITE (Tetranychus cinnabarinus) severe in 0.25 acre of snap beans at Waianae, Oahu; generally light to moderate in most other snap beans in this area. Light in small planting of eggplants at Puunene, Maui. (Miyahira et al.).

Ornamentals - WESTERN FLOWER THRIPS (Frankliniella occidentalis) adults and nymphs generally light, averaged 6 per blossom, in 2 acres of roses at Waianae, Oahu; moderate in spots, noticeably damaged half of blossoms on some bushes. (Kawamura). HAWAIIAN THRIPS (Taeniothrips hawaiiensis) heavy in gardenia blossoms at Kaneohe, Oahu; as many as 250 nymphs and adults per blossom. (Funasaki).

Beneficial Insects - Larvae, pupae, and adults of LADY BEETLES (Azya luteipes and Orcus chalybaeus) moderate, 6 adults of each species per plant, on 15 gardenia plants infested with GREEN SCALE (Coccus viridis). (Funasaki).

DETECTION

New State Records - IVY APHID (Aphis hederae) OKLAHOMA - Payne County (p. 298). A PHYLLOXERA (Pineus sylvestris) ARIZONA - Maricopa County (p. 298).

New County Records - BROWN RECLUSE SPIDER (Loxosceles reclusa) TENNESSEE - Sumner, Weakley (p. 300). A MEGACHILID BEE (Osmia lignaria) WASHINGTON - King (p. 300). PINE SPITTLEBUG (Aphrophora parallela) FLORIDA - Marion (p. 298).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville, 4/18-23, BL - Armyworm (Pseudaletia unipuncta) 1, beet armyworm (Spodoptera exigua) 1, corn earworm (Heliothis zea) 1, granulate cutworm (Feltia subterranea) 9, variegated cutworm (Peridroma saucia) 1, yellow-striped armyworm (Prodenia ornithogalli) 2. MISSISSIPPI - Stoneville, 4/17-23, 2BL, 53°-86°F., precip. 1.23 - Armyworm 84, black cutworm (Agrotis ipsilon) 22, corn earworm 1, granulate cutworm 4, salt-marsh caterpillar (Estigmene acrea) 41, variegated cutworm 39, yellow-striped armyworm 5. TEXAS - Waco, 4/17-23, BL - Armyworm 136, beet armyworm 11, black cutworm 22, cabbage looper (Trichoplusia ni) 3, corn earworm 7, granulate cutworm 34, salt-marsh caterpillar 1, variegated cutworm 83, yellow-striped armyworm 8.

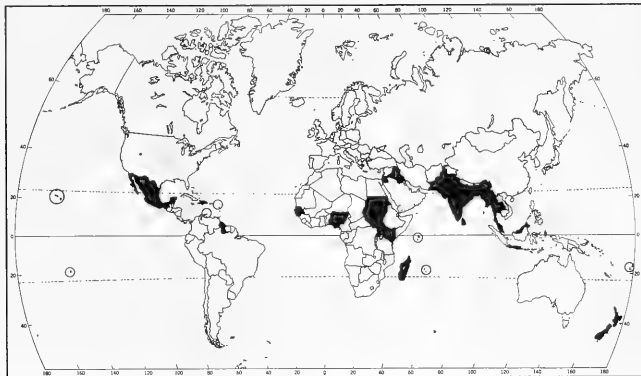
INSECTS NOT KNOWN TO OCCUR IN THE CONTINENTAL UNITED STATES

GROUNDNUT BRUCHID (Caryedon serratus (Olivier)) ^{1/}

Economic Importance: Caryedon serratus (Olivier), described in 1790, has also been known as Caryedon fuscus (Bedel) and C. gonagra (F.). It is a serious pest of stored groundnuts (Arachis hypogaea L.) in Africa (Senegal, Nigeria, Uganda, Gambia) where it attacks both shelled and unshelled nuts during drying and in open stack or warehouse storage. It is occasionally intercepted in seed or confectionary nuts from Africa. Although it is of primary importance as a pest of groundnuts (peanuts), one of its preferred hosts is tamarind (Tamarindus indica L.), a pantropical legume grown in the Old World tropics and in Mexico and the Caribbean. The bruchid is often intercepted in Plant Quarantine inspections of tamarind seeds, and as hitchhikers in planes and ships. It is a potential storage pest of peanuts in the United States.

Distribution: Burma, Ceylon, Curacao Island, Dominica Island, Fiji, Gambia, Guyana, Haiti, Hawaii, India, Indonesia (Java), Iraq, Israel, Jamaica, Jordan, Kenya, Malagasy Republic, Malaysia, the Mascarenes, Mexico, New Zealand, Nigeria, Pakistan, Portuguese Guinea, Senegal, the Seychelles, Sudan, Tahiti, Thailand, Uganda, and Virgin Islands.

Hosts: Principally groundnuts (peanuts) and tamarind seeds. It has been intercepted on a number of other different hosts.

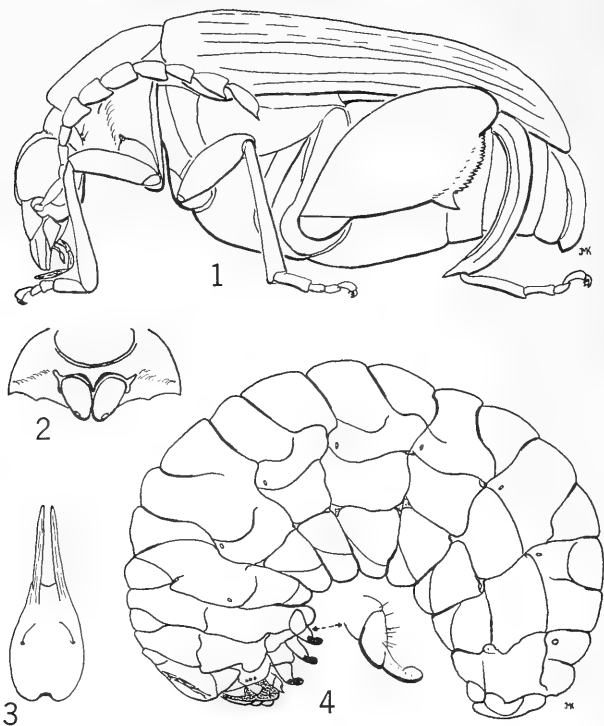


General Distribution of Caryedon serratus

Life History and Habits: The egg is laid on the shell or nut, and the larva bores into the meat of the nut where it completes its development. Before pupation, the mature larva bores out and forms a papery brown pupal case partly within the burrow or glued to the outer surface of the nut. Two to four larvae may develop in a single nut. The emerging female after mating will reinfest pods or nuts in the vicinity to begin a second generation. Presumably, continuous reinfestation is possible as long as nuts are available. Developmental periods (egg to adult) at 70 percent relative humidity vary from 42 days at 87° F., to 98 days at 77° F.

^{1/} Also called tamarind seed beetle

Description: Adult (Fig. 1) 3.5 - 6.8 mm. long; reddish or yellowish brown with darker maculations of elytra; eyes black. Antennae long, slender, slightly serrated, eyes shallowly emarginate at antennal insertion; hind femur greatly inflated, serrate on ventral margin; tibia strongly curved; front coxae not separated by prosternum (Fig. 2). Larva (Fig. 4) yellowish white, head brown; body crescent shaped, legs rudimentary; labium with shield-shaped sclerome (Fig. 3). Pupal cell brown, thin, papery, composed of silken threads, usually formed in larval excavation.



Caryedon serratus

Fig. 1. Adult, lateral aspect. Fig. 2. Prothorax, ventral aspect. Fig. 3. Labial sclerome of larval mouthparts. Fig. 4. Larva, lateral aspect, leg inset.

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Coop. Econ. Ins. Rpt.
20(18):303-304, 1970

TECHNIQUES TO DETERMINE LOSSES

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Part V

Additional copies of Parts I through V of this bibliography are available from Economic Insect Survey and Detection.

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* Additional Citations for 1951, 1957, 1966-1968 are included at the end of this list.

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Cooperative
**ECONOMIC INSECT
REPORT**



Issued by

PLANT PROTECTION DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PROTECTION DIVISION

ECONOMIC INSECT SURVEY AND DETECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearinghouse and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT**HIGHLIGHTS**Current Conditions

ARMYWORM moths increasing in light traps in Missouri and flights increasing in Illinois. (p. 309).

SPOTTED ALFALFA APHID heavy on alfalfa in Oklahoma. (p. 309). ALFALFA WEEVIL larval damage heavy in Missouri. (p. 310). PEA APHID heavy on alfalfa in Oklahoma and Missouri. (p. 311).

HORN FLY heavy on cattle in several southern States. (p. 314).

Detection

An ACARID MITE reported for the first time from Hawaii. This species reported only from Japan, India, and England. This is a new Western Hemisphere record. (p. 317).

New State records include a CHEYLETID MITE from Hawaii (p. 317) and LESSER CLOVER LEAF WEEVIL from Florida (p. 311).

For new county and island records see page 316.

Special Reports

Golden Nematode Quarantine Map. Centerfold.

Reports in this issue are for week ending May 1 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance.....309

Insects Affecting

Corn, Sorghum, Sugarcane.....309	Citrus.....313
Small Grains.....310	Small Fruits.....313
Forage Legumes.....310	Ornamentals.....314
Cotton.....312	Forest and Shade Trees.....314
General Vegetables.....312	Man and Animals.....314
Deciduous Fruits and Nuts.....312	Stored Products.....315

Beneficial Insects.....315

Federal and State Plant Protection Programs.....315

Detection.....316

Light Trap Collections.....316

Hawaii Insect Report.....317

Golden Nematode Quarantine Map. Centerfold.

WEATHER BUREAU'S 30-DAY OUTLOOK

MAY 1970

The Weather Bureau's 30-day outlook for May is for temperatures to average above seasonal normals over the eastern half of the Nation except for near normal along the middle and north Atlantic coast. Below normal temperatures are indicated for the central and southern Plateau region and the southern half of California. Elsewhere near normal temperatures are in prospect. Precipitation is expected to exceed normal over the central and south Pacific coast, the Great Basin, the Great Lakes region and western portions of the northern and central Plains. Subnormal totals are indicated for New England, the gulf and south Atlantic coast regions, the Pacific Northwest and the southern Plateau. In unspecified areas near normal precipitation is in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price \$5.00 a year.

For weather of the week see page 318.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMY CUTWORM (Chorizagrotis auxiliaris) - NEBRASKA - Larvae averaged about 1 per square foot; severely thinned one new seeding of alfalfa near Curtis, Lincoln County. (Manglitz et al., Apr. 28-29). Very little activity on wheat. Averaged less than 1 per linear foot in Hitchcock County. (Menke). WYOMING - Larvae ranged 0-2 per linear foot in wheatfields in Goshen and Laramie Counties. (Parshall).

ARMYWORM (Pseudaletia unipuncta) - FLORIDA - Found 28 larvae in 100 sweeps of rye at Gainesville, Alachua County. (Mead, Apr. 22). MISSOURI - Early instars ranged up to 4 per square foot of wheat and barley in southeast area. Adults increasing in blacklight trap at Fair Grove, Greene County. (Munson). ILLINOIS - Moth flight increasing. Larvae should be noticeable in extreme southern areas in 2-3 weeks; in south-central and central areas in 3-5 weeks. (Sur. Bull.).

ASTER LEAFHOPPER (Macrosteles fascifrons) - MINNESOTA - Ranged 32-60 per 100 sweeps of rye and grassy alfalfa in Dakota and Scott Counties April 27 and 30. (Minn. Pest Rpt.).

BUDWORMS (Heliothis spp.) - GEORGIA - Moderate to heavy across tobacco growing area. (French).

CORN EARWORM (Heliothis zea) - FLORIDA - Found 17 larvae in 100 sweeps of wheat at Gainesville, Alachua County. (Mead, Apr. 22).

GREENBUG (Schizaphis graminum) - OKLAHOMA - Counts of up to 10 per linear foot of wheat still found in Texas County, Woodward County, and several southeast area counties. (Okla. Coop. Sur.).

HORNWORMS (Manduca spp.) - GEORGIA - Light on tobacco in Colquitt County. (French).

SPOTTED ALFALFA APHID (Therioaphis maculata) - NEW MEXICO - Ranged 4-100 per 25 sweeps of alfalfa in Cotton City and Animas area and Virden Valley, Hidalgo County. Often mixed with Acyrtosiphon pisum (pea aphid) populations. No visible damage in established stands. Mostly apterous. (Riddle, Nielsen). Generally 0-15 per 25 sweeps on Chaves County alfalfa. Over 200 per 25 sweeps in one field. (Mathews, Apr. 24). Currently light in alfalfa in Bernalillo and Chaves Counties. Alate forms appear more numerous. (Mathews, Heninger). OKLAHOMA - Ranged 1,500-5,000 per square foot of alfalfa in Jackson and Tillman Counties. Heavy in Greer and Washita Counties and moderate in Cotton County. (Okla. Coop. Sur.).

TOBACCO BUDWORM (Heliothis virescens) - FLORIDA - Found 2 larvae per 4 plants of flue-cured tobacco in field at university farm in Alachua County. Eggs prevalent. (Strayer, Apr. 21). Larvae heavy on flue-cured tobacco, light to moderate on shade-grown tobacco at Quincy, Gadsden County. (Tappan).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - SOUTH DAKOTA - Overwintering larval mortality low in eastern area. This, plus heavy carryover from fall, indicates potential for first brood borers to be heavy in 1970. Reduction expected in fields worked up prior to planting. (Jones). MINNESOTA - Percent overwintering larval mortality as follows: Northwest 21.3; west-central 13.6; central 8.0; east-central 13.3; south-central 56.6. (Minn. Pest Rpt.). IOWA - Spring survey in southeast, southwest, and northwest areas indicate a total of 3,824 live borers per acre. Samples taken from cornstalks and debris in oatfields. (Iowa Ins. Sur.).

SEED-CORN MAGGOT (Hylemya platura) - NEW JERSEY - Collected 180 adults on 3 sticky-board traps at Cedarville April 22-29. (Ins.-Dis. Newsltr.).

SMALL GRAINS

PALE WESTERN CUTWORM (*Agrotis orthogonia*) - COLORADO - Larvae ranged 0-2 per linear foot of wheat in most fields in Larimer, Weld, and Morgan Counties, up to 3 per linear foot in Washington, Yuma, and Phillips Counties. (Johnson et al.). WYOMING - Larvae ranged 0-4 (averaged 0.2) per linear foot in 31 wheat-fields in Goshen and Laramie Counties. Little damage. (Parshall). NEBRASKA - Little damage in southwest and panhandle wheat areas. Larvae averaged less than 1 per foot; highest 2-3 per linear foot in Perkins County. (Hendrix). Averaged less than 1 per foot in Deuel County. Little damage and control noted. (Sall). Damage spotted and local in few wheatfields, mainly in thin stands. Ranged 0-5 per foot in 18 fields; averaged less than 1 per foot in Cheyenne County. Some controls applied. (Sakurada). Crown rot appears to be increasing in area and damage likely confused with cutworm injury. (Keith).

RICE STINK BUG (*Oebalus pugnax*) - FLORIDA - Adults in 100 sweeps by crop: Oats 12, rye 14, and wheat 55. All crops with seed heads well formed at Gainesville, Alachua County. (Mead, Apr. 22).

A LYGAEID BUG (*Paromius longulus*) - FLORIDA - Adults per 100 sweeps by crop: Rye 56, wheat 104, and oats 50-100 at Gainesville, Alachua County. (Mead, Apr. 22).

ENGLISH GRAIN APHID (*Macrosiphum avenae*) - MINNESOTA - Trace to 1 per 100 sweeps on rye and bluegrass on April 27 in Dakota County. (Minn. Pest Rpt.).

BROWN WHEAT MITE (*Petrobia latens*) - COLORADO - Light on wheat in Larimer, Weld, and Morgan Counties. (Johnson, Hantsbarger). OKLAHOMA - Heavy in scattered wheat-fields in several southwest area counties. (Okla. Coop. Sur.).

FORAGE LEGUMES

ALFALFA WEEVIL (*Hypera postica*) - WYOMING - Adults ranged 0-2 per square foot in 2 alfalfa fields in Goshen County. (Parshall). NEW MEXICO - Larvae ranged up to 7 per 25 sweeps in Bernalillo County alfalfa. Collected 2 adults. (Heninger). OKLAHOMA - Adults reared from larvae collected in alfalfa in southeast corner of Okfuskee County on April 9 and near Sulphur, Murray County April 11. These are new county records. Larval damage remains moderate in Bryan County. (Okla. Coop. Sur.). NEBRASKA - Recovered 12 small larvae and 1 adult in 24 fields in Dawson County April 28 and 29. (Manglitz). MISSOURI - Heavy damage in east-central, southeast, south-central, and southwest areas. Larval counts ranged 12 per 10 sweeps in new counties in southwest area to 600 per 10 sweeps in southeast area. Some chemical controls applied in all areas. Adults collected for first time in Barton, Dade, and Cedar Counties. (Thomas et al.). ILLINOIS - Larvae common in southern and south-central area alfalfa, and feeding damage evident. Larvae common on south and west slopes in central areas. Hymenopterous parasites noted in south and south-central areas. (Sur. Bull.). INDIANA - Larvae ranged 0-202 per 100 stems, averaged 31, in central district due to high counts in southern portion week ending April 24. Feeding negligible in northern districts by May 1. Adults per 100 sweeps by district as follows: Northwest 20, north-central 56, and northeast 45. (Meyer). OHIO - Eggs averaged 53 per square foot at Wooster, Wayne County. (Flessel); second instars 4 per square foot in Brown County. (Roach). NEW YORK - Cool, wet weather slowed movement of adults from hibernation sites at Ithaca, Tompkins County. (N.Y. Wkly. Rpt., Apr. 27). NEW JERSEY - Adults scarce in alfalfa in Salem County. Expect no economic losses from this pest this year. (Ins.-Dis. Newsltr.). DELAWARE - Adults averaged 1 per 20 sweeps in 10-inch alfalfa in New Castle County. First and second instars averaged 2 per stalk with about 15 percent of stalks infested. (Burbutis). MARYLAND - Adults noted throughout State; highest counts ranged 1-3 per 10 sweeps. Highest larval counts ranged 3-10 per 10 sweeps in 30 acres of alfalfa in Queen Annes County near Price. (U. Md., Ent. Dept.). VIRGINIA - Larvae averaged 240 per 100 sweeps of alfalfa and damage light in Orange, Albemarle, and Nelson Counties. (W.A. Allen). WEST VIRGINIA - Adults 15 and larvae 2 per 100 sweeps of alfalfa in Fayette County.

Hypera postica adults 3 per 100 sweeps of clover in Putnam County. Adults 154 and larvae 382 per 100 sweeps in alfalfa in Mason County. (W. Va. Ins. Sur.). MISSISSIPPI - Adult emergence peaked in Pontotoc County. (Sartor). ALABAMA - Larvae defoliated burclover around old house sites and along highways in Shelby and Talladega Counties. First-generation adults in tremendous numbers underneath plants. (Thompson et al.). FLORIDA - Larvae, pupae, and adults abundant on crimson clover, at farm near Quincy, Gadsden County; light on alfalfa at Quincy (Tappan et al.); common in roadside crimson clover on bypass, north-eastern Tallahassee, Leon County, April 30. This is a new county record. (Habeck, Mead).

LESSER CLOVER LEAF WEEVIL (*Hypera nigrirostris*) - FLORIDA - Adults common in crimson clover at farm near Quincy, Gadsden County, April 28. Determined by R.E. Woodruff. (Tappan et al.). This is a new State record. (Fla. Coop. Sur.). WEST VIRGINIA - Adults 11 per 100 sweeps of clover in Putnam County. (W. Va. Ins. Sur.). NEW YORK - Most common weevil of light traps at Ithaca, Tompkins County. (N.Y. Wkly. Rpt., Apr. 27).

CLOVER LEAF WEEVIL (*Hypera punctata*) - INDIANA - Averaged 4 per 100 stems (ranged 1-9) on west-central area alfalfa. (Meyer, Apr. 24). OKLAHOMA - Larvae moderate to heavy and damaging alfalfa in several southwest and west-central counties. (Okla. Coop. Sur.).

ALFALFA SNOUT WEEVIL (*Brachyrhinus ligustici*) - NEW YORK - About 20 collected from chuckholes and moving into oatfield previously in alfalfa sod at Rural Hill, Jefferson County. (N.Y. Wkly. Rpt., Apr. 27).

PEA APHID (*Acyrtosiphon pisum*) - NEW MEXICO - Ranged up to 12 per 25 sweeps of alfalfa near Albuquerque, Bernalillo County. (Heninger). Averaged 5 to 50 per 25 sweeps in Chaves County. (Mathews). COLORADO - Near Canon City, Fremont County, heavy on alfalfa. Controls applied. (Hantsbarger). OKLAHOMA - Moderate to very heavy in alfalfa throughout most of State. Populations mostly moderate in north-central and northeast area; heavy to very heavy in many fields in southeast, south-central, central, southwest, west-central, and panhandle areas. (Okla. Coop. Sur.). KANSAS - Ranged 200-400 per 15 sweeps of alfalfa in Jackson, Coffey, Osage, Lyon, Butler, Greenwood, Woodson, Allen, and Wilson Counties. (Redding). NEBRASKA - About 20 taken in Lincoln, Lancaster County, suction trap. (Pruess, Keith). Averaged 18 per 25 sweeps in alfalfa near Mead, Saunders County. (Kindler). Present in all 24 fields surveyed in Dawson County April 28-29; ranged 1-224 per 100 sweeps. (Manglitz et al.). MISSOURI - Heavy populations; stunting and yellowing on alfalfa in southwest area. Ranged 400-700 per sweep in alfalfa and red clover. Chemical controls applied. (Thomas, Hanning). Counts on alfalfa in southeast area continue to decline. Ranged 3-20 per sweep. (Munson).

TARNISHED PLANT BUG (*Lygus lineolaris*) - NEW YORK - Overwintered adults heavy on sticky-board trap. (N.Y. Wkly. Rpt., Apr. 27). DELAWARE - Adults averaged 2 per 10 sweeps of alfalfa in New Castle County. (Burbutis). WEST VIRGINIA - Adults per 100 sweeps of alfalfa by county as follows: Mason 1, Fayette 6, and Putnam, 8 on clover. (W. Va. Ins. Sur.). INDIANA - Adults averaged 30 per 100 sweeps of alfalfa in northern districts. (Meyer). NEBRASKA - Averaged 63 per 25 sweeps of alfalfa at Mead, Saunders County. (Kindler).

LYGUS BUGS (*Lygus* spp.) - NEW MEXICO - Averaged 2-12 per 25 sweeps on Hidalgo County alfalfa. About 80 percent nymphs. Most abundant where mustard plants heaviest. (Nielsen, Apr. 24).

MEADOW SPITTLEBUG (*Philaenus spumarius*) - MARYLAND - First nymphs of season on red clover in Frederick, Montgomery, Howard, and Carroll Counties. Ranged 6-10 per square foot in heaviest areas. Most, less than 1 per square foot. (U. Md., Ent. Dept.). INDIANA - Averaged 3 (ranged 0-5) early instars per 100 stem samples on west-central area alfalfa. (Meyer, Apr. 24).

CLOVER STEM BORER (Languria mozaridi) - WEST VIRGINIA - Adults 2 per 100 sweeps of clover in Putnam County. (W. Va. Ins. Sur.).

BROWN WHEAT MITE (Petrobia latens) - NEW MEXICO - Problem in few fields; up to 2 per trifoliolate leaf. Foliage injury evident. (Mathews).

THRIPS (Frankliniella spp.) - NEW MEXICO - Ranged from less than 40 to over 200 per sweep of alfalfa at Cotton City and Animas area and Virden Valley, Hidalgo County. Terminals deformed. (Riddle, Nielsen, Apr. 24).

COTTON

BOLL WEEVIL (Anthonomus grandis) - ALABAMA - Surveys conducted in Monroe, Dallas, Montgomery, Autauga, Shelby, and Talladega Counties. Emerging weevils observed as far north as Shelby and Talladega Counties. Weevils occurring earlier in cotton reaching first true leaf stage than during past 2 years. (McQueen). GEORGIA - First adults trapped on April 30 in Spalding County. (Beckham); 15 adults trapped in Randolph County. (Womack).

BOLLWORMS (Heliothis spp.) - ALABAMA - Occasional larvae and numerous eggs occurring on young Cotton throughout south and central areas. Adults observed in numerous fields. Larvae 1 per 10 sweeps on crimson clover and vetch along field borders in Monroe, Dallas, Montgomery, and Autauga Counties. (McQueen).

GENERAL VEGETABLES

ASPARAGUS BEETLE (Crioceris asparagi) - MARYLAND - Adults laying eggs in 200 acres of asparagus near Massey, Kent County. Averaged less than 1 per yard of row. (U. Md., Ent. Dept.).

RED-BACKED CUTWORM (Euxoa ochrogaster) - WASHINGTON - Larvae and pupae ranged 15-20 around crowns on experimental plot of asparagus at Prosser, Benton County. (Cone).

DECIDUOUS FRUITS AND NUTS

EASTERN TENT CATERPILLAR (Malacosoma americanum) - MISSISSIPPI - Light on cherry in southeast area. (Sartor). TENNESSEE - Heavy on apple and cherry statewide. (Locke et al.). MISSOURI - Defoliation of wild cherry and wild plum common in south-central and central areas. Heavy on unsprayed fruit trees. First hatch of season in southwest area on flowering peach in Polk County. (Francka). INDIANA - Hatched on trees in Marion County. (Cummings, Apr. 24). Tents more abundant in southwest district in 1970 than in 1969. (Huber). VIRGINIA - Tents 3-10 per tree in many areas of Albemarle and Orange Counties. Feeding on crab apple in Fairfax County. (Wahgray).

WESTERN TENT CATERPILLAR (Malacosoma californicum pluviale) - OREGON - Late second instars light in cherry orchard at west Salem, Polk County. Tents very conspicuous. (Brown, Apr. 24).

OBLIQUE-BANDED LEAF ROLLER (Choristoneura rosaceana) - OREGON - Early instars heavy in all 200+ acres of prune orchard near Dallas, Polk County. Appears to be heaviest infestation in recent years. (Brown, Apr. 24).

EYE-SPOTTED BUD MOTH (Spilonota ocellana) - OREGON - Late instars unusually abundant and widespread on prune and cherry, mostly prune, in Polk County. (Brown).

A PHYCITID MOTH (Acrobasis tricolorella) - MICHIGAN - Overwintered larvae feeding and webbing cherry bud clusters in Oceana County. (Thompson, Apr. 27).

SPRING CANKERWORM (Paleacrita vernata) - MICHIGAN - Flying in limited numbers. Activity will increase next 7-10 days. (Newman, Apr. 27).

GOLDEN NEMATODE

COOPERATIVE FEDERAL / STATE QUARANTINES

■ COUNTIES ENTIRELY COLORED ARE COMPLETELY REGULATED;
COUNTIES PARTIALLY COLORED ARE PARTIALLY REGULATED;
△ ERADICATED, REGULATIONS REMOVED

OR COUNTY AGENT FOR ASSISTANCE REGARDING
EXACT AREAS UNDER REGULATION AND
REQUIREMENTS FOR MOVING REGULATED ARTICLES.

U. S. Department of Agriculture
Agricultural Research Service
Plant Protection Division
Cooperating with Affected States

SEE REVERSE SIDE FOR INFORMATION CONCERNING CERTIFICATION OF REGULATED ARTICLES.

Revised March 25, 1970

Soybeans (other than for seed) are exempt if harvested in bulk or

THE FOLLOWING CROPS OR ARTICLES MUST BE MOVED UNDER CERTIFICATE OR PERMIT YEAR-ROUND EXCEPT AS INDICATED:

1. Soil, compost, humus, muck, peat, and decomposed manure, separately or with other things.

Soil samples of any size shipped to U. S. Army Corps of Engineers soil laboratories within the conterminous United States are exempt.*

2. Plants with roots, except soil-free aquatic plants.
3. Grass sod.
4. Plant crowns and roots for propagation.
5. True bulbs, corms, rhizomes, and tubers, of ornamental plants.
6. Irish potatoes and other root crops.

Irish potatoes (other than for seed) are exempt** if graded at an approved grader or washed free of soil, and packaged in approved containers, unless otherwise notified by an inspector. Potatoes from noninfested fields may be shipped to Puerto Rico in new burlap bags.

Root crops (other than Irish potatoes and sugar beets) are exempt** if moved in approved containers, unless otherwise notified by an inspector.

7. Small grains and soybeans.

Small grains are exempt** if harvested in bulk or directly into approved containers, and if the small grains and containers thereof have not come into contact with the soil; or, if they have been cleaned to meet State seed sales requirements.

Soybeans (other than for seed) are exempt** if harvested in bulk or directly into approved containers, and if the soybeans and containers thereof have not come into contact with the soil.

8. Hay, straw, fodder, and plant litter of any kind.

Hay, straw, fodder, and plant litter are exempt** if moved in approved containers, unless otherwise notified by an inspector.

9. Ear corn except, shucked ear corn.

Unshucked ear corn is exempt** if harvested in bulk or directly into approved containers, and if the corn and containers thereof have not come into contact with the soil.

10. Used crates, boxes, and burlap bags, and other used farm products containers.
11. Used farm tools.

Used farm tools, are exempt** if cleaned free of soil.

12. Used mechanized cultivating and used harvesting machinery.

13. Used mechanized soil-moving equipment.

14. Any other products, articles, or means of conveyance, of any character whatsoever, not covered by the above when it is determined by an inspector that they present a hazard of spread of golden nematode and the person in possession thereof has been so notified.

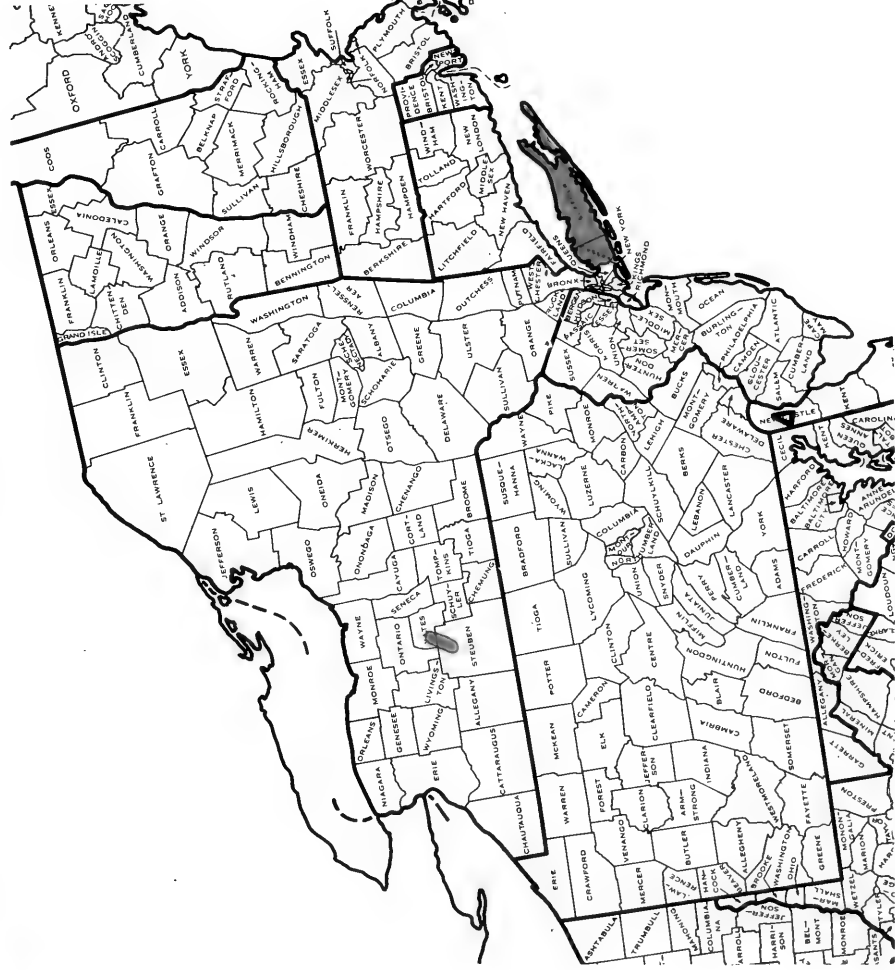
*Effective July 1, 1970, soil samples of any size may be moved from regulated areas to any approved laboratory, including U. S. Army Corps of Engineers, without a certificate or permit attached.

**Exempt if not exposed to infestation after cleaning or other prescribed handling.

GOLDEN NEMATODE

COOPERATIVE FEDERAL / STATE QUARANTINES

-  COUNTIES ENTIRELY COLORED ARE COMPLETELY REGULATED;
- COUNTIES PARTIALLY COLORED ARE PARTIALLY REGULATED
-  ERADICATED, REGULATIONS REMOVED



RESTRICTIONS ARE IMPOSED ON THE MOVEMENT OF REGULATED ARTICLES FROM RED INTO OR THROUGH WHITE

U. S. Department of Agriculture
Agricultural Research Service
Plant Protection Division
Cooperating with Affected States

CONSULT YOUR PLANT PROTECTION INSPECTOR
OR COUNTY AGENT FOR ASSISTANCE REGARDING
EXACT AREAS UNDER REGULATION AND
REQUIREMENTS FOR MOVING REGULATED ARTICLES.

SEE REVERSE SIDE FOR INFORMATION CONCERNING CERTIFICATION OF REGULATED ARTICLES.

Revised March 25, 1970

directly into approved containers, and if the soybeans and containers thereof have not come into contact with the soil.

8. Hay, straw, fodder, and plant litter of any kind.
Hay, straw, fodder, and plant litter are exempt** if moved in approved containers, unless otherwise notified by an inspector.
 9. Ear corn except, shucked ear corn.
Unshucked ear corn is exempt** if harvested in bulk or directly into approved containers, and if the corn and containers thereof have not come into contact with the soil.
 10. Used crates, boxes, and burlap bags, and other used farm products containers.
 11. Used farm tools.
Used farm tools, are exempt** if cleaned free of soil.
 12. Used mechanized cultivating and used harvesting machinery.
 13. Used mechanized soil-moving equipment.
 14. Any other products, articles, or means of conveyance, of any character whatsoever, not covered by the above when it is determined by an inspector that they present a hazard of spread of golden nematode and the person in possession thereof has been so notified.
- *Effective July 1, 1970, soil samples of any size may be moved from regulated areas to any approved laboratory, including U. S. Army Corps of Engineers, without a certificate or permit attached.
- **Exempt if not exposed to infestation after cleaning or other prescribed handling.

PLUM CURCULIO (Conotrachelus nenuphar) - GEORGIA - Larval damage heavy in Mitchell County peaches. (Lee).

PERIODICAL CICADA (Magicicada septendecim) - VIRGINIA - Nymphs building emergence tubes in Fairfax County. (Wahgray).

APPLE APHID (Aphis pomi) - NEW HAMPSHIRE - Hatching at Durham, Strafford County. (Blickle).

SPIDER MITES - WASHINGTON - First summer eggs of Tetranychus mcdanieli April 21 on Bartlett pear at Parker Heights, Yakima County. (Johnson, Hudson). OHIO - Panonychus ulmi (European red mite) hatch underway in orchard in Franklin County. Red Delicious apples passed full pink; terminal blooms opening. (Holdsworth).

PECAN NUT CASEBEARER (Acrobasis caryae) - NEW MEXICO - Overwintered larvae on new growth at Carlsbad, Eddy County. (Marek; Apr. 24).

PECAN PHYLLOXERA (Phylloxera devastatrix) - GEORGIA - Heavy on hickory foliage in Muscogee County. (McWhirter).

CITRUS

Citrus Insect Situation in Florida - Mid-April - CITRUS RUST MITE (Phyllocoptruta oleivora) infested 71 (norm 61) percent of groves; economic in 53 (norm 41) percent. Increased slightly and continued above normal and in high range. Further increase expected in May. Highest districts west, east, and south. CITRUS RED MITE (Panonychus citri) in 41 (norm 48) percent of groves; economic in 15 (norm 17) percent. Decreased slightly. Will be below normal and in low range. Will decrease further in April and increase in May. Highest district north. TEXAS CITRUS MITE (Eutetranychus banksi) in 25 (norm 41) percent of groves; economic in 8 (norm 19) percent. Population lowest for April in 11 years. Will remain below normal and in low range. Increase expected in May. Highest district south. SIX-SPOTTED MITE (Eotetranychus sexmaculatus) in 11 (norm 9) percent of groves; economic in 3 percent. Population near normal. Increase expected. Few groves will develop important infestations. GLOVER SCALE (Lepidosaphes gloverii) in 81 (norm 80) percent of groves; economic in 9 (norm 22) percent. Slightly subnormal and at moderate level. Little change expected. Highest districts west, north, and east. PURPLE SCALE (L. beckii) in 68 (norm 81) percent of groves; economic in 6 (norm 12) percent. Below normal and will continue near present low level. Highest district west. CHAFF SCALE (Parlatoria pergandii) in 49 (norm 63) percent of groves; economic in 1 (norm 12) percent. Will continue to be low and much below normal in all districts. BLACK SCALE (Saissetia oleae) in 5 (norm 26) percent of groves; none economic (norm 10 percent). Lowest since 1963. Will remain very low. YELLOW SCALE (Aonidiella citrina) in 59 (norm 66) percent of groves; economic in 5 (norm 11) percent. Decreased. Will remain below normal and low statewide. Highest districts north and south. An ARMORED SCALE (Unaspis citri) in 25 percent of groves; moderate or heavy in 8 percent. Higher than in prior Aprils; however activity decreased early in April and not expected to increase until May. WHITEFLY larvae infested 62 (norm 63) percent of groves. Adults in 91 percent of groves. Adults moderate or heavy in 44 percent of groves, highest adult population since August 1958 and portends above normal larval populations in May. MEALYBUGS will remain very low until mid-May, then increase rapidly. APHIDS peaked early in April below normal level and quickly decreased. (W.A. Simanton, Citrus Expt. Sta., Lake Alfred)).

CITRUS RED MITE (Panonychus citri) - CALIFORNIA - Heavy on nursery stock at Yuba City, Sutter County. (Cal. Coop. Rpt.).

SMALL FRUITS

GRAPE FLEA BEETLE (Altica chalybea) - ALABAMA - Unusual buildup of first-generation larvae on grape leaves throughout Mobile County. (Goff et al.). MISSOURI - Heavy on unsprayed grapes in Boone County. (Enns). OHIO - Adults in Scioto and Franklin Counties. (Roach).

ORNAMENTALS

BOXWOOD LEAF MINER (Monarthropalpus buxi) - SOUTH CAROLINA - Pupated. Adults emerging at Greenville, Greenville County. (Jones, Nettles, Apr. 20).

FOREST AND SHADE TREES

SPRUCE BUD SCALE (Physokermes piceae) - CALIFORNIA - Adults 2 per stem on western white spruce nursery stock at Napa, Napa County. Collected by B.F. Eaton, April 7. Determined by R. Wilkey. This is a new county record. (Cal. Coop. Rpt.).

A CONIFER APHID (Cinara sp.) - NEW MEXICO - Building up on ponderosa pine at Santa Fe, Santa Fe County, and Albuquerque, Bernalillo County. Honeydew problem on sidewalks at Albuquerque. (Heninger, Apr. 24).

SPRUCE NEEDLE MINER (Taniva albolineana) - NEW HAMPSHIRE - Pupation starting at Dover, Strafford County. (Blickle).

TENT CATERPILLARS (Malacosoma spp.) - ALABAMA - M. disstria (forest tent caterpillar) defoliated large areas in river and creek swamps in Mobile, Baldwin, and Escambia Counties. Pupation begun. (Payne). UTAH - M. californicum fragile (western tent caterpillar) on cottonwoods at Santa Clara, Washington County. (Knowlton, May 1).

SPRING CANKERWORM (Paleacrita vernata) - TENNESSEE - Moderate to heavy. Damage in central area. (Bogard).

EUROPEAN ELM SCALE (Gossyparia spuria) - NEW MEXICO - Widespread; damaged American elms at Santa Fe, Santa Fe County. (Heninger, Apr. 24). CALIFORNIA - Heavy on elms at Modesto, Stanislaus County. May be serious this season. (Cal. Coop. Rpt.).

MAN AND ANIMALS

HORN FLY (Haematobia irritans) - FLORIDA - Adults averaged 200 per dairy cow at Gainesville, Alachua County. (Butler, Apr. 24). GEORGIA - Increasing populations and outbreaks on Spalding County cattle. (Dupree, Snoddy). ALABAMA - Problem increased on beef cattle in central and south areas. (Farquhar et al.). OKLAHOMA - Averaged 200 per head on Major County cattle. Moderate in Cotton County. Light in Pontotoc and Woodward Counties. (Okla. Coop. Sur.).

HOUSE FLY (Musca domestica) - FLORIDA - Adults averaged 2 per dairy cow at Gainesville, Alachua County. (Butler, Apr. 24). MISSISSIPPI - Heavy in chicken houses in Simpson County. (Sartor). VIRGINIA - Becoming problem on caged layers in Powhatan County. (Turner).

STABLE FLY (Stomoxys calcitrans) - FLORIDA - Adults averaged 2-19 per dairy cow at Gainesville, Alachua County. (Butler, Apr. 24).

SCREW-WORM (Cochliomyia hominivorax) - No cases reported in U.S. April 26 to May 2. Total of 88 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico as follows: Sonora 55, Chihuahua 25, Nuevo Leon 2, Tamaulipas 6. Total of 15 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 12,568,000; Mexico 144,464,000. (Anim. Health Div.).

MOSQUITOES - CALIFORNIA - High in most areas. Abatement districts treating to reduce initial populations. (Cal. Coop. Rpt.). ALABAMA - Heavy in fields and around homes in Shelby and Talladega Counties. (Thompson et al.). FLORIDA - First

Coquillettidia perturbans adults at Vero Beach, Indian River County, and at Gainesville, Alachua County, April 17. (Butler). MINNESOTA - Most single-brooded spring Aedes larvae now in third and fourth instars. First pupae found April 24. Aedes excrucians, A. cinereus, and A. stimulans most common. A. vexans larvae in first to fourth instars. Larvae numerous in flood water. (Minn. Pest Rpt.).

COMMON CATTLE GRUB (Hypoderma lineatum) - OKLAHOMA - Moderate in Mayes County. (Okla. Coop. Sur.).

WRINKLED SUCKING LICE (Haematopinus spp.) - FLORIDA - H. quadripertusus (cattle tail louse) adults averaged 15 (ranged 0-100) on tail; eggs 75 per animal on 20 untreated cattle at Ona, Hardee County. (Butler, Apr. 21). OKLAHOMA - Mainly H. eurysternus (short-nosed cattle louse) heavy on Woodward County cattle. (Okla. Coop. Sur.).

NORTHERN FOWL MITE (Ornithonyssus sylviarum) - VIRGINIA - Appears widespread on caged layers. Moderate in Washington County. Heavy on some flocks in Nottoway, Powhatan, and Rockingham Counties. (Turner).

STORED PRODUCTS

POTATO TUBERWORM (Phthorimaea operculella) - PENNSYLVANIA - Heavy in 6 bushels of seed potatoes in home in Mercer County. (Adams, Apr. 27).

BENEFICIAL INSECTS

A MARCH FLY (Bibio xanthopus) - OREGON - Extremely abundant in cherry orchards at Salem, Marion County, week of April 17. Adults about one per 3-4 blossoms. Serving as very efficient pollinators in this area. Much more abundant than honey bees on blossoms. Larvae probably built up heavily last year in nearby grass fields. (Westcott).

HONEY BEE (Apis mellifera) - TENNESSEE - Poor condition statewide due to extremely cold January and February. Colonies will be very slow to reach full strength. (Little). OHIO - Up to 25 percent overall loss. Many colonies weak, but enough strong colonies left to build up weak ones.

AN ICHNEUMON WASP (Bathyplectes curculionis) - INDIANA - Ranged 15-50 per 100 sweeps of alfalfa in Knox County. (Wilson, Apr. 24).

DAMSEL BUGS (Nabis spp.) - INDIANA - Adults averaged 10 per 100 sweeps of alfalfa in northern districts. (Meyer).

A BIG-EYED BUG (Geocoris punctipes) - ARKANSAS - Adults on crimson clover in east area. (Boyer, Barnes).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

CEREAL LEAF BEETLE (Oulema melanopus) - OHIO - Adults averaged 6 per 100 sweeps of wheat in Wyandot, Marion, and Union Counties. Averaged 15 per 100 sweeps in Franklin County. Eggs 0-6 (averaged 4) per square foot in Franklin County. (Forrester). PENNSYLVANIA - First adult of season on winter wheat in Butler County April 16. (Eckess). WEST VIRGINIA - Adults 1 per 100 sweeps of winter wheat in Putnam and Mason Counties. (W. Va. Ins. Sur.).

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) - OREGON - Pupation underway at McNary Dam, Umatilla County, April 28. (Goeden).

GYPSY MOTH (Porthetria dispar) - NEW JERSEY - Larvae on oaks in Burlington County. (Ins.-Dis. Newsltr.).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - TEXAS - Specimens collected at Louise, Jackson County, by L.R. Hubenak April 20 and at Yoakum, De Witt County, by H.L. Bales April 16. Determined by V.H. Owens; confirmed by D.R. Smith. These are new county records. (PPD).

JAPANESE BEETLE (Popillia japonica) - WEST VIRGINIA - Larvae 15 per square foot of sod in Kanawha County. (W. Va. Ins. Sur.).

PINK BOLLWORM (Pectinophora gossypiella) - CALIFORNIA - Release of 3,762,500 sterile moths in Coachella Valley; total to date 15,101,600. Release of 1,433,700 sterile moths in Bakersfield area, Kern County; total to date 3,026,200. (PPD).

WHITE-FRINGED BEETLES (Graphognathus spp.) - FLORIDA - Larvae heavy on 50 acres of field corn. Stand reduced 20 percent; damage continuing. Field will be treated, disced, and replanted at Greenwood, Jackson County. (Strayer, Apr. 22). SOUTH CAROLINA - G. leucoloma fecundus specimen collected under aster at Greenville, Greenville County, by W.B. Lott, April 11. Determined by V.H. Owens; confirmed by D.M. Anderson. This is a new county record. (PPD). GEORGIA - Light on Lanier County tobacco. (French, Strickland). ALABAMA - Larvae heavy in one Geneva County field. Destroyed 3.5 acres of peanuts. (Reynolds).

DETECTION

New Western Hemisphere Record - An ACARID MITE (Lardoglyphus konoi (Sasa & Asanuma)) HAWAII - Oahu Island (p. 317).

New State Records - A CHEYLETID MITE (Bakericheyla chanayi) HAWAII - Oahu Island (p. 317). LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) FLORIDA - Gadsden County (p. 311).

New County and Island Records - ALFALFA WEEVIL (Hypera postica) FLORIDA - Leon (p. 311); MISSOURI - Barton, Cedar, Dade; OKLAHOMA - Murray, Okfuskee (p. 310). AUSTRALIAN FERN WEEVIL (Syagrus fulvitaris) HAWAII - Kauai (p. 317). IMPORTED FIRE ANT (Solenopsis saevissima richteri) TEXAS - De Witt, Jackson (p. 316). SPRUCE BUD SCALE (Physokermes piceae) CALIFORNIA - Napa (p. 314). A WHITE-FRINGED BEETLE (Graphognathus leucoloma fecundus) SOUTH CAROLINA - Greenville (p. 316).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville, 4/24-30, BL - Armyworm (Pseudaletia unipuncta) 3, beet armyworm (Spodoptera exigua) 24, black cutworm (Agrotis ipsilon) 12, corn earworm (Heliothis zea) 2, granulate cutworm (Feltia subterranea) 18, tobacco hornworm (Manduca sexta) 1, variegated cutworm (Peridroma saucia) 2. MISSISSIPPI - Stoneville, 4/24-30, 2BL, 57°-87° F, precip. 3.66 - Armyworm 58, black cutworm 39, corn earworm 7, granulate cutworm 15, salt-marsh caterpillar (Estigmene acrea) 136, variegated cutworm 17, yellow-striped armyworm (Prodenia ornithogalli) 45. MISSOURI - Fair Grove, 4/23-29, BL - Armyworm 664, black cutworm 59, variegated cutworm 31, yellow-striped armyworm 2. Portageville, 4/16-22, BL - Armyworm 3, black cutworm 1, variegated cutworm 3. OHIO - Wooster, 4/24-30, BL - Armyworm 59, black cutworm 7, variegated cutworm 5. PENNSYLVANIA - Auburn, 4/22-27, BL - Armyworm 6, black cutworm 2. TEXAS - Waco, 4/24-30, BL - Armyworm 57, beet armyworm 4, black cutworm 41, cabbage looper (Trichoplusia ni) 15, corn earworm 16, granulate cutworm 48, tobacco budworm (H. virescens) 1, variegated cutworm 101, yellow-striped armyworm 17.

HAWAII INSECT REPORT

New Western Hemisphere Record - Specimens of an ACARID MITE (Lardoglyphus konoi (Sasa & Asanuma)) found infesting a Dermestes colony used to clean skeletal material at Honolulu, Oahu, March 5, 1970. Collected and determined by F.J. Radovsky. Reported from Japan and India as an economic pest of dried sea foods and from England. (Kawamura).

New State Record - Specimens of a CHEYLETID MITE (Bakericheyla chanayi), a blood sucking mite, collected from a shama (Copsychus malabaricus) at Forest Ridge, Honolulu, Oahu. Collected by D.O. Crozier January 1970. Determined by F.J. Radovsky. First record of bird-parasitizing cheyletids in Hawaii. First described in Europe, recent publications of this species include records from California and Asiatic USSR. (Kawamura).

General Vegetables - All stages of GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) generally light in most snap beans and soybeans at Waimanalo, Oahu. CARMINE SPIDER MITE (Tetranychus cinnabarinus) light to moderate on both crops, trace in a few fields at Waimanalo. LEAF MINER FLIES (Liriomyza spp.) light to moderate on snap beans, larvae heavy in older leaves, in several fields at Waimanalo. (Kawamura). SOUTHERN GREEN STINK BUG (Nezara viridula) nymphs and adults moderate in backyard snap beans, yardlongbeans and lima beans at Ewa, Oahu; light in 0.5 acre of soybeans at Waimanalo. (Funasaki, Kawamura).

Fruits and Nuts - COCONUT SCALE (Aspidiotus destructor) generally trace to light on papaya in windward Oahu. Moderate colonies on some papaya trees at Hakipu; trace in 1969. Moderate colonies on some fronds of 25 coconut trees at Koko Head; larvae and adults of a LADY BEETLE (Telsimia nitida) numerous on infested pinnae. A STINK BUG (Plautia stali) trace on wild guavas at Waimanalo. (Kawamura).

Ornamentals - Nymphs and adults of a PLATASPID BUG (Coptosoma xanthogramma) light to moderate on roadside maunaloa vines at Kahaalu and Kaaawa, Oahu. Heavy on same host at Waiahole, as many as 33 nymphs and adults per terminal. Moderate, 5-8 adults per terminal, on 3 wiliwili (Erythrina sp.) trees at Kaneohe, Oahu. (Funasaki, Kawamura).

Forest and Shade Trees - AUSTRALIAN FERN WEEVIL (Syagrius fulvitaris) adult emergence holes and damage to stipes of a native fern, amaumau (Sadleria cyatheoides), noted for first time on Kauai at Kalalau Lookout on April 25. This species, native of Australia, previously discovered on Oahu in 1903, Hawaii in 1908, and Maui in 1922. (Sugawa).

Beneficial Insects - Larvae, pupae, and adults of a LADY BEETLE (Coccinella septempunctata brucki) heavy on white mustard cabbage (Brassica chinensis) at Koko Head, Oahu; as many as 7 pupae per plant on the weeds, golden crownbeard (Verbesina encelioides) and spiny amaranth. (Kawamura).

Miscellaneous Pests - GIANT AFRICAN SNAIL (Achatina fulica) adults heavy in residential areas of Waikapu, Wailuku, and Spreckelsville, Maui. (Miyahira).

WEATHER OF THE WEEK ENDING MAY 4

HIGHLIGHTS: Most of last week's weather was associated with a large storm in the central Great Plains with fronts stretching northward to the Great Lakes and southward to Texas.

PRECIPITATION: Slow-moving cold fronts stretched from the Great Lakes to Texas last week. Heavy snow and cold rain fell west of the fronts from Idaho to western North Dakota and southward to the mountains in Arizona. An area east of Salt Lake City, Utah, received 22 inches of snow in about 48 hours early in the week. Strong winds accompanied the snow and cold rain. The gusty winds and drifting snow made highway travel hazardous. Thick blowing dust became a problem in the southern Rocky Mountains and in western Texas. East of the frontal system, southerly winds brought warm humid air northward from the Gulf of Mexico. Tornadoes and numerous violent thunderstorms developed along the fronts and in the large warm, moist air mass. By midweek, violent weather had spread over a 12-State area from Minnesota to Ohio and southward to Texas. Many of the thunderstorms produced hail. On Wednesday afternoon hail as large as baseballs fell in north-central Texas. Late Wednesday, the wind at Quincy, Illinois, gusted to 80 m.p.h. The heavy rains caused flooding along numerous streams from Illinois to Texas. As the fronts moved eastward over the weekend, the rain belt moved eastward also. Light rains fell along the northern Atlantic coast on Sunday and moderate rains occurred from Virginia to southern Alabama. Weekly precipitation totals over the West ranged from no rain or light sprinkles in the southern parts of Arizona and New Mexico and western Texas, to over 2 inches in northwestern Utah. Many western areas received less than 0.25 inch. In the East, totals ranged more widely from widely scattered sprinkles in the Florida Peninsula to over 9 inches in some localities in Illinois. A strip from Oklahoma City, Oklahoma, to Chicago, Illinois, and from central Illinois to north-central Tennessee received around 3 inches or more.

TEMPERATURE: A well developed storm and frontal system lay over the central Great Plains last week. Fronts extended from the storm center northward to the Great Lakes and southward to Texas. Temperatures dropped to subfreezing levels over the Great Basin, the Rocky Mountains, and the western edge of the northern Great Plains. Flagstaff, Arizona, registered 8° Wednesday morning. Southerly winds warmed the vast area east of the fronts. Minneapolis-St. Paul, Minnesota, registered 90° Wednesday afternoon. Two days later, after the front had moved eastward past the station, the temperature reached only 43°. The front continued its eastward movement over the weekend and by Sunday afternoon only the south Atlantic coast and Florida remained in the warm air. Maxima elsewhere in the East and Deep South remained in the 50's and 60's. Weekend warming occurred in the West and in the Great Plains, however, with Sunday maxima reaching the 70's and low 80's at most stations. In general, temperatures averaged below normal over the western half of the nation and above normal over the eastern half. Most of the Great Basin and the Rocky Mountains averaged 6° to more than 12° colder than normal. Most of the Great Lakes region and the Northeast averaged 6° to 12° warmer than normal. (Summary supplied by Environmental Data Service, ESSA.)

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Cooperative
**ECONOMIC INSECT
REPORT**



Issued by

PLANT PROTECTION DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PROTECTION DIVISION

ECONOMIC INSECT SURVEY AND DETECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearinghouse and does not assume responsibility for accuracy of the material.

All reports and inquiries pertaining to this release, including the mailing list, should be sent to:

Economic Insect Survey and Detection
Plant Protection Division
Agricultural Research Service
United States Department of Agriculture
Federal Center Building
Hyattsville, Maryland 20782

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

ARMYWORM moths in light traps in several States. (pp. 321, 330). CORN LEAF APHID heavy on grain sorghum in some areas of Texas and heavy on sorghum in Arizona. (p. 321).

PALE WESTERN CUTWORM damaged wheat in Colorado, South Dakota, and Wyoming. SOUTHERN CORN ROOTWORM damaged corn in a limited area of Alabama. (p. 322).

ALFALFA WEEVIL larvae damaged alfalfa in many States. Increasing in central and Eastern Shore counties of Maryland. (p. 323). PEA APHID heavy in Kansas, Arkansas, and Missouri. (p. 324).

NANTUCKET PINE TIP MOTH and DEODAR WEEVIL damaged seedling trees in Texas. (pp. 327-328).

Detection

A CLICK BEETLE reported from Wisconsin for the first time. (p. 323).

For new county records see page 330.

CONTENTS

Special Insects of Regional Significance.....321

Insects Affecting

Corn, Sorghum, Sugarcane.....	322	General Vegetables.....	325
Small Grains.....	322	Deciduous Fruits and Nuts.....	326
Turf, Pastures, Rangeland.....	322	Citrus.....	327
Forage Legumes.....	323	Small Fruits.....	327
Peanuts.....	324	Ornamentals.....	327
Cotton.....	324	Forest and Shade Trees.....	327
Sugarbeets.....	325	Man and Animals.....	328
Potatoes, Tomatoes, Peppers.....	325	Households and Structures.....	329
Cole Crops.....	325		

Beneficial Insects.....329

Federal and State Plant Protection Programs.....329

Hawaii Insect Report.....330

Detection.....330

Light Trap Collections.....330

WEATHER OF THE WEEK ENDING MAY 13

HIGHLIGHTS: The West cooled and the East warmed during the week. Vicious tornadoes and violent thunderstorms occurred over several Central States late in the week and over the weekend.

PRECIPITATION: Fair weather prevailed over most of the Nation early in the week. A few thunderstorms dotted the northern half of the Country in response to weak frontal systems. Snow flurries occurred in the vicinity of the Great Lakes with some sleet in upper Michigan. By midweek, stormy weather hit the Northwest with brisk winds and scattered rains. The Southwest remained dry. The strong winds kicked up clouds of dust and sand. The wind at Palm Springs, California, gusted to 58 m.p.h. Wednesday afternoon. The weekend brought several inches of snow to the northern Rocky Mountains and much severe weather to mid-America. Violent thunderstorms with large hail, high winds, and torrential rains hit several States from the central Great Plains to northern Mississippi. Flash flooding occurred in parts of Kansas and Missouri. The storms became more violent on Sunday and Monday. Large hail fell in many localities. Many of the storms produced hail up to 1 inch in diameter and in some areas were much larger approaching or exceeding the size of grapefruit. Some of the larger hailstones fell in Kansas, Iowa, and Texas. Tornadoes occurred in several States. One of the worst hit Lubbock, Texas, late Monday night killing dozens of persons, injuring thousands, and causing millions of dollars property damage.

TEMPERATURE: High pressure with pleasant sunny weather lay over a wide area behind a front that, early in the week, stretched from the Great Lakes to the middle Mississippi River Valley. High temperatures occurred in the desert Southwest, reaching 98° at Thermal, California, and Phoenix, Arizona, Monday afternoon May 4. Northerly winds cooled New England and the Northeast early in the week while southerly breezes behind the cold HIGH warmed the interior States. Moberidge, South Dakota, registered 89° Thursday afternoon. As the HIGH moved eastward the temperatures increased over the Eastern States reaching the 80's in New York and southern New England by the weekend. The west was mostly warmer than normal early in the week but cooled in the latter half. Weekly temperatures averaged slightly cooler than normal in the Far West and from southern Texas to the middle Atlantic coast. Much of the central Great Plains averaged 3° to 9° warmer than normal. (Summary supplied by Environmental Data Service, ESSA.)

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMYWORM (Pseudaletia unipuncta) - DELAWARE - Moths very numerous in blacklight trap collections in Kent County. (Burbutis, Kelsey). MICHIGAN - Collected 12 moths in Livingston County light trap April 26 and 27. (Newman). WISCONSIN - Moths appearing around lights in Dane County. (Wis. Ins. Sur., May 1). IOWA - Moths appeared in central areas May 2. Caught 18 adults April 25 in light trap at Dubuque, Dubuque County. (Iowa Ins. Sur.). KANSAS - Moths abundant in lawns and other grassy areas in Riley County. (Simpson).

ARMY CUTWORM (Chorizagrotis auxiliaris) - NEVADA - Larvae ranged light (1-2) to heavy (8-12) per crown in alfalfa hay and seed fields at Oroveda, Humboldt County. Larvae 0.5 to 1.25 inches in length. (Day, Lundahl). UTAH - Larvae numerous in home garden at Salt Lake City, Salt Lake County. (Knowlton, May 6). WYOMING - Light, ranged 0-3 per linear foot of wheat in Platte, Goshen, and Laramie Counties. (Parshall). NEBRASKA - Averaged 6 in 10 square feet in Frontier County forage legumes. Apparently peak damage past. (Manglitz).

ASTER LEAFHOPPER (Macrosteles fascifrons) - WISCONSIN - Ranged 6 per 100 sweeps in Dane and La Crosse Counties to 1 per 100 sweeps in Lafayette and Waushara Counties. Males and females present week ending May 1. Increased, counts of 15 per 100 sweeps in alfalfa and oats, in western Dane County. (Wis. Ins. Sur.).

BEET LEAFHOPPER (Circulifer tenellus) - IDAHO - Adult survey indicates populations below 1969. Host plants less widespread and in poor condition compared with 1969. (PPD).

CORN EARWORM (Heliothis zea) - TEXAS - Light on young grain sorghum in Williamson County. (Green, Wakefield).

CORN LEAF APHID (Rhopalosiphum maidis) - TEXAS - Numerous in some south-central areas. Beneficial insects controlling aphids in most fields in Live Oak and Gonzales Counties week ending May 1. (Cole). Currently light to moderate on small grains in El Paso County. Heavy in grain sorghum in Williamson County. Light to heavy in several counties, including Victoria, De Witt, and Caldwell. (Green et al.). ARIZONA - Averaged 100 per linear foot of sorghum in Maricopa County. (Ariz. Coop. Sur.).

GREENBUG (Schizaphis graminum) - KANSAS - Ranged 1-10 per linear foot of wheat in Sedgwick, Elk, Greenwood, Bourbon, Labette, Montgomery, Neosho, Allen, Lyon, Chase, and Anderson and 1-20 per linear foot in Chautauqua, Crawford, and Cherokee Counties. None found in wheat in Sumner, Cowley, Thomas, Rawlins, Sherman, and Cheyenne Counties. (Guldner et al.). TEXAS - Populations still heavy in some panhandle counties; wheat outgrowing damage. Braconids parasitizing greenbugs in Swisher, Briscoe, and Deaf Smith Counties (Daniels); declined on grain sorghum and corn in Live Oak and Gonzales Counties week ending May 1. (Cole). Currently light to moderate on small grain in El Paso County. Heavy on young grain sorghum in Williamson County. Greenbugs noted in Gonzales, Caldwell, Bexar, Kinney, Pecos, and Reeves Counties. No significant damage noted. (Green et al.). ARIZONA - Averaged 40 per linear foot of sorghum on 3 to 8-inch plants in 6 fields in Goodyear, Litchfield, and Maryvale areas of Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

POTATO LEAFHOPPER (Empoasca fabae) - VIRGINIA - First adult of season in Montgomery County on birdsfoot trefoil April 30. (Pienkowski).

POTATO PSYLLID (Paratrioza cockerelli) - ARIZONA - This species and Myzus persicae (green peach aphid) required treatments in some potato fields in Maricopa County. (Ariz. Coop. Sur.).

SPOTTED ALFALFA APHID (Therioaphis maculata) - WISCONSIN - Increased, averaged 1 per 5 sweeps, in some alfalfa at Spring Green, Sauk County. (Wis. Ins. Sur.).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (*Ostrinia nubilalis*) - NORTH DAKOTA - Winter mortality survey in southeast counties indicates higher than normal mortality for 1970. Ranged 0-90 (averaged 31) percent in Cass, Dickey, Ransom, Richland, and Sargent Counties. Increased 17 percent from 14 percent mortality in 1969. None of fields surveyed worked up. (Brandvik). WISCONSIN - Pupation started in sandy areas of State. (Wis. Ins. Sur.). ILLINOIS - Pupation 50 percent in Gallatin County. Started in northern area. First-generation borers not expected to cause much damage. (Sur. Bull.). MARYLAND - Pupation increasing. Ranged 10-25 percent on Eastern Shore and 1-12 percent in counties west of Chesapeake Bay. (U. Md., Ent. Dept.).

CHINCH BUG (*Blissus leucopterus*) - TEXAS - Heavy near Giddings, Lee County, on grain sorghum and corn. Some damage in Live Oak County week ending May 1. (Spivey, Cole). Currently damaging grain sorghum in several south-central counties. Problem magnified due to dry weather. (Cole).

SOUTHERN CORN ROOTWORM (*Diabrotica undecimpunctata howardi*) - TEXAS - Light in grain sorghum in Williamson and Limestone Counties. (Green et al.). ALABAMA - Destroyed 25-30 percent of young corn plants in 150-acre planting in Escambia County. (Knowles).

SEED-CORN BEETLE (*Agonoderus lecontei*) - MICHIGAN - Hundreds collected at Lenawee County blacklight on nights of April 26 and 27. (Newman).

SEED-CORN MAGGOT (*Hylemya platura*) - NEW JERSEY - Collected 330 on 4 sticky-board traps at Cedarville April 29 to May 6. (Ins.-Dis. Newsltr.).

EASTERN SUBTERRANEAN TERMITE (*Reticulitermes flavipes*) - ALABAMA - Damaging stalks of sugarcane in Escambia County. (Knowles, Barnett).

SMALL GRAINS

PALE WESTERN CUTWORM (*Agrotis orthogonia*) - SOUTH DAKOTA - Economic, larvae ranged 1-3 per row foot of winter wheat near Carter, Tripp County. Controls applied to 500 acres of winter wheat near Presho, Lyman County. (Jones, Jensen). WYOMING - Larvae ranged 0-8 (averaged 0.35) per linear foot in 24 wheatfields in Goshen, Platte, and Laramie Counties. Some spotty damage beginning to show in few fields. Larvae averaged 1.4 per linear foot in heaviest infested field. (Parshall). COLORADO - Scattered economic infestations (3-5 per linear foot) in wheat in northeastern areas. Controls applied to some fields. (Johnson).

A WIREWORM (*Limonijs infuscatus*) - IDAHO - Ranged up to 12 per square foot in bluegrass seed fields and wheatfields at Post Falls and Worley, Kootenai County, and grassy field margins and wheatfields at Plummer, Benewah County. (Portman).

AN ANTHOMYIID FLY (*Hylemya cerealis*) - COLORADO - Observed on wheat throughout northeastern areas. Some controls applied. (Reinschmidt et al.).

ENGLISH GRAIN APHID (*Macrosiphum avenae*) - WISCONSIN - Alates appearing in western part of State, none found in southeastern counties. (Wis. Ins. Sur.).

BROWN WHEAT MITE (*Petrobia latens*) - NEVADA - Medium on experimental plots of barley and wheat at Sparks, Washoe County. (Cords, Maxfield). WYOMING - Ranged 0-60 per linear foot of wheat in Goshen and Laramie Counties. (Parshall).

TURF, PASTURES, RANGELAND

WESTERN TENT CATERPILLAR (*Malacosoma californicum* ssp.) - NEVADA - Tents ranged 0-10 (average 4-5) per plant of bitterbrush (*Purshia tridentata*) at Peavine Mountain, Washoe County. (Lauderdale).

A CLICK BEETLE (Oedostethus femoralis) - WISCONSIN - Collected on July 28, 1969, from Japanese beetle traps at Mitchell Air Field in Milwaukee. Determined by V.H. Owens. This is a new State record. (Wis. Ins. Sur.).

A GROUND PEARL (Margarodes sp.) - TEXAS - Heavy on Tifgreen lawns at Odessa, Ector County. (Need).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - MISSOURI - Heavy damage in central, east-central, southeast, and south-central areas. Many untreated fields completely defoliated. Counts in these 4 areas ranged 15-60 larvae and 1-4 adults per sweep. Pupation underway in east-central, southeast, and south-central areas. Heavy populations of second instars throughout northeast area. Overwintered adult mating and oviposition observed throughout area. Adults and larvae collected in Bates, Cass, Jackson, St. Clair, and Vernon Counties. These are new county records. Chemical controls applied throughout southern half of State. (Hanning et al.). ILLINOIS - Larvae extremely abundant in alfalfa in southern areas. Pupation underway. Severe damage occurred to some fields in southern area. Controls applied. In northern areas moderate damage expected. May be problem of second cutting in north. (Sur. Bull.). INDIANA - Larval counts averaged 6 per 100 stems in northern district; feeding signs averaged 57 percent in southeast, 71 in south-central, and 82 in the southwest districts. (Meyer). WISCONSIN - Primarily first instar and few second instars appearing. Larval damage difficult to assess due to feeding by larvae of Hypera punctata (clover leaf weevil) with populations higher than alfalfa weevil. Feeding by combined species evident in newly seeded fields. (Wis. Ins. Sur.). MICHIGAN - Adults in St. Clair County; found in protected areas. Adults and feeding signs found in Ingham and Clinton Counties, not yet damaging. Adults scarce in fields examined in Bay, Saginaw, and Tuscola Counties. (Ruppel). NEW YORK - Adults ranged 1 per 2 sweeps to 1 per sweep on alfalfa in Genesee County April 28. Adults found in Livingston County April 17. (N.Y. Wkly. Rpt.). NEW JERSEY - Adults and larvae in southern counties practically non-existent. (Ins.-Dis. Newsltr.). DELAWARE - All instars present on alfalfa in Sussex County, feeding injury very light in most fields. (Burbutis, Kelsey).

MARYLAND - Alfalfa weevil adult and larval activity increasing in central and Eastern Shore counties. Adults 3-12 per 10 sweeps. Larvae ranged 0-30 per 10 sweeps statewide. Larvae heaviest in 40 acres of alfalfa near Beltsville, Prince Georges County. (U. Md., Ent. Dept.). VIRGINIA - Light to heavy in southern Piedmont; most fields moderate. Damage generally higher than predicted in area. Damage by county as follows: Franklin light to heavy, most fields moderate; Campbell light; Nottoway moderate to heavy, most fields moderate. (Allen). Larvae averaged 20 per sweep in Hanover County. (Innes). TENNESSEE - Heavy damage in alfalfa in Giles County. (Edwards et al.). SOUTH CAROLINA - Still in all alfalfa fields; adults and second-generation larvae numerous in Anderson and Newberry Counties. (Thomas). ARKANSAS - No economic infestations in southwest areas. Adults ranged 15-30 in 100 sweeps in Lafayette County. (Boyer, Barnes). TEXAS - Specimens collected at Stephenville, Erath County, March 26; at Sequin, Guadalupe County, by H.S. New April 1; at Luling, Caldwell County, by C.L. Cole April 8; at Meridian, Bosque County, by L.R. Green March 26; at Hamilton, Hamilton County, March 26; and at Carrizo Springs, Dimmit County, by O. Reinhart April 6; and at Bastrop, Bastrop County, by E. Migura April 7. Collections on alfalfa and clover. Determined by D.M. Anderson and R.E. Warner. These are new county records. (PPD). COLORADO - Adult feeding very light, no evidence of egg laying in Logan, Morgan, Weld, and Larimer Counties. (Johnson). WYOMING - Averaged 0-4 per 10 sweeps of alfalfa in Platte and Goshen Counties. (Parshall). UTAH - Adults active at Brigham, Box Elder County (Knowlton, May 5); limited in northern areas due to cold weather. (Davis, May 6).

CLOVER LEAF WEEVIL (Hypera punctata) - WISCONSIN - Ranged first to third instar and generally outnumbered alfalfa weevil larvae by 3 to 1. (Wis. Ins. Sur., May 1). KANSAS - Counts of 20 per 10 sweeps of alfalfa in Cherokee County. (Guldner), 20 per 25 sweeps in Graham, Sheridan, and Rawlins Counties. (Iselin).

PEA APHID (Acyrtosiphon pisum) - ARIZONA - Averaged 800 per 100 sweeps of alfalfa in Yuma County. (Ariz. Coop. Sur.). KANSAS - Average per 25 sweeps of alfalfa by county: 0-10 in Sherman and Cheyenne, 10-50 in Thomas, Rawlins, Cherokee; 50-100 in Neosho, Allen, Chautauqua, Anderson; 100-200 in Montgomery, Wabaunsee; 200-300 in Labette, Bourbon, Crawford, Greenwood; 300-400 in Chase, Lyon; 500-600 in Elk; 600-700 in Sedgwick; 800-900 in Cowley and 1,000-1,500 in Sumner. Predators and parasites in significant numbers in all infested fields. (Guldner et al.). ARKANSAS - Heavy, ranged 800-1,000 in 100 sweeps, in alfalfa in southwest areas. (Boyer, Barnes). MISSOURI - Heavy, up to 500 per sweep still found throughout southwest area. Predators still low but diseased aphids observed in all fields. (Munson). WISCONSIN - Remains low, parasitism noticeable; as high as 30 percent in southeastern counties. Adults of Praon pequodorum (a braconid) emerging. (Wis. Ins. Sur.). INDIANA - Averaged 31 (ranged 0-105) per 100 sweeps in southern district. (Meyer). VIRGINIA - Averaged 30-50 per 100 sweeps of alfalfa and red clover in Franklin, Mecklenburg, Campbell, and Nottoway Counties. (Allen).

NOCTUID MOTHS - MICHIGAN - Agrotis ipsilon (black cutworm) increasing, 7 collected at Livingston County light trap week ending May 4. (Newman). WISCONSIN - Colias eurytheme (alfalfa caterpillar) larvae common in many alfalfa fields and some parasitism evident. (Wis. Ins. Sur., May 1). ARIZONA - Spodoptera exigua (beet armyworm) larvae averaged 8 per 100 sweeps of alfalfa at Yuma Valley, Yuma County. (Ariz. Coop. Sur.).

MEADOW SPITTLEBUG (Philaenus spumarius) - WISCONSIN - Eggs hatching in sandy areas of State and nymphs on alfalfa week ending May 1. Spittle masses currently 1 in 10 stems of alfalfa in sandy areas. (Wis. Ins. Sur.). INDIANA - Spittle masses averaged 11 per 100 stems of alfalfa in southeast district, 22 per 100 in south-central, and 15 per 100 in southwest. (Meyer). MARYLAND - Heavy (6-10 spittle masses per square foot) in 4 large stands (totaling 250 acres) of red clover in Carroll, Howard, and Frederick Counties. (U. Md., Ent. Dept.). VIRGINIA - Very light on red clover in Franklin, Campbell, Halifax, Mecklenburg, Botetourt, Roanoke, and Montgomery Counties. (Allen). Appeared in Fluvanna County on red clover and alfalfa. (Watts).

LYGUS BUGS (Lygus spp.) - INDIANA - L. lineolaris (tarnished plant bug) adults averaged 21 per 100 sweeps of alfalfa in southeast district, 25 in south-central, and 36 in southwest. (Meyer). VIRGINIA - L. lineolaris 14-24 per 100 sweeps of alfalfa in Franklin, Campbell, and Nottoway Counties. (Allen). ARIZONA - Lygus sp. averaged 350 per 100 sweeps of alfalfa at Gila Valley and Yuma Mesa, Yuma County. (Ariz. Coop. Sur.).

PEANUTS

A BURROWING STINK BUG (Pangaeus bilineatus) - TEXAS - Light and feeding on cotyledons of young peanuts in Frio County. (Cole).

COTTON

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Overwintered weevils trapped in Wharton, Jackson, Matagorda, Calhoun, Stonewall, and Haskell Counties. Traps inside diapause control areas indicate much lower weevil populations. (Cole, Boring, May 1). In McLennan and Falls Counties, 12 flight screens installed and 1 weevil collected April 10. In 60 fields inspected 1 weevil found. (Cowan et al.). Decline in weevil catches in south-central areas; may be due to weather. Collected 1 weevil in diapause control area, 23 from area southeast of control zone between treated and untreated fields. Total of 18 weevils caught in Matagorda County and 10 in northern Wharton County. (Green). ALABAMA - Surveys negative in

Monroe, Shelby, Talladega, Morgan, and Colbert Counties. (McQueen). SOUTH CAROLINA - Boll weevil survival lower than anytime since 1940. (Nettles).

ALFALFA WEEVIL (Hypera postica) - TEXAS - Adults heavy in young cotton in Navarro County, apparently attacking stems at ground level. (Turney).

DARKLING BEETLES (Blapstinus spp.) - ARIZONA - Controls required in 1 field of young cotton at Marana, Pima County. (Ariz. Coop. Sur.).

BOLLWORMS (Heliothis spp.) - TEXAS - H. zea and H. virescens light in cotton in lower Rio Grande Valley. (Deer, May 1).

COTTON FLEAHOPPER (Pseudatomoscelis seriatus) - TEXAS - Increasing in some fields in lower Rio Grande Valley week ending May 1. (Deer). Light in 3 of 22 treated fields and in 9 of 38 untreated fields in McLennan and Falls Counties. (Cowan et al.).

A FLEAHOPPER (Spanogonicus albofasciatus) - ARIZONA - Averaged 1 per 5 cotton seedlings on west side of Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

SUGARBEETS

SUGAR-BEET ROOT MAGGOT (Tetanops myopaeiformis) - IDAHO - Larvae pupating at Rupert, Minidoka County, and adult emergence expected soon. (Peay). COLORADO - Adults emerging in Windsor area, Weld County. (Jenkins).

POTATOES, TOMATOES, PEPPERS

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - DELAWARE - Adults on young potatoes in Kent County. (Boys). MARYLAND - Adults active in recently plowed, unplanted fields in Dorchester, Wicomico, Somerset, and Worcester Counties. Expect problems on transplanted tomatoes if controls not applied during transplanting. (U. Md., Ent. Dept.). INDIANA - Adult counts of 1-2 on potato plants in Gibson County. (Meyer). WASHINGTON - Overwintering adults emerging from shelter at Yakima, Yakima County. (Landis).

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - MARYLAND - First adults of season in newly planted tomatoes in Caroline County, no damage. (U. Md., Ent. Dept.).

GREEN PEACH APHID (Myzus persicae) - ARIZONA - This species and Paratrioza cockerelli (potato psyllid) required treatments in some potato fields in Maricopa County. (Ariz. Coop. Sur.).

COLE CROPS

IMPORTED CABBAGEWORM (Pieris rapae) - MICHIGAN - Early spring brood appeared in limited numbers May 3 in Livingston County. Eggs deposited on wild and early planted crucifers. (Newman).

GENERAL VEGETABLES

CABBAGE LOOPER (Trichoplusia ni) - TEXAS - Heavy and widespread on cabbage and lettuce in Limestone County. (Brown, May 1).

ONION MAGGOT (Hylemya antiqua) - NEW JERSEY - Collected 30 on 4 sticky-board traps at Cedarville April 29 to May 6. (Ins.-Dis. Newsltr.).

A SNAIL (Otala lactea) - ARIZONA - Collected 4 specimens at residence April 22. Two adjoining residences infested. First record of establishment in Maricopa County. Determined by A. Mead. (Ariz. Coop. Sur.).

DECIDUOUS FRUITS AND NUTS

EASTERN TENT CATERPILLAR (*Malacosoma americanum*) - TENNESSEE - Defoliation beginning on shade trees in central area. Heavy damage expected in some areas. (Gordon). WISCONSIN - Webs noticeable. (Wis. Ins. Sur., May 1). NEW JERSEY - Active for first time in 2 years on Morris County wild cherry. (Ins.-Dis. Newsltr.). RHODE ISLAND - Hatched in Providence County. (Relli).

GEOMETRID MOTHS - TENNESSEE - *Paleacrita vernata* (spring cankerworm) damage heavy on apple trees in Giles County. (Edwards et al.). MICHIGAN - *P. vernata* and *Alsophila pometaria* (fall cankerworm) adults showed moderate increase in Livingston County blacklight trap. Counts below numbers of past 2 years. (Newman, May 4).

PEACH TWIG BORER (*Anarsia lineatella*) - WASHINGTON - First shoot strikes on peach April 27 at Sawyer, Yakima County. (Johnson).

ORIENTAL FRUIT MOTH (*Grapholitha molesta*) - WASHINGTON - First adults trapped April 28 at Sawyer, Yakima County. (Johnson). COLORADO - Adults increasing in traps in Palisade and Vineland districts of Mesa County. Ranged 1-31 per trap; heaviest at Vineland. (Sisson, Anderson). NEW JERSEY - Trapped 7 moths at Glassboro, Gloucester County, April 29 to May 6. (Ins.-Dis. Newsltr.).

CODLING MOTH (*Laspeyresia pomonella*) - WASHINGTON - First adults in sex lure traps May 2 at Prosser, Benton County, and in upper Yakima Valley, Yakima County. (Johnson, Olmstead).

PEAR PSYLLA (*Psylla pyricola*) - MICHIGAN - Hatching from Berrien County to Fennville, Allegan County. (Janes, May 4). NEW YORK - Hatched in Ulster, Dutchess, and Orange Counties week ending May 4. Generally lighter than in 1969. (N.Y. Wkly. Rpt.). CONNECTICUT - Adults at East Lyme, New London County. Hatched at Storrs, Tolland County. (Savos, May 6).

CICADAS (*Magicicada* spp.) - MARYLAND - Nymphal tunnels evident throughout State west of Chesapeake Bay. Heaviest counts of emergence holes, 1-10 per square foot, in wooded areas near Greenbelt, Prince Georges County. (U. Md., Ent. Dept.).

TARNISHED PLANT BUG (*Lygus lineolaris*) - NEW YORK - Feeding on pears and apples in Ulster, Dutchess, and Orange Counties April 26-27. (N.Y. Wkly. Rpt.). MICHIGAN - First adults in orchards week ending May 4. (Janes).

EUROPEAN RED MITE (*Panonychus ulmi*) - MICHIGAN - Immatures numerous on apple foliage from Benton Harbor through Kalamazoo to Pontiac. (Janes, May 4). NEW JERSEY - First hatch of year May 2-3 in south counties. Coincides with full pink stage for Red Delicious. (Ins.-Dis. Newsltr.). CONNECTICUT - Overwintered egg hatch at New Haven, New Haven County; Woodstock, Windham County; and Storrs, Tolland County. (Savos, May 6).

A SPIDER MITE (*Tetranychus mcDanieli*) - WASHINGTON - Early instars on pear May 6 at Parker Heights, Yakima County. (Johnson).

PECAN NUT CASEBEARER (*Acrobasis caryae*) - TEXAS - Moth emergence in De Witt County week ending May 1. Larvae tunneling in developing shoots in Wilbarger, Martin, and Upton Counties. (Boring et al.). Moth emergence from pupae collected in bands reached 10 percent in Maverick County May 1-2, peaked May 4. Moth emergence 10 percent in Brazos County May 6; anticipated spray date May 16. Moth emergence 15 percent by May 5 in Milam County; spray date May 15-16. (Harris et al.).

CITRUS

Citrus Insect Situation in Florida - End of April - CITRUS RUST MITE (*Phyllocoptura oleivora*) infested 71 (norm 63) percent of groves; economic in 57 (norm 40) percent. Advanced farther into high range and is above average. Further increase expected. Highest districts west, south, central, and east. CITRUS RED MITE (*Panonychus citri*) in 40 (norm 49) percent of groves; economic in 21 (norm 19) percent. Increase but still below normal and in low range. Increase expected to continue. Highest districts north and south. TEXAS CITRUS MITE (*Eutetranychus banksi*) in 24 (norm 49) percent of groves; economic in 11 (norm 24) percent. At lowest April level in 11 years. Will remain in low range in all districts despite expected increase. Highest district south. SIX-SPOTTED MITE (*Eotetranychus sexmaculatus*) in 12 (norm 9) percent of groves; economic in 2 (norm 1) percent. Near normal. Will increase through May and then decrease rapidly. Scattered groves that did not receive a miticide postbloom may develop heavy infestations that can cause leaf drop. GLOVER SCALE (*Lepidosaphes gloverii*) in 79 (norm 82) percent of groves; economic in 10 (norm 19) percent. Below normal and moderate; increase expected. Highest districts west, north, and east. PURPLE SCALE (*L. beckii*) in 69 (norm 82) percent of groves; economic in 5 (norm 11) percent. Below normal and at moderate level; little change expected. Highest districts west and north. YELLOW SCALE (*Aonidiella citrina*) in 61 (norm 64) percent of groves; economic in 4 (norm 9) percent. CHAFF SCALE (*Parlatoria pergandii*) in 46 (norm 64) percent of groves; economic in 2 (norm 11) percent. BLACK SCALE (*Saissetia oleae*) in 5 (norm 26) percent of groves; none economic (norm 10 percent). Above 3 scales below normal abundance and in low range; all expected to increase gradually. An ARMORED SCALE (*Unaspis citri*) in 26 percent of groves; moderate or heavy in 7 percent. Population highest on record for April. Increase expected. WHITEFLIES in 72 (norm 63) percent of groves; economic in 15 (norm 7) percent. Adult, egg, and larval forms much above normal abundance in April. Larvae expected to increase into high range. MEALYBUGS expected to continue to be low until June. (W.A. Simanton, Citrus Expt. Sta., Lake Alfred).

CITRUS THRIPS (*Scirtothrips citri*) - ARIZONA - Treated all citrus areas at Yuma, Yuma County. Many young commercial groves treated in Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

SMALL FRUITS

A GROUND PEARL (*Margarodes meridionalis*) - ARIZONA - Infested soil in grape vineyard at Chandler Heights, Maricopa County. (Ariz. Coop. Sur.).

ORNAMENTALS

CITRUS RED MITE (*Panonychus citri*) - ARIZONA - Infested camellia at local nursery in Maricopa County. (Ariz. Coop. Sur.).

SPIDER MITES - COLORADO - Very active on junipers at Greeley, Weld County. Controls recommended. (Urano).

FOREST AND SHADE TREES

SOUTHERN PINE BEETLE (*Dendroctonus frontalis*) - TEXAS - Numbers throughout early 1970 remained significantly below previous years. Total of 136 multiple tree spots detected on private lands since January 1. Of these, about 36 have been southern pine beetle. Controlled spot size averaged 36 trees in 1970, well below 72-tree average of 1968 and 1969. (Mason, For. Pest Activity Rpt., Jan. - Mar.).

DEODAR WEEVIL (*Pissodes nemorensis*) - TEXAS - Damage heavy to seedlings and saplings on roadsides and cleared areas. Killed or damaged 4,000 young trees in eastern Angelina County. (Mason, For. Pest Activity Rpt., Jan. - Mar.).

PINE COLASPIS (*Colaspis pini*) - TEXAS - Damaging ornamental pines in Morris County. (Coster, May 1).

OLETHREUTID MOTHS - TEXAS - Rhyacionia frustrana (Nantucket pine tip moth) damage very heavy to pine seedlings in Chambers, Harris, and Red River Counties. Many areas throughout pine range heavily infested past 3-4 years. (Mason, For. Pest Activity Rpt., Jan. - Mar.). RHODE ISLAND - R. buoliana (European pine shoot moth) larvae on Scotch pine in Kent County. (Relli, May 1). MICHIGAN - Taniwa albolineana (spruce needle miner) damage severe in acre block of Colorado spruce in Macomb County April 29. (Hanna).

TEXAS LEAF-CUTTING ANT (Atta texana) - TEXAS - Damage increased primarily due to new pine plantings and absence of other green foliage. Heavily damaged 5,500 seedlings in Bastrop, Wood, Gonzales, Lee, Colorado, Caldwell, Fayette, Polk, and Rusk Counties. Bait control effective. (Mason, For. Pest Activity Rpt., Jan. - Mar.).

EUROPEAN PINE SAWFLY (Neodiprion sertifer) - INDIANA - Larvae heavy in Ripley County but not unusually abundant in other areas. (Schuder).

PINE SPITTLEBUG (Aphrophora parallela) - MICHIGAN - Few first instars May 1 on Scotch pine in Ingham County. No spittle masses. Normal hatch expected in 14 days with spittle masses most evident in early June. (Hanna).

ELM LEAF BEETLE (Pyrrhalta luteola) - TEXAS - Overwintering adults damaged elm leaves in Upton, Glasscock, and several Rolling Plains counties. (Neeb, Boring, May 1). NEVADA - Heavy adult emergence from hibernation, feeding on elm foliage in southern Washoe County. (Nev. Coop. Rpt.).

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) - KANSAS - Adults feeding on American elm in Shawnee County. (Simpson). IDAHO - Adults emerging and migrating at Caldwell, Canyon County. (Homan).

NATIVE ELM BARK BEETLE (Hylurgopinus rufipes) - NORTH DAKOTA - Adults appeared at Kindred, Cass County. Collected 75 in window trap in 24 hours. (Brandvik).

SPRING CANKERWORM (Paleacrita vernata) - WISCONSIN - First instars feeding on American elm leaves in western Dane County. (Wis. Ins. Sur., May 1).

MAN AND ANIMALS

HORN FLY (Haematobia irritans) - TEXAS - Building up on cattle throughout Rolling Plains. Light in Martin, Midland, and Glasscock Counties. Heaviest, 600 per head, in Glasscock County. (Boring, Neeb, May 1). Light to heavy on cattle in Victoria and Cottle Counties. Moderate to heavy in Shackelford County. (McCombs, Boring). MARYLAND - First adults of season 3-15 per head on 60 steers at Brookville, Montgomery County. (U. Md., Ent. Dept.).

FACE FLY (Musca autumnalis) - NEW JERSEY - On dairy cows near Neshanic, Somerset County. (Ins.-Dis. Newsltr.). MARYLAND - First adults of season in Frederick, Carroll, Baltimore, and Howard Counties. Adults 5-25 per head on dairy cattle and beef steers. (U. Md., Ent. Dept.). IDAHO - First male of season at Moscow, Latah County, May 2. (Portman).

MOSQUITOES - TEXAS - Aedes sollicitans light at Sabine and Pleasure Island, Jefferson County, during April. Culex salinarius heavy in south and central areas of county. C. pipiens quinquefasciatus larvae becoming numerous in polluted water. Probably first flight of Psorophora confinnis males April 16. New Coquillettidia perturbans females collected early in April. (Jefferson County Mosq. Cont. Dist.).

SCREW-WORM (Cochliomyia hominivorax) - No cases reported in U.S. May 3-9. Total of 46 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico April 26 to May 2: Sonora 43, Chihuahua 2, Nuevo Leon 1. Total of 13 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 14,638,000; Mexico 140,850,000. (Anim. Health Div.).

A BITING MIDGE (Culicoides variipennis) - INDIANA - Annoying man and cattle in Grant County. (Sanders).

HOUSEHOLDS AND STRUCTURES

A SUBTERRANEAN TERMITE (Reticulitermes tibialis) - NEVADA - Heavy; damage heavy to several houses at Reno, Washoe County, and Carson City, Ormsby County. (Nev. Coop. Rpt.).

BENEFICIAL INSECTS

LADY BEETLES - ARKANSAS - Coccinella novemnotata, most abundant lady beetle, 75-100 in 100 sweeps, in alfalfa in Lafayette County. (Boyer). Hippodamia convergens (convergent lady beetle) light, 15-20 in 100 sweeps, in southwest area alfalfa. (Boyer, Barnes). TENNESSEE - H. convergens light to moderate in small grains in central area. (Gordon). INDIANA - Ceratomegilla maculata adults averaged 12 per 100 sweeps of alfalfa in southeast district, 13 in south-central, and 74 in southwest. (Meyer). WASHINGTON - Coccinella transversoguttata (transverse lady beetle) adults emerging from overwintering cache at bases of trees at Yakima, Yakima County. (Landis).

DAMSEL BUGS - INDIANA - Adults averaged 20 per 100 sweeps of alfalfa in southeast district, 5 in south-central, and 31 in southwest. (Meyer).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

CEREAL LEAF BEETLE (Oulema melanopus) - MICHIGAN - Adults and feeding scarce on wheat and grasses in Ingham and Clinton Counties. None in Bay and Tuscola Counties. (Ruppel). Eggs laid on wheat April 28 at Gull Lake, Kalamazoo County. (Janes).

CITRUS BLACKFLY (Aleurocanthus woglumi) - MEXICO - Biological Control - Infested 3,831 of 66,031 trees inspected in municipios Villagran, Hidalgo, and Padilla, Tamaulipas. Chemical Control - Infested 516 of 48,413 trees inspected in 7 municipios of Nuevo Leon. Infested 4 trees in Reynosa, Tamaulipas. Inspection in Sonora and Baja California negative. (PPD Mex. Reg., Mar.).

GRASSHOPPERS - IDAHO - Oedaleonotus enigma 3-27 (averaged 9) per square yard in Rosevear Gulch and Grindstone Butte area of Elmore County. (Evans). WYOMING - Two Psoloessa delicatula fifth instars and 1 Arphia conspersa adult in 100 square feet of rangeland sampled at Glendo study site, Platte County, May 5. Eritettix simplex tricarinatus fifth instars less than 1 per 100 square feet. No hatch of any overwintering eggs. (Pfadt).

A GRASS BUG (Labops hesperius) - UTAH - Counts of 25 per square foot on crested wheatgrass, damage moderate, in Diamond Fork of Spanish Fork Canyon, Utah County. (Thornley, Judd, May 8).

GYPSY MOTH (Porthetria dispar) - NEW YORK - Premature hatch on houses at Huntington and Wildwood, Suffolk County, week ending May 4. (N.Y. Wkly. Rpt.). RHODE ISLAND - Hatching at Burrillville, Providence County. (Stelle).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - ARKANSAS - Light in grass of motel parking lot at Conway, Faulkner County, for a new county record. Collected by R. Loftin May 5. Determined by V.H. Owens; confirmed by D.R. Smith. (PPD).

PINK BOLLWORM (Pectinophora gossypiella) - CALIFORNIA - Release of 4,135,150 sterile moths in Coachella Valley; total to date 19,236,750. Release of 981,500 sterile moths in Bakersfield area, Kern County; total to date 4,007,700. First squares appeared April 25 in Coachella Valley. Heavy native moth emergence in cages since April 10. ARIZONA - First releases of sterile moths this year at Redington, Pima County, May 1; total of 67,500. (PPD).

WHITE-FRINGED BEETLES (*Graphognathus* spp.) - ALABAMA - Larvae damaged young corn and seed corn in 20-acre field and large percentage of transplanted tomato plants in 4-acre field in Houston County. (Wilson).

HAWAII INSECT REPORT

General Vegetables - All stages of TEXAS CITRUS MITE (*Eutetranychus banksi*) heavy on upper leaf surfaces of backyard lima beans at Ewa, Oahu. (Funasaki). IMPORTED CABBAGEWORM (*Pieris rapae*) adults heavy in 0.5 acre of abandoned head cabbage planting at PuTeHu, Maui; eggs light, larvae trace. Adults of a BRACONID (*Apanteles glomeratus*) numerous, average 6 per plant. Adults of ONION THRIPS (*Thrips tabaci*) light, 4-6 per plant, in 1.5 acre of bulb onions at Omapio, Maui. (Miyahira).

Fruit and Nuts - An ARMORED SCALE (*Fiorinia fioriniae*) light, 25 per leaf, on avocado at Pukalani and Makawao, Maui. Trace on macadamia trees at Pukalani. (Miyahira). Larvae of a NOCTUID MOTH (*Phlegetonia delatrix*) heavy, 2-3 per terminal, on mountain-apple (*Eugenia malaccensis*) tree at Kaneohe, Oahu. Moderate to heavy damage to young terminal leaves of Java-plum (*E. cumini*) in windward Oahu. (Funasaki, Kawamura).

Ornamentals - All stages of BANDED GREENHOUSE THRIPS (*Hercinothrips femoralis*) moderate to heavy on foliage and stems of spider lily at resort hotels at Waipouli and Lihue, Kauai. (Sugawa, Bianchi).

Beneficial Insects - Larvae of a PUNCTURE-VINE STEM WEEVIL (*Microlarinus lypriformis*) in all 71 internodes of *Tribulus cistoides* and in 63 percent of 107 internodes of *T. terrestris* at Waikapu, Maui. (Miyahira).

Miscellaneous Pests - During April surveys for GIANT AFRICAN SNAIL (*Achatina fulica*), 369 snails, mostly juveniles, destroyed at Poipu; 6 at Wahiawa, Kauai. No live snails detected in areas accessible by surveillance trails, but 12 snails discovered in adjacent areas. Poison baits extended to include these areas. (Sugawa, Yoshioka).

DETECTION

New State Record - A CLICK BEETLE (*Oedostethus femoralis*) WISCONSIN - Milwaukee. (p. 323).

New County Records - ALFALFA WEEVIL (*Hypera postica*) MISSOURI - Bates, Cass, Jackson, St. Clair, Vernon; TEXAS - Bastrop, Bosque, Caldwell, Dimmit, Erath, Guadalupe, Hamilton (p. 323). IMPORTED FIRE ANT (*Solenopsis saevissima richteri*) ARKANSAS - Faulkner (p. 329).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville, 5/1-7, BL - Armyworm (*Pseudaletia unipuncta*) 7, beet armyworm (*Spodoptera exigua*) 35, black cutworm (*Agrotis ipsilon*) 12, granulate cutworm (*Feltia subterranea*) 22, salt-marsh caterpillar (*Estigmene acrea*) 1, variegated cutworm (*Peridroma saucia*) 4, yellow-striped armyworm (*Prodenia ornithogalli*) 2. MISSISSIPPI - Stoneville - 5/1-7, 2BL, 47°-88°F., precip. 0.93 - Armyworm 32, black cutworm 43, corn earworm (*Heliothis zea*) 14, fall armyworm (*S. frugiperda*) 1, granulate cutworm 3, salt-marsh caterpillar 43, variegated cutworm 4, yellow-striped armyworm 29. MISSOURI - Fair Grove - 4/30-5/6, BL - Armyworm 224, black cutworm 14, variegated cutworm 7. Kansas City - 4/23-5/6 - Armyworm 164, black cutworm 23, variegated cutworm 14. OHIO - Wooster, 5/1-7, BL - Armyworm 51, black cutworm 2, variegated cutworm 1. TEXAS - Waco - 4/30-5/7, BL - Armyworm 3, beet armyworm 3, black cutworm 3, cabbage looper (*Trichoplusia ni*) 1, corn earworm 1, variegated cutworm 15, yellow-striped armyworm 13.

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Cooperative
**ECONOMIC INSECT
REPORT**

Issued by

**PLANT PROTECTION DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE**



AGRICULTURAL RESEARCH SERVICE

PLANT PROTECTION DIVISION

ECONOMIC INSECT SURVEY AND DETECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT**HIGHLIGHTS**Current Conditions

ARMYWORM moth catches increased in light traps in Missouri and Nebraska. ASTER LEAFHOPPER heavy on rye, alfalfa, and grasses in Minnesota. SPOTTED ALFALFA APHID heavy on alfalfa in Oklahoma and appears to be building up in some fields in New Mexico. (p. 334).

ALFALFA WEEVIL adults damaging clover and vetch in Alabama, and heavy in southern Illinois. Larval damage up to 81 percent in northeast Missouri. (p. 336). PEA APHID damage still heavy in Colorado. Populations heavy on alfalfa in Oklahoma and Kansas. (p. 337).

PEA LEAF WEEVIL adults damaged peas in Washington and infested peas in Idaho. (p. 339).

Adults of PERIODICAL CICADAS appearing in Georgia, Tennessee, Maryland, and Pennsylvania. (p. 340).

HORN FLY heavy on cattle in Maryland, Alabama, and Mississippi; increasing in Oklahoma and Texas. (pp. 341, 342).

Detection

New State records include a DARKLING BEETLE from Idaho (p. 342) and a SCARAB from Ohio (p. 336).

For new county records see page 344.

Special Reports

Survey Methods. Selected References 1943. Part XXIX. (pp. 345-346).

CONTENTS

Special Insects of Regional Significance.....333

Insects Affecting

Corn, Sorghum, Sugarcane.....	335	Beans and Peas.....	339
Small Grains.....	336	General Vegetables.....	339
Turf, Pastures, Rangeland.....	336	Deciduous Fruits and Nuts.....	340
Forage Legumes.....	336	Citrus.....	340
Soybeans.....	338	Small Fruits.....	340
Cotton.....	338	Forest and Shade Trees.....	341
Tobacco.....	338	Man and Animals.....	341
Sugarbeets.....	338	Households and Structures.....	342
Potatoes, Tomatoes, Peppers.....	338	Stored Products.....	342

Beneficial Insects..... 343

Federal and State Plant Protection Programs..... 343

Hawaii Insect Report..... 344

Detection..... 344

Light Trap Collections..... 344

Survey Methods. Selected References 1943. Part XXIX..... 345

WEATHER OF THE WEEK ENDING MAY 18

HIGHLIGHTS: Torrential rains, severe thunderstorms, large hail, and a number of Tornadoes occurred from Texas to Ohio. The weekend brought the warmest temperatures of the year to parts of the West.

PRECIPITATION: Numerous tornadoes and other severe storms occurred in mid-America last week along the middle portion of a quasi-stationary front that stretched from southern Nevada to southern New England. The storminess occurred where the warm humid air from the Gulf of Mexico battled with the unseasonably cool air from the north. One of the worst killer tornadoes struck Lubbock, Texas, Monday evening, killing 21 persons, injuring 1,000 others, and causing over \$100 million damage to property. Hail, preceding or accompanying the storm ranged in size from as large as golf balls to as large as grapefruit. Many were as large as baseballs. Other Tornadoes struck Nebraska, Kansas, Iowa, northern Illinois, Indiana, and Ohio. Many thunderstorms produced large hail. A tornado struck south of Waterloo, Iowa, Monday evening accompanied by hail up to 4-inches in diameter. On Tuesday thunderstorms produced hail as large as golf balls at Kirksville, Missouri, and at Fairbank, Iowa. Several tornadoes struck in Iowa and Illinois late Tuesday. Torrential rains flooded Joliet, Illinois, where some of the streets became covered with 2 to 3 feet of water. The storms Tuesday night were scattered all the way from eastern Kansas to northern Ohio. Local showers exceeding 3.5 inches caused flash floods in east-central and southeastern Kansas. Woodworth, Illinois, received 6 inches of rain in 24 hours and 4 inches fell at Kankakee, Illinois. Severe storms on Wednesday were scattered from Texas to Ohio and Kentucky. The eastern portions of the front moved southward but the western and middle portions remained almost stationary and the storms continued with tornadoes and severe thunderstorms scattered along the front from Texas to Ohio being especially numerous in northern and central Ohio on Thursday. Torrential downpours of 6 to 8 inches or more fell in the Texas hill country on Friday sent the San Marcos River rampaging, flooding half the City of San Marcos, drowning 2 persons and causing \$1 million in property losses.

TEMPERATURE: Cold and hot air masses battled last week along a series of fronts that stretched from southern Nevada to southern New England. This resulted in weekly temperatures which averaged slightly cooler than normal from Washington and Oregon to the Great Lakes and in extreme northern New England while the southern two-thirds of the Nation experienced warmer-than-normal weather. The main exception was central and southern Texas which averaged slightly cooler than normal. Quick warming occurred over the West late in the week with temperatures in the southwestern deserts ranging from 100° to 109° Saturday afternoon. Weather continued on page 339.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

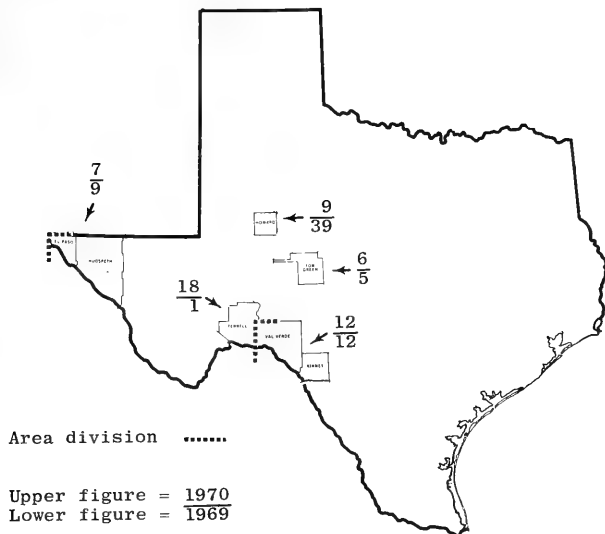
Potato Psyllid Survey, Spring Breeding Areas of Texas

The potato psyllid (*Paratrioza cockerelli* (Sulc)) survey in Texas was completed April 17, 1970. Compared with 1969, psyllid counts remained the same in the Del Rio area, decreased in Big Spring and El Paso areas, and increased in the Marathon-Sanderson and San Angelo areas. Rainfall was above average and temperatures were colder this past winter. Lycium host plants are in fair to excellent condition and heavily leafed in all areas. Psyllid egg deposits were light.

Potato Psyllid Survey on Overwintering Hosts in Texas

Average Number Per 100 Sweeps

<u>District</u>	<u>1968</u>	<u>1969</u>	<u>1970</u>
Big Spring (Howard County)	42	39	9
San Angelo (Tom Green County)	17	5	6
Del Rio (Val Verde and Kinney Counties)	5	12	12
Marathon-Sanderson (Terrell County)	13	1	18
El Paso (El Paso and Hudspeth Counties)	14	9	7 (PPD)



ARMYWORM (*Pseudaletia unipuncta*) - ILLINOIS - Moth flights continue from States to south. Egg laying in grassy areas and in thick stands of wheat, barley, and rye. Early instars in southern and south-central sections. (Sur. Bull). MISSOURI - Larvae ranged up to 7 per sweep in dense fescue and orchard grass in southwest area. Moths increasing in blacklight trap in Greene County. (Peters). NEBRASKA - Moths increased at Lincoln, Lancaster County, and Concord, Dixon County, light traps. Flights heavier than in several years. No larvae reported. (Keith). ARKANSAS - Larvae ranged 0-1 per square foot in thin stands of wheat to 5-6 per square foot in thick stands. (Boyer, Barnes).

ARMY CUTWORM (*Chorizagrotis auxiliaris*) - IDAHO - Larvae moderate in alfalfa at Bonners Ferry, Boundary County. Controls may be needed. (Studer). COLORADO - Larvae light to heavy on wheat in Dolores County. (Alexander).

ASTER LEAFHOPPER (*Macrostelus fascifrons*) - MINNESOTA - Heavy, ranged 80-1,135 per 100 sweeps, in rye, alfalfa, and grasses in southeast, south-central, east-central, and central districts. Limited surveys indicate 2-3 percent carrying aster yellows virus disease. (Minn. Pest Rpt.). FLORIDA - Few nymphs, 25 adults in 100 sweeps of wheat at Gainesville, Alachua County. (Mead).

BEEF LEAFHOPPER (*Circulifer tenellus*) - CALIFORNIA - Total of 33,588 acres treated from Kern County northward. Some migration from spring breeding areas observed in Coalinga area, Fresno County. Spring flight surveys underway. (Cal. Coop. Rpt., May 8). ARIZONA - Averaged 30 per 100 sweeps at Kansas Settlement, Cochise County. (Ariz. Coop. Sur.). WYOMING - Total of 7,456 acres of wasteland in Washakie and southern Big Horn Counties treated. Recovered 1 specimen in 200 (square foot) samples after spraying. Counts before spraying averaged 0.12 per square foot. (Petersen, Parshall).

CORN EARWORM (*Heliothis zea*) - GEORGIA - Light on corn in Cook and Lowndes Counties. (Kessler, French, May 8). ALABAMA - Larvae light on corn in Geneva, Autauga, and other south and central areas. Moth flight heavy in Montgomery County. Larvae still on vetch and late crimson clover throughout State. (Reynolds et al.). OKLAHOMA - Occasional small larvae in alfalfa in northeast, central, and south-central areas. (Okla. Coop. Sur.).

CORN LEAF APHID (*Rhopalosiphum maidis*) - TEXAS - Light on spring barley in El Paso County. (Neeb). Heavy in Lee, Limestone, Bexar, Caldwell, De Witt, Gonzales, and Guadalupe Counties. Moderate in grain and sorghum in Kinney County. (Cole et al.). ARIZONA - Averaged 8 per barley plant at Kansas Settlement, Cochise County. (Ariz. Coop. Sur.). NEVADA - This species and *Schizaphis graminum* (greenbug) heavy on barley in Virgin Valley, Clark County, in early April; declined to trace due to predators and parasites. Damage by greenbug feeding evident on lower leaves. Trace on wheat and barley in Moapa Valley, Clark County, and Pahrap Valley, Nye County. (Bechtel, Zoller).

GREENBUG (*Schizaphis graminum*) - KANSAS - Statewide check of wheat indicates non-economic levels in nearly all fields checked. Ranged 5-50 per row foot in sorghum in Montgomery County. (Simpson). OKLAHOMA - Light, ranged 1-10 per linear foot in wheat, in Texas and Cimarron Counties. Ranged 0-8 per plant on volunteer sorghum in scattered fields in Texas County. (Okla. Coop. Sur.). TEXAS - Light on spring barley in El Paso County. (Neeb). Noted in Limestone, Bexar, Caldwell, De Witt, Gonzales, and Guadalupe Counties. Some controls applied. Heavy in scattered fields of young grain sorghum in Pecos and Reeves Counties. (Cole, Neeb). ARIZONA - Combining started in Salt River Valley. Averaged 4 per plant at Kansas Settlement, Cochise County. (Ariz. Coop. Sur.).

POTATO LEAFHOPPER (*Empoasca fabae*) - ILLINOIS - Continues to migrate into State from south. (Sur. Bull.).

SPOTTED ALFALFA APHID (*Therioaphis maculata*) - OKLAHOMA - Ranged 3,000-5,000 per square foot in alfalfa in Harmon County and 500-1,000 per square foot in field of alfalfa and wheat in Jackson County. Reported moderate in Garvin County. (Okla. Coop. Sur.). NEW MEXICO - Ranged 20-60 per 25 sweeps in most alfalfa in Chaves

County. Appears to be building up in several fields. (Mathews). Ranged 2-10 per 25 sweeps in Socorro County alfalfa. (Heninger). NEVADA - Ranged 0-5 per sweep to 0-4 per stem in alfalfa needing irrigation or in drier areas of field previously irrigated in Pahrump Valley, Nye County; more prevalent in areas of heavy spider mite infestations. (Bechtel, Zoller).

TOBACCO BUDWORM (Heliothis virescens) - FLORIDA - Larvae heavy on flue-cured tobacco at Live Oak, Suwannee County, and generally throughout northern tobacco area April 30. (Strayer). GEORGIA - Very heavy across tobacco belt. (French, May 8).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - ALABAMA - Larvae heavy in 7 acres of early corn at Autaugaville, Autauga County. Ranged 2-5 on 60-80 percent of stalks. Overwintered larvae light in cornfield in Barbour County in April. This is a new county record. (McQueen). GEORGIA - Light in Lowndes County corn. (French, May 8). MARYLAND - Pupation ranged 20-70 percent on Eastern Shore and 0-50 percent in areas west of Chesapeake Bay. (U. Md., Ent. Dept.). DELAWARE - Moths taken in blacklight traps in Kent and Sussex Counties. (Burbutis, Kelsey). ILLINOIS - Pupation underway in southern areas and few moths emerged. Pupation beginning in central areas. No pupation in northern section. Heavy overwintered populations in southern and western areas. Corn may not be mature enough for good survival of first-generation borers. (Sur. Bull.). IOWA - Larvae reduced by plowing in 32 Boone County fields from 4,840 per acre to 1,400. (Iowa Ins. Sur.). MINNESOTA - Larval overwintering mortality averaged 19.6 percent in southwest area. State average 20 percent. (Minn. Pest Rpt.).

NOCTUID MOTHS - FLORIDA - Spodoptera frugiperda (fall armyworm) larvae abundant in buds, with 30 percent of cornstalks affected in untreated check plots of sweet corn at Belle Glade, Palm Beach County, May 5. (Janes). GEORGIA - This species, S. exigua (beet armyworm), and Prodenia ornithogalli (yellow-striped armyworm) light to moderate in Lowndes County corn. (Kessler, French, May 8). OKLAHOMA - Occasional small larvae of P. ornithogalli on Johnston County corn. First of year. (Okla. Coop. Sur.).

SEED-CORN MAGGOT (Hylemya platura) - NEW JERSEY - Collected 235 from 3 sticky boards at Cedarville May 6-13. (Ins.-Dis. Newsltr.).

FLEA BEETLES (Chaetocnema spp.) - ILLINOIS - C. pulicaria (corn flea beetle) feeding on newly emerged corn. No serious injury yet. (Sur. Bull.). VIRGINIA - C. pulicaria averaged 1 per plant on field corn in 20-acre field in Amelia County. (Allen). OKLAHOMA - Chaetocnema sp. ranged 1-5 per plant on corn in Johnston County. Bottom 2-3 leaves heavily damaged on most plants. Light on Garvin County corn. (Okla. Coop. Sur.).

SUGARCANE BEETLE (Euetheola rugiceps) - FLORIDA - Adults abundant in 25 acres of field corn, 35 percent of stand destroyed at Jay, Santa Rosa County, April 29. (Strayer). ALABAMA - Adult damage continues on corn in southern areas. (Lemons). Adults at night lights. Extremely large number entered school building at Livingston in Sumter County. (Shumack et al).

SEED-CORN BEETLE (Agonoderus lecontei) - ILLINOIS - Numerous in many cornfields or in fields soon to be planted to corn. (Sur. Bull.). NEBRASKA - This species and Clivina sp. damaged seedling corn in Hall County; replanting of few fields required. (Logan, May 11).

A CORN LEAFHOPPER (Dalbulus maidis) - FLORIDA - Collected 9 adults on gamagrass in nursery at Coral Gables, Dade County, April 30 by C.F. Dowling, Jr. Determined by F.W. Mead. This is a new county record. Apparently second record for State. (Fla. Coop. Sur.).

CHINCH BUG (*Blissus leucopterus*) - OKLAHOMA - Adults ranged 0-6 per plant on corn in Johnston County. Mating; no nymphs. (Okla. Coop. Sur.). TEXAS - Heavy on grain sorghum in Limestone County. (Brown).

SMALL GRAINS

PALE WESTERN CUTWORM (*Agrotis orthogonia*) - SOUTH DAKOTA - Some economic infestations in western Tripp County winter wheat, mostly on slopes. (Calkins). WYOMING - Larvae ranged 0-5 per linear foot in wheatfield near Lingle, Goshen County. (Burkhardt).

BROWN WHEAT MITE (*Petrobia latens*) - OKLAHOMA - Averaged 1,000 per square foot in field of wheat and alfalfa in Jackson County. Light, ranged 1-10 per linear foot, in wheat in Cimarron County. (Okla. Coop. Sur.).

TURF, PASTURES, RANGELAND

WHITE GRUBS (*Phyllophaga* spp.) - OHIO - *P. knochi* trapped July 9, 1969, at Akron Municipal Airport, Portage County. Determined by V.H. Owens. This is a new State record. (Shepard). This species noneconomic. (PPD). COLORADO - *Phyllophaga* sp. damaging Buffalo gamagrass in one locality in Cheyenne County. (Vance, Hantsberger).

BROWN WHEAT MITE (*Petrobia latens*) - IDAHO - Heavy in bluegrass seedfield at Nezperce, Lewis County. (McPherson).

FORAGE LEGUMES

ALFALFA WEEVIL (*Hypera postica*) - ALABAMA - Adults still heavy on white clover and hairy vetch in Lowndes, Limestone, and Bullock Counties. (Stone et al.). TENNESSEE - Damaged 80 percent of alfalfa terminals in Hardeman County. Adults and larvae common. (Turpen). VIRGINIA - Larvae per sweep by county as follows: Nottoway 10; New Kent 12; Amelia 20; Powhatan 30; Goochland 40; Prince George 60. (Innes, Freund). Damage light to medium in Orange, Page, and Shenandoah Counties; most unsprayed fields show 50 percent of tips damaged. (Allen). MARYLAND - Heaviest larval injury to date found in 40 acres of alfalfa near Darlington, Harford County; 30-40 percent showed light tip damage. Tip damage still 0-20 percent statewide. (U. Md., Ent. Dept.). DELAWARE - Larvae increased, ranged 4-10 per sweep, in Kent and Sussex Counties; injury light in most areas. (Burbutis, Kelsey). PENNSYLVANIA - Damage in eastern areas still light; from Fulton County west, tip damage 35-100 percent. (Gesell, Mallis). NEW YORK - Adults noted in alfalfa in 4-county Finger Lakes region, no damage. Adults common, larvae and eggs scarce in Tompkins County as of May 11. (N.Y. 'Wkly. Rpt.). MASSACHUSETTS - Averaged 1 larva and 133 adults per 100 sweeps in 3 alfalfa fields in Hampshire County. (Jensen, May 8). NEW HAMPSHIRE - Adult on alfalfa at Durham, Strafford County, May 4. (Blickle).

OHIO - Alfalfa weevil eggs per square foot averaged 122 at Wooster, Wayne County, 20 at Castalia, Erie County. (Flessel). MICHIGAN - Eggs 25 per square foot and adults 64 per 100 sweeps in Kalamazoo County; 10-20 eggs per square foot and 25 adults per 100 sweeps in Ingham County. No larvae but evidence of feeding. No damage. (Casagrande). INDIANA - Larval counts per 100-stem sample of alfalfa by district as of May 8 as follows: South 255, southeast 229, south-central 245, and southwest 281. Larvae 1,776 (adults 67) per 100 sweeps in central district. (Meyer). ILLINOIS - Adults heavier than past 2 years. Heavy and damage evident in most fields south of U.S. Highway 136. Pupation underway and wasp parasites reducing some weevil numbers. Eggs hatching, populations expected to remain high for 2 to 3 weeks. North of U.S. Highway 136, larval feeding noticeable. New growth of second crop could sustain most severe injury in this area. (Sur. Bull.). MISSOURI - Damaging in all infested areas of State. Larvae ranged 35 per 100 sweeps in southwest area to 50 per sweep in east-central area. Feeding damage on up to 81 percent of plants in extreme northeast area. (Peters). NEBRASKA - Adults ranged 0-81 per 100 sweeps in 12 fields in Gothenburg and Cozad area in western Dawson County. Larvae light, averaged 1 per 100 sweeps. Adults ranged 0-1 per 100 sweeps

in 12 fields in eastern Dawson County. (Manglitz, Stevens). WYOMING - Alfalfa weevil adults ranged 0-3 per 10 sweeps of alfalfa in Fremont, Hot Springs, Washakie, Big Horn, and Park Counties. Eggs present in most fields, no larvae. (Parshall). COLORADO - Laying eggs in Larimer, Weld, and Boulder Counties. Few larvae found in debris. (Johnson, Cross). KANSAS - Noneconomic in alfalfa in most counties. Finds in Montgomery, Neosho, Crawford, Bourbon, and Morton Counties are new county records. (Simpson). OKLAHOMA - Larvae in alfalfa in Pontotoc County on April 29. Averaged 1 per 100 sweeps near Bixby and 9 per 100 sweeps near Leonard, Tulsa County, May 12. Larvae and adults ranged 4-31 per 100 sweeps in alfalfa in Garvin, Carter, Marshall, Johnston, and Coal Counties May 13 and 14. (Okla. Coop. Sur.).

PEA APHID (Acyrtosiphon pisum) - NEVADA - Heavy, damaging infestations on alfalfa in late April in Sandy Valley, Clark County, reduced to trace by predators and parasites. Averaged 3 per sweep in Moapa Valley and 1 per sweep in Virgin Valley. Earlier, heavy infestations on alfalfa in Pahrump Valley, Nye County, reduced to trace in most fields by predators and parasites. (Bechtel, Zoller). WYOMING - Ranged 0-10 per 10 sweeps of alfalfa in Washakie, Hot Springs, and Big Horn Counties. (Parshall). COLORADO - Damage remains heavy in Fremont, Custer, and Huerfano Counties. Extensive controls applied. (Hantsbarger). NEW MEXICO - Averaged 3-15 per 25 sweeps of alfalfa in Socorro area, Socorro County. (Heninger). OKLAHOMA - Heavy in alfalfa in Mayes, Craig, Kay, Cleveland, and Cotton Counties. Ranged 10-200 per 10 sweeps in Tulsa, Garvin, Carter, Marshall, Johnston, Coal, and Seminole Counties. Light in Payne, Noble, and Harmon Counties. (Okla. Coop. Sur.). KANSAS - Ranged 200-600 per 10 sweeps of alfalfa in eastern two-thirds of State. Predators and parasites abundant in all fields. (Simpson). NEBRASKA - Increased; averaged 350 per 10 sweeps in field at Mead Experimental Farm. (Kindler, May 11). Ranged 50-500 per 100 sweeps in 8 Dawson County alfalfa fields. (Manglitz, Stevens). WISCONSIN - Difficult to evaluate due to wet fields. Apparently increasing in number and percent of alates. (Wis. Ins. Sur.). ILLINOIS - Remains light on clover and alfalfa, no damage. Parasites exerting some control. (Sur. Bull). MASSACHUSETTS - Averaged 63 per 100 sweeps in 3 alfalfa fields in Hampshire County. (Jensen, May 8). DELAWARE - Heavy in some alfalfa in Sussex County. (Burbutis, Kelsey). TENNESSEE - Very heavy on alfalfa in Hardeman County. (Turpen).

NOCTUID MOTHS - MICHIGAN - Caenurgina erechtea (forage looper) increasing nightly at Livingston County light trap. (Newman, May 11). OKLAHOMA - Peridroma saucia (variegated cutworm) larvae moderate and damaged alfalfa in Bryan County. Plathypena scabra (green cloverworm) larvae ranged 1-8 per 10 sweeps in alfalfa in Tulsa, Garvin, Carter, Marshall, Johnston, Coal, and Seminole Counties. (Okla. Coop. Sur.). WASHINGTON - Euxoa ochrogaster (red-backed cutworm) larvae damaged 80 percent of plants on 250 acres of alfalfa at Othello, Adams County. (Forester, Retan).

LYGUS BUGS (Lygus spp.) - ARIZONA - Buildup of Lygus sp. in Yuma Mesa alfalfa. Averaged 600 per 100 sweeps in Yuma County. (Ariz. Coop. Sur.). INDIANA - L. lineolaris (tarnished plant bug) adults averaged 28 per 100 sweeps of alfalfa in central districts. (Meyer).

SUNFLOWER SPITTLEBUG (Clastoptera xanthocephala) - FLORIDA - Counts of 1-2 adults per sweep on alfalfa at Gainesville, Alachua County, May 7. (Mead).

MEADOW SPITTLEBUG (Philaenus spumarius) - MARYLAND - Populations heaviest in isolated red clover and alfalfa fields in Howard and Harford Counties. Above 1969 levels. Spittle masses ranged 8-15 per square foot. Ranged 0-3 spittle masses per square foot throughout State. (U. Md., Ent. Dept.). INDIANA - Average of 9 percent of alfalfa stems with spittle masses in central districts. (Meyer).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - ARIZONA - Averaged 1,500 per 100 sweeps of alfalfa at Kansas Settlement, Cochise County. (Ariz. Coop. Sur.).

SOYBEANS

BEAN LEAF BEETLE (Cerotoma trifurcata) - MISSISSIPPI - Adults caused heavy damage to soybeans, snap beans, and lima beans in Oktibbeha County. (Sartor). ARKANSAS - Heavy in few isolated fields in several areas of State. (Boyer, Barnes).

COTTON

BOLLWORMS (Heliothis spp.) - ALABAMA - Few larvae and eggs on young cotton in presquare stage throughout State; noneconomic. Unusual and heavy infestation of early instars in several fields of 4 to 6-leaf cotton in Mytlene area of Montgomery County. H. zea moths heavy and laying eggs. Predators and parasites reducing larvae. (McQueen). LOUISIANA - Total of 5 H. zea and 2 H. virescens collected in light trap in Madison Parish week ending May 8. (Cleveland et al.). TEXAS - Total eggs and larvae to date on all hosts: H. zea 50 and H. virescens 8 in McLennan and Falls Counties. (Cowan et al.).

NOCTUID MOTHS - NEW MEXICO - Spodoptera exigua (beet armyworm) larvae damaged few cotton fields in Dona Ana County. (Durkin). TEXAS - S. exigua larvae on seedling cotton in Reeves County. (Neeb). ALABAMA - Prodenia ornithogalli (yellow-striped armyworm) larvae in cotton throughout State; more noticeable in northern counties. (Eich et al.).

BOLL WEEVIL (Anthonomus grandis) - ALABAMA - Adult counts 4 and 8 per acre on 2 selected farms in Autauga County; 35 per acre on farm in Montgomery County. (Gamble et al.). LOUISIANA - Collected 1,068 weevils from wing traps in Madison Parish and on island in Mississippi River as of May 8. (Cleveland et al.). TEXAS - Collected 1 weevil in wing trap in McLennan and Falls Counties; total to date 107. (Cowan et al.).

COTTON FLEAHOPPER (Pseudatomoscelis seriatus) - TEXAS - Light in 1 of 10 treated fields and 10 of 19 untreated fields in McLennan and Falls Counties. (Cowan et al.).

THRIPS (Frankliniella spp.) - OKLAHOMA - Averaged 8 per row foot in young cotton in Harmon County. (Okla. Coop. Sur.). ARIZONA - F. occidentalis (western flower thrips) averaged 3 per seedling in Salt River Valley, Maricopa County. (May).

TOBACCO

TOBACCO FLEA BEETLE (Epitrix hirtipennis) - VIRGINIA - Adults very light in tobacco plant beds in Pittsylvania County. (Dominick).

CABBAGE LOOPER (Trichoplusia ni) - FLORIDA - Early instars averaged 3 per 5 plants in 12 acres of flue-cured tobacco at Mayo, Lafayette County, April 30. (Strayer).

SUGARBEETS

SUGAR-BEET ROOT MAGGOT (Tetanops myopaeformis) - NORTH DAKOTA - Larvae ranged 5-27 (averaged 14) per square foot in Pembina County fields in sugarbeets last year. (Kaatz, May 7).

POTATOES, TOMATOES, PEPPERS

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - TEXAS - Caused heavy localized damage in Cherokee County to tomatoes. (Green). GEORGIA - Heavy on potatoes in Lowndes County. (Kessler, French, May 8). MARYLAND - Adults averaged less than 1 per square yard in 30 acres of potatoes near Beaverdam, Worcester County. Eggs present. (U. Md., Ent. Dept.). DELAWARE - Adults and eggs on commercial potatoes and tomatoes. (Boys).

NOCTUID MOTHS - FLORIDA - Trichoplusia ni (cabbage looper) larvae caused 10-20 percent defoliation of tomato plants at Immokalee, Collier County; still problem on tomatoes in Bradenton, Manatee County, area. Prodenia eridania (southern armyworm) larvae damaged up to 40 percent of tomato fruit on several acres at Immokalee. Spodoptera exigua (beet armyworm) larvae damaged 1-2 percent of tomatoes and severe on one-third acre of bell peppers at Immokalee. (Poe). Problem on bell peppers at Belle Glade, Palm Beach County. (Genung, Janes).

EUROPEAN CORN BORER (Ostrinia nubilalis) - VIRGINIA - First moths taken on May 9 at Painter, Accomack County, latest for 13 years. Next two nights, 69 moths collected. If collection rate continues, could be severe on potatoes in area. (Hofmaster).

TOMATO PINWORM (Keiferia lycopersicella) - TEXAS - Medium on tomatoes in Brazos County. (Green).

BEANS AND PEAS

PEA LEAF WEEVIL (Sitona lineatus) - WASHINGTON - Adults moderate to heavy and damaged pea seedlings near Garfield, Whitman County, May 8. This is a new county record and farthest east since recorded near Eltopia, Franklin County, in 1966. (Entenmann et al.). Apparently all fields in Garfield area infested; most fields several hundred acres in size. No indication of damage to lentil seedlings even where volunteer peas damaged in same field. (Johansen, Eves). IDAHO - Infested several hundred acres of peas in Latah County. Determined by W.F. Barr. This infestation adjacent to infested area in Whitman County, Washington. (Portman).

PEA APHID (Acyrtosiphon pisum) - DELAWARE - On peas in eastern Sussex County. (Boys). MISSISSIPPI - Damage heavy to English peas in Oktibbeha County. (Sartor).

GENERAL VEGETABLES

ASPARAGUS BEETLES (Crioceris spp.) - WISCONSIN - C. asparagi (asparagus beetle) laying eggs on spears in Dane and Waushara Counties. Adults of C. duodecimpunctata (spotted asparagus beetle) more common on Dane County asparagus. (Wis. Ins. Sur.).

ONION MAGGOT (Hylemya antiqua) - NEW JERSEY - Collected 105 from 3 sticky boards at Cedarville May 6-13. (Ins.-Dis. Newsltr.).

Weather continued from page 332.

and 90° maximums were recorded in southeastern Washington. By Sunday, summer heat had reached the northern Great Plains. Valentine, Nebraska, registered 90° Sunday afternoon. In many western areas, this was the warmest weather of the season. Meanwhile, cool weather pushed southward over the East with weekend maximums ranging from the 50's in New York to the 80's in the Deep South. (Summary supplied by Environmental Data Service, ESSA.)

WEATHER BUREAU'S 30-DAY OUTLOOK

MID-MAY TO MID-JUNE 1970

The Weather Bureau's 30 day outlook for mid-May to mid-June is for temperatures to average above seasonal normals in the northeastern and southwestern quarters of the Nation. Below normal temperatures are indicated for the Northwest as well as the gulf coast region. Elsewhere near normal temperatures are in prospect. Precipitation is expected to exceed normal over the Mississippi and Ohio Valleys, the Great Lakes region, and the Pacific Northwest. Subnormal totals are indicated for most of the Southwest and also New England. In unspecified areas near normal precipitation is expected.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price \$5.00 a year.

DECIDUOUS FRUITS AND NUTS

ORIENTAL FRUIT MOTH (Grapholitha molesta) - COLORADO - Adults peaked in peaches May 6 in Mesa County. Heavier and earlier than anticipated. (Sisson et al.)
MISSOURI - Damaged small fruit and twig terminals of peaches in south area and damaged terminals in central area. (Craig). NEW JERSEY - Trapped 8 moths May 6-13 at Glassboro, Gloucester County. (Ins.-Dis. Newsltr.).

A NOCTUID MOTH (Xylomyges curialis) - CALIFORNIA - Normally pest of citrus. Damaged leaves and fruit of plum and peach in Fresno and Tulare Counties, indicating heavy population pressure. (Cal. Coop. Rpt., May 8).

PLUM CURCULIO (Conotrachelus nenuphar) - TENNESSEE - Damaged fruit on untreated peach trees in east area. (Pless, Cherry). MISSOURI - Eggs laid on apples and peaches in south and central areas. (Craig).

CICADAS - GEORGIA - Infested apple trees in Gilmer County. (Smith, May 8).
TENNESSEE - Magicicada septendecim (periodical cicada) adults in Fentress, Knox, Anderson, Loudon, Roane, Hamilton, Montgomery, Robertson, White, Obion, Weakley, Carroll, Claiborne, and Sevier Counties. Heavy in localized areas. No damage yet. (Mullett, Pless). MARYLAND - First Magicicada sp. adult of season at Greenbelt, Prince Georges County. (U. Md., Ent. Dept.). PENNSYLVANIA - First Magicicada sp. adult May 12 in Lehigh County. Nymphs in tunnels past 10 days; no mud "chimneys" in southeast area. (Gesell).

PEAR PSYLLA (Psylla pyricola) - WASHINGTON - First summer adults May 8. Late nymphal instars numerous at Yakima, Yakima County. (Johnson).

SAN JOSE SCALE (Quadraspidiotus perniciosus) - GEORGIA - Heavy on apple trees in Douglas County. (Denny). TEXAS - Light on Montgomery County peach trees. (Coster).

APHIDS - GEORGIA - Eriosoma lanigerum (woolly apple aphid) severely damaged apple tree roots in Pulaski County. (Alligood). CALIFORNIA - Rhopalosiphum nymphaeae (waterlily aphid) heavy on peach trees at San Andreas, Calaveras County. (Cal. Coop. Rpt.).

TARNISHED PLANT BUG (Lygus lineolaris) - MASSACHUSETTS - Feeding injury common on apple buds in Hampshire, Worcester, and Middlesex Counties May 4-8. (Fultz).
NEW HAMPSHIRE - Very numerous in apple orchards in south area May 5. (Blickle).

EUROPEAN RED MITE (Panonychus ulmi) - MASSACHUSETTS - Hatched on apple trees in Hampshire and Worcester Counties May 4-6. (Jensen).

PECAN NUT CASEBEARER (Acrobasis caryae) - TEXAS - Moth emergence about 70-80 percent on bands in 3 to 4 days in south and south-central areas. Indicates short, heavy egg-laying period. Moth emergence 12 percent in Hood County May 12 and 26.5 percent in Brown County May 14. Anticipated spray date May 22-25. (Green).

PECAN LEAF PHYLLOXERA (Phylloxera notabilis) - TEXAS - Heavy on pecan trees in San Jacinto County. (Coster).

CITRUS

YUMA SPIDER MITE (Eotetranychus yumensis) - CALIFORNIA - Infested 60-acre grove at Imperial, Imperial County. (Cal. Coop. Rpt., May 8).

SMALL FRUITS

WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) - NEVADA - First instars at Las Vegas and eggs at Goodsprings, Clark County. Latter area infested for first time in 1969. (Bechtel, Zoller).

RASPBERRY CROWN BORER (Bembecia marginata) - IDAHO - Infested raspberry patch May 8 at Orofino, Clearwater County. (Fitzsimmons).

STRAWBERRY CROWN MOTH (Ramosia bibionipennis) - WASHINGTON - This and Tyloderma fragariae (strawberry crown borer) damaged 90 percent of 0.5 acre of strawberries at Brush Prairie, Clark County. (Wessler, Shanks).

FOREST AND SHADE TREES

OLETHREUTID MOTHS (Rhyacionia spp.) - ALABAMA - R. frustrana (Nantucket pine tip moth) pupation and adult emergence on new growth tips of pine as far north as Chilton County. Damage heavy in isolated areas for one mile or more along highway plantings in Chilton, Autauga, Macon, and Montgomery Counties. Mass browning effect in these areas. (Eich et al.). VIRGINIA - R. frustrana severe on 13 acres of Scotch pine Christmas trees in Hanover County on May 1. (Weidhaas). OHIO - R. buoliana (European pine shoot moth) damaged 50-60 percent of 2 acres of pole-size red pine in Warren County. (Mooter).

CONIFER SAWFLIES (Neodiprion spp.) - VIRGINIA - Neodiprion sp. severe on Virginia pine in Orange, Louisa, Amelia, Chesterfield, Goochland, and Nottoway Counties. (Allen). OHIO - N. sertifer (European pine sawfly) damaged 50-60 percent of 2 acres of pole-size red pine in Warren County. (Mooter). INDIANA - N. sertifer heavy in Allen County. (Schuder). MICHIGAN - N. sertifer hatch about 60 percent complete. Little damage. (Janes, May 11).

COOLEY SPRUCE GALL APHID (Adelges cooleyi) - IDAHO - Infested up to 40 percent of spruce at Nampa and Caldwell, Canyon County. (Homan).

TENT CATERPILLAR MOTHS (Malacosoma spp.) - WEST VIRGINIA - M. disstria (forest tent caterpillar) damage moderate to sugar and Norway maples in Ritchie County. Collected by J.P. Szeliga May 5. This is a new county record. (W. Va. Ins. Sur.). CALIFORNIA - M. californicum pluviale (western tent caterpillar) larvae medium on 100 acres of oaks at Oroville, Butte County. (Cal. Coop. Rpt.).

WHITE-MARKED TUSSOCK MOTH (Hemerocampa leucostigma) - TEXAS - Heavy on oaks near Lake Jackson, Brazoria County. (Poindexter).

ELM LEAF BEETLE (Pyrrhalta luteola) - TENNESSEE - Emerging adults and first-generation larvae in east areas. (Pless). TEXAS - Larvae damaged elms in Wilbarger County. (Boring). OKLAHOMA - Increased on Siberian elm across State. Heavy in Cotton County and moderate in Payne and Kay Counties. (Okla. Coop. Sur.). WASHINGTON - Overwintered adults feeding heavily on elm at Ephrata, Moses Lake, and Soap Lake, Grant County. No eggs noted. (Hunter).

SMALLER EUROPEAN ELM BARK BEETLE (Scolytus multistriatus) - WISCONSIN - Primarily in larval stage in Dane County. Winter survival appears low. (Wis. Ins. Sur.).

MAN AND ANIMALS

HORN FLY (Haematobia irritans) - MARYLAND - Heaviest to date, 30-100 per head of dairy cattle in Montgomery and Frederick Counties. (U. Md., Ent. Dept.).

GEORGIA - Heavy on untreated cattle statewide. (Snoddy, Nolan). FLORIDA - Adults averaged 80 per untreated milk cow and 303 per untreated dry heifer at Hague, Alachua County, May 7. (Butler). Building up later than normal on cattle at Belle Glade, Palm Beach County, May 5. (Janes). ALABAMA - Built up rapidly throughout State. Appears much heavier than past 2-3 years. Ranged 100-500 per head on many beef cattle in Morgan, Madison, Colbert, Limestone, Autauga, and Montgomery Counties. Heavy in Wilcox and Bibb Counties. (Odom et al.). MISSISSIPPI - Adults averaged 200 per head on 6 cattle at State College, Oktibbeha County, May 8. Averaged 1,000 per head on 900 cattle in Clay County. (Sartor). MISSOURI - Ranged 25-550 (averaged 189.8) per head on untreated cattle

in Boone County. Up to 100 (averaged 17.5) per head on cattle with back rubbers. (Thomas). NEBRASKA - Increased, averaged 15 per head on 4 range herds pastured near Lincoln, Lancaster County. Averaged 2-5 on feedlot herd in Saunders County. (Campbell, May 14). OKLAHOMA - Averaged 250 per head on cows and 700 per head on bulls in Payne County. Increased slowly across State. Moderate in most areas. (Okla. Coop. Sur.). TEXAS - Appears to be increasing throughout most Trans-Pecos counties and in Shackelford County. (Neeb, Boring).

FACE FLY (Musca autumnalis) - MISSOURI - Up to 15 (averaged 3.7) per head on untreated cattle in Boone County. Up to 28 (averaged 5.5) per head on cattle with back rubbers. (Thomas). UTAH - On cattle at Ogden, Weber County, on warm days. (Knowlton, May 12).

HOUSE FLY (Musca domestica) - GEORGIA - Many adults emerging from untreated manure from caged layer houses over State. (Nolan). FLORIDA - Averaged 2-3 per untreated milk cow and 1 per dry heifer at Hague, Alachua County, May 7. (Butler).

SCREW-WORM (Cochliomyia hominivorax) - No cases reported in U.S. May 10-16. Total of 63 cases reported in portion of Barrier Zone in Republic of Mexico as follows: Sonora 35, Chihuahua 23, Coahuila 1, Nuevo Leon 1, Tamaulipas 3. Total of 111 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 14,918,000; Mexico 134,740,000. (Anim. Health Div.).

MOSQUITOES - GEORGIA - Culex pipiens quinquefasciatus (southern house mosquito) nuisance around homes in Spalding, Candler, Early, and Henry Counties. (Snoddy, Nolan). MARYLAND - Aedes canadensis landing counts ranged 20-30 per person within 1 minute in wooded areas of Talbot, Dorchester, Wicomico, and Somerset Counties. A. grossbecki less than 2 per person per minute. (U. Md., Ent. Dept.). ILLINOIS - Mosquitoes, mostly floodwater species, annoying in many areas due to recent wet weather. (Sur. Bull.). NEVADA - A. dorsalis adults heavy in Virgin Valley, Clark County. (Bechtel, Zoller).

SHORT-NOSED CATTLE LOUSE (Haematopinus eurysternus) - OKLAHOMA - Mainly this louse moderate to heavy in Craig and Garvin Counties. (Okla. Coop. Sur.).

AMERICAN DOG TICK (Dermacentor variabilis) - GEORGIA - Increasing in Glynn County. (Snoddy). OKLAHOMA - Caused concern over pets in Washington, Tulsa, Payne, and Oklahoma Counties. (Okla. Coop. Sur.). WISCONSIN - Heavy in north counties, but lighter than previous week. (Wis. Ins. Sur.).

BROWN RECLUSE SPIDER (Loxosceles reclusa) - ALABAMA - Numerous in barn and home near Thorsby, Chilton County. Over 20 specimens killed. Heaviest reported infestation in State. Treatments planned. (Hayes, Pigott). MISSOURI - Collected in Knox County May 11 for a new county record. (Craig).

HOUSEHOLDS AND STRUCTURES

WESTERN DRYWOOD TERMITE (Incisitermes minor) - CALIFORNIA - Counts of 200 per linear foot of flooring in residence at Vallejo, Solano County. (Cal. Coop. Rpt.).

SPIDER BEETLES - WYOMING - Mezium affine in basement of home June 10, 1969, at Torrington, Goshen County. This is a new county record. (Spackman). IOWA - Ptinus clavipes (brown spider beetle) in and under house at Woodward, Boone County. This is a new county record. (Iowa Ins. Sur.).

STORED PRODUCTS

A DARKLING BEETLE (Latheticus oryzae) - IDAHO - Collected in barley sample at Ririe, Jefferson County, by R.I. Gooch April 15, 1970. Determined by D.W.S. Sutherland, confirmed by H.W. Smith. This is a new State record. (Portman).

BENEFICIAL INSECTS

LADY BEETLES - ARIZONA - Hippodamia convergens (convergent lady beetle) averaged 30 per 100 sweeps of sorghum in Salt River Valley, Maricopa County. (Ariz. Coop. Sur.). NEVADA - Lady beetles and other beneficial insects effectively reduced damaging aphid infestations on alfalfa in Clark and southern Nye Counties. (Bechtel, Zoller). WASHINGTON - First Hippodamia sp. egg masses on peach at Parker Heights, Yakima County. (Johnson). INDIANA - Ceratomegilla maculata most common lady beetle, 45 per 100 sweeps, in central districts. (Meyer).

HETEROPTEROUS PREDATORS - FLORIDA - Nabis spp. (damselfly nymphs) 8 and adults 14, and Orius insidiosus adults 20 in 100 sweeps of wheat at Gainesville, Alachua County. (Mead). ARIZONA - Geocoris sp. (a big-eyed bug) averaged 20 per 100 sweeps of safflower in Salt River Valley, Maricopa County. (Ariz. Coop. Sur.). WASHINGTON - First Deraeocoris sp. (a mirid) nymphs feeding on pear psylla nymphs May 6 at Yakima, Yakima County. (Johnson).

SYRPHID FLIES - WASHINGTON - Larvae preying on apple aphid at Cowiche, Yakima County. (Gregorich).

A GREEN LACEWING - WASHINGTON - First eggs on unsprayed pears May 8. (Johnson).

A PHYTOSEIID MITE (Metaseiulus occidentalis) - WASHINGTON - Laid eggs on apple foliage at Gleed, Yakima County. (Gregorich).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

CEREAL LEAF BEETLE (Oulema melanopus) - OHIO - Adults 1-32 per 100 sweeps of oats and wheat in Greene, Miami, Darke, and Preble Counties. Mostly second instars 20 per 100 sweeps on Preble County wheat. Eggs 2 per square foot of oats and 66 per square foot of wheat next to oats in Darke County. (Forrester). INDIANA - Eggs 5-10 per square foot of oats in north districts. (Shade). MICHIGAN - Adult activity increased with high temperatures. Sprays may be needed next 10-14 days. (Ruppel, May 11).

GRASSHOPPERS - MINNESOTA - Melanoplus bivittatus and M. packardii eggs nearly all eyespot. M. femurrubrum and M. differentialis in early coagulation to coagulated stage. Egg predators light. (Minn. Pest Rpt.). NORTH DAKOTA - Eggs 45 percent coagulated, 40 percent eyespot, and 15 percent segmented. No desiccated or parasitized eggs. M. sanguinipes dominant at Orrin, Pierce County. (Brandvik). WYOMING - Melanoplus sp. hatching on canal bank and other wasteland areas in Washakie County. (Parshall).

GYPSY MOTH (Porthetria dispar) - NEW JERSEY - Larvae active in many areas. Infestations in Piscataway and areas outside Plainfield, Union County. Heavy in Allaire State Park. (Ins.-Dis. Newsltr.). PENNSYLVANIA - First hatch April 28 followed by general hatch in east area and Centre County. (Jeffery). NEW HAMPSHIRE - Hatched May 4. (Blickle).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - GEORGIA - Feeding on egg-plant in Thomas County. (Beasley, French, May 8).

ORIENTAL FRUIT FLY (Dacus dorsalis) - CALIFORNIA - Detection negative since 18 flies trapped in September and October 1969. (Cal. Coop. Rpt., May 8).

PINK BOLLWORM (Pectinophora gossypiella) - CALIFORNIA - Sterile moth releases May 8-14: Coachella Valley 6,305,500, total to date 25,542,250; Kern County 1,120,000, total to date 5,127,700. ARIZONA - Release at Redington, Pima County, 67,500; total to date 135,000. (PPD).

WHITE-FRINGED BEETLES (Graphognathus spp.) - GEORGIA - Larvae heavy under okra in Macon County. (Cates).

HAWAII INSECT REPORT

General Vegetables - All stages of GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) light to moderate on snap beans at Waimanalo, Oahu; adults light in 1.5 acres of snap beans and heavy in acre of tomatoes at Pulehu, Maui, and heavy in 0.5 acre of bitter-melon (Mormordica charantia) at Pupukeya, Oahu. (Ah Sam et al.). Adults of a CLERID BEETLE (Tillus notatus) light on terminals of yardlong-beans (Vigna sesquipedalis) in backyards at Ewa, Oahu. (Au).

Man and Animals - MOSQUITOES - Aedes vexans nocturnus (vexans mosquito) numbered 15 and Culex pipiens quinquefasciatus (southern house mosquito) 467 in 56 light traps on Oahu in April. Aedes light in all traps. Culex high of 75 at Waipahu. (Mosq. Cont. Br., Dept. of Health).

Beneficial Insects - Larvae, pupae, and adults of a LADY BEETLE (Coccinella septempunctata brucki) abundant on spiny amaranth infested with COWPEA APHID (Aphis craccivora) in fallow farm areas at Waimanalo. (Kawamura). All stages of SOUTH AFRICAN EMEX WEEVIL (Apion antiquum) severely damaged emex on abandoned vegetable farm at Pulehu. (Miyahira).

Miscellaneous Insects - About 200 adults of a NOCTUID MOTH (Melipotés indomita) collected from light traps at Halawa and Ewa, Oahu. A LONGHORN GRASSHOPPER (Euconocephalus nasutus) stridulating at night in various areas of Oahu. (Narahara, Kawamura).

DETECTION

New State Records - A DARKLING BEETLE (Latheticus oryzae) IDAHO - Jefferson County (p. 342). A SCARAB (Phyllophaga knochi) OHIO - Portage County (p. 336).

New County Records - ALFALFA WEEVIL (Hypera postica) KANSAS - Bourbon, Crawford, Montgomery, Morton, Neosho (p. 337). BROWN RECLUSE SPIDER (Loxosceles reclusa) MISSOURI - Knox (p. 342). BROWN SPIDER BEETLE (Ptinus clavipes) IOWA - Boone (p. 342). A CORN LEAPHOPPER (Dalbulus maidis) FLORIDA - Dade (p. 335). EUROPEAN CORN BORER (Ostrinia nubilalis) ALABAMA - Barbour (p. 335). FOREST TENT CATERPILLAR (Malacosoma disstria) WEST VIRGINIA - Ritchie (p. 341). PEA LEAF WEEVIL (Sitona lineatus) WASHINGTON - Whitman (p. 339). A SPIDER BEETLE (Mezium affine) WYOMING - Goshen (p. 342).

LIGHT TRAP COLLECTIONS

FLORIDA - Gainesville, 5/8-14, BL - Armyworm (Pseudaletia unipuncta) 1, beet armyworm (Spodoptera exigua) 14, black cutworm (Agrotis ipsilon) 9, cabbage looper (Trichoplusia ni) 1, granulate cutworm (Feltia subterranea) 14, salt-marsh caterpillar (Estigmene acrea) 2, yellow-striped armyworm (Prodenia ornithogalli) 1. KANSAS - Barton County, 5/4-12, BL - Army cutworm (Chorizagrotis auxiliaris) 8, armyworm 150, black cutworm 15, wheat head armyworm (Faronta diffusa) 254. MISSISSIPPI - Stoneville, 5/8-14, 2BL, 62°-88°F., precip. trace - Armyworm 52, black cutworm 45, corn earworm (Heliothis zea) 37, granulate cutworm 9, salt-marsh caterpillar 32, tobacco budworm (H. virescens) 3, variegated cutworm (Peridroma saucia) 8, yellow-striped armyworm 39. MISSOURI - Greene County, 5/7-13, BL - Armyworm 776, black cutworm 155, corn earworm 2, variegated cutworm 23, yellow-striped armyworm 22. Platte County, 5/7-13, BL - Armyworm 95, black cutworm 6, variegated cutworm 5, yellow-striped armyworm 2. NORTH DAKOTA - Fargo, 5/9-10, BL - Armyworm 22, beet webworm (Loxostege sticticalis) 1, black cutworm 1. OHIO - Wooster, 5/7-14, BL - Armyworm 231, black cutworm 15, wheat head armyworm 1. TEXAS - Waco, 5/7-14, 70°-80°F. - Armyworm 4, beet armyworm 9, black cutworm 11, cabbage looper 6, corn earworm 10, granulate cutworm 28, variegated cutworm 38, yellow-striped armyworm 25. PENNSYLVANIA - Furnace, 5/11, BL - Armyworm 6, black cutworm 1, salt-marsh caterpillar 1. WISCONSIN - Madison, 5/7-12, BL - Armyworm 17.

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Part XXIX

Additional copies of Parts I through XXIX of this bibliography are available from Economic Insect Survey and Detection.

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May 29, 1970

Cooperative
**ECONOMIC INSECT
REPORT**

Issued by

**PLANT PROTECTION DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE**



AGRICULTURAL RESEARCH SERVICE

PLANT PROTECTION DIVISION

ECONOMIC INSECT SURVEY AND DETECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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COOPERATIVE ECONOMIC INSECT REPORT**HIGHLIGHTS**Current Conditions

ARMYWORM larvae damaged corn in several areas of Virginia. (p. 349). See light trap collections. (p. 362). ASTER LEAFHOPPER heavy in small grain in southeast Minnesota. (p. 349).

EUROPEAN CORN BORER damage threat to diminish if borers continue to develop ahead of corn in Illinois. (p. 350). CUTWORMS damaged corn in Georgia (p. 350), wheat in South Dakota, and small grains in Nebraska. (p. 351).

ALFALFA WEEVIL injury appears to be declining for third year in Maryland, still heavy in Illinois (p. 351), increasing in some areas of Colorado (p. 352).

BOLLWORMS troublesome on cotton in Rio Grande Valley of Texas. (p. 353).

PREDATORS and PARASITES effective on several crops. (pp. 349, 352, 355).

GRASS BUGS damaged crested wheatgrass in Utah. (p. 361).

Detection

New State records include ALFALFA WEEVIL from Minnesota (p. 352), a NEMATODE from Illinois (p. 353), and PECAN WEEVIL from New Mexico (p. 357).

For new county records see page 355.

Reports in this issue are for week ending May 22 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance.....349

Insects Affecting

Corn, Sorghum, Sugarcane.....	350	Potatoes, Tomatoes, Peppers.....	354
Small Grains.....	351	Beans and Peas.....	355
Turf, Pastures, Rangeland.....	351	Cucurbits.....	355
Forage Legumes.....	351	Deciduous Fruits and Nuts.....	356
Soybeans.....	353	Citrus.....	357
Cotton.....	353	Small Fruits.....	357
Tobacco.....	354	Forest and Shade Trees.....	358
Sugarbeets.....	354	Man and Animals.....	359

Hawaii Insect Report.....355

Detection.....355

Beneficial Insects.....360

Federal and State Plant Protection Programs.....360

Corrections.....361

Light trap collections.....362

WEATHER OF THE WEEK ENDING MAY 25

HIGHLIGHTS: Temperatures and relative humidity increased over much of the Nation last week. Moderate to heavy showers fell over parts of the Nation and in southern Texas.

PRECIPITATION: Rains were light and widely scattered early in the week being confined mostly to the northern Rocky Mountains in the West and to areas near the northern Atlantic coast in the East. A few light showers occurred along the gulf coast. Frontal activity in the latter half of the week produced generous showers from the northern Great Plains to Pennsylvania. Most weekly totals in that area were from 0.5 inch to 1.5 inches but a few spots received much more. Over 5 inches fell at Concordia, Kansas. South-central and southwestern Texas received spotty heavy showers Saturday when 5.57 inches fell at Victoria and 8.60 inches at Wharton. Tornadoes and damaging winds whipped the lower Rio Grande counties Sunday. A tornado at Zapata injured 34 persons. Property damage was slight. Two large areas received no rain or only widely scattered light sprinkles. One extended from central Washington to southern California, thence eastward to the Continental Divide in Colorado and the Trans-Pecos in Texas. The other area extended from central Arkansas to the Carolina coast and from Kentucky to the Florida Panhandle.

TEMPERATURE: Most of the Nation averaged warmer than normal last week. The exceptions were along the northern Pacific coast, the extreme northern portion of the Great Plains, New England, South Carolina to Florida, and southern Texas. Most of the interior from Colorado to Ohio and from southern Minnesota to the Missouri Bootheel averaged 6 to 12° warmer than normal. Cool weather lay over the East early in the week while a warm-weather pattern prevailed over the West. Temperatures climbed above 100° in the southwestern deserts, reaching 110° at Blythe, California, on Monday. Mid-America was hot, also. Sioux City, Iowa, registered 96° on Monday and the temperature at Marquette, Michigan, reached 88°. The warm weather moved eastward with 80° maximums common from Pennsylvania to the Gulf of Mexico Tuesday afternoon when Williamsport, Pennsylvania, recorded 88°. Temperatures in the 90's were common in Virginia and Maryland by the week-end. Increasing humidity added to the discomfort caused by the high temperatures. (Summary supplied by Environmental Data Service, ESSA.)

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMYWORM (*Pseudaletia unipuncta*) - NEBRASKA - Decreasing at Lincoln light trap. First to third instars ranged 50-75 per 100 sweeps in bromegrass pasture near Lincoln, Lancaster County, on May 16. No damage reported. (Keith). KANSAS - Larvae light in grassy alfalfa field in Harper County. (Simpson). MISSOURI - Light to moderate on small grains through southern half of State. Larvae ranged 0-4 per square foot in thin stands of wheat, up to 14 per square foot in dense lodged wheat in southern half of State. (Thomas). MINNESOTA - Moth collections relatively heavy at Rochester, Olmsted County, and Worthington, Nobles County. (Minn. Pest Rpt.). ILLINOIS - Found in thick, rank stands of wheat, barley, rye, and various grasses in southern half of State. (Sur. Bull). NEW HAMPSHIRE - Collected 1 moth in blacklight trap at Lee, Strafford County, week ending May 15. Currently trapped 4 moths at same location. (Blickle). MARYLAND - First larvae of season on corn in Wicomico County. No economic damage. (U. Md., Ent. Dept.). VIRGINIA - Larvae damaged seedling corn in Amelia, Lancaster, Powhatan, Montgomery, Cumberland, and Smyth Counties and in Virginia Beach. (W.A. Allen). TENNESSEE - Light in several western counties. (Gordon). SOUTH CAROLINA - Infestations later than usual, not expected to be as heavy as past years on small grain. (Chastain). Will affect yield. (Nettles).

ARMY CUTWORM (*Chorizagrotis auxiliaris*) - WYOMING - Moths appearing at Torrington, Goshen County. (Parshall).

ASTER LEAFHOPPER (*Macrosteles fascifrons*) - MINNESOTA - Counts remain heavy in small grain, lighter in grassy alfalfa. Ranged 50-700 per 100 sweeps in oats in southeast district. (Minn. Pest Rpt.). WISCONSIN - Males and females in western and central counties about May 1. Currently 35 per 100 sweeps in southwestern counties to 4 per 100 sweeps in southeastern counties. Ranged 8-12 per 100 sweeps in central counties. (Wis. Ins. Sur.).

BET LEAFHOPPER (*Circulifer tenellus*) - CALIFORNIA - Populations still along west side of San Joaquin Valley from Los Banos in Merced County south through Wheeler Ridge area in Kern County. No heavy counts detected to date. Counts on roadside hosts near Kettleman City ranged from 2 to high of 7 per 10 sweeps, highest count next to foothills. Leafhoppers left breeding grounds due to drying of host. Check of all planted beets for curly top shows 1 percent or less with local areas in Kern County showing 3-8 percent in individual fields in Arvin and Wheeler area. (Cal. Coop. Rpt.).

CORN EARWORM (*Heliothis zea*) - ALABAMA - Larvae heavy in 25 acres of peanuts in Covington County, estimated 50 percent of plants in early bloom stage affected. Predators and parasites destroyed most larvae. (Pike et al.). NEBRASKA - First moth in Lincoln, Lancaster County, light trap on May 22. (Berogan, Keith).

CORN LEAF APHD (*Rhopalosiphum maidis*) - ARIZONA - Counts of 25 per boot in some Yuma County sorghum. Beneficial insects apparently reducing numbers. (Ariz. Coop. Sur.). TEXAS - Light to medium on young sorghum in Brazos, Milam, Robertson, Bell, McLennan, and Limestone Counties. Declining in south-central area. Heavy in Jackson and Lee Counties. (Green et al.). OKLAHOMA - Ranged 5-50 per young sorghum plant in Payne County. Light parasitism noted. (Okla. Coop. Sur.).

GREENBUG (*Schizaphis graminum*) - ARIZONA - Averaged 3 per sorghum plant at Gadsden and Somerton, Yuma County. (Ariz. Coop. Sur.). TEXAS - Generally light on young grain sorghum in Milam, Bell, McLennan, Limestone, and Robertson Counties. Heaviest in Bell, McLennan, and Limestone Counties. Ranged 0-45 per plant in fields in these three counties. No visible damage. Greenbugs on young grain sorghum in Castro, Parmer, and Deaf Smith Counties. (Green). KANSAS - Ranged 60-150 per 100 sweeps of wheat in Coffey, Linn, Miami, Johnson, Franklin, Woodson, Wilson, and Wyandotte Counties, and up to 10 per row foot in Harper, Harvey, Butler, McPherson, Marion, Morris, and Geary Counties. (Guldner, Redding). Surveys negative in sorghum in Stafford, Reno, and Barton Counties. (Martinez). NEBRASKA - None trapped at Lincoln, Lancaster County. Averaged less than 1 per 20 sweeps in

3 wheatfields in Cass and Lancaster Counties on May 19. Negative in 25 wheatfields in central, southwest, and panhandle counties May 12-14. (Staples).

POTATO LEAFHOPPER (Empoasca fabae) - MINNESOTA - First of season found on May 19 in Wabasha County. Averaged 200 per 100 sweeps in Wabasha, Winona, Houston, Fillmore, Mower, and Olmsted Counties. (Minn. Pest Rpt.). INDIANA - Adults ranged 0-100 (averaged 20) per 100 sweeps of alfalfa in northern district. (Meyer).

POTATO PSYLLID (Paratrioza cockerelli) - WYOMING - Adults 23 per 50 sweeps on Lycium sp. at Torrington, Goshen County. (Parshall). COLORADO - Adults and eggs appearing on Lycium sp. in potato-growing areas of Weld County. (Johnson).

SPOTTED ALFALFA APHID (Therioaphis maculata) - UTAH - Counts per 10 sweeps: 3 at Washington fields, and 1 at Hurricane, Washington County. (Knowlton, Davis, May 18). NEW MEXICO - Ranged 0-15 per 25 sweeps in Socorro County alfalfa. (Heninger). OKLAHOMA - Light in Garvin County and moderate to heavy in Kingfisher County alfalfa. (Okla. Coop. Sur.).

TOBACCO BUDWORM (Heliothis virescens) - GEORGIA - Light to moderate on tobacco. (Girardeau).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - DELAWARE - Adult flights increased considerably over last period as indicated in blacklight traps in Kent and Sussex Counties. (Burbutis, Kelsey). Moths in light traps in all counties. (Boys). OHIO - Adults emerged in Franklin, Licking, and Wayne Counties on May 19. Pupation underway in Ashland County. (Walker et al.). ILLINOIS - Pupation about complete in southern section, moths emerging. Pupation 60-90 percent in central section; somewhat ahead of normal. Pupation starting in northern section. In southern section, first-generation borer problems should be light. Peak egg laying expected during first week of June. If borers continue to develop ahead of schedule, threat of severe damage will diminish. (Sur. Bull.). MISSOURI - Pupation complete in southwest, south-central, and east-central areas. Emergence started in these areas and complete in southeast area. Egg masses per 100 plants averaged 5 in southeast area and 3.5 in southwest area. First moth trapped in southwest area on May 14. (Munson, Thomas). NEBRASKA - First adults taken at Lincoln, Lancaster County, light trap on May 22. (Keith, Berogan).

BLACK CUTWORM (Agrotis ipsilon) - NEBRASKA - This species and Euxoa messoria (dark-sided cutworm) caused severe damage to seedling corn in Dodge, Washington, Platte, Polk, Colfax, Dawson, Clay, Saline, Seward, and York Counties. Several fields destroyed, replanting required. Most larvae one-fourth to two-thirds grown. (Roselle, Keith). IOWA - Adults of A. ipsilon moderate in light trap at Ames, Story County. (Iowa Ins. Inf., May 18).

SOUTHWESTERN CORN BORER (Diatraea grandiosella) - ARIZONA - Serious in corn in west side of Salt River Valley. Up to 10 first and second instars per plant in Maricopa County. (Ariz. Coop. Sur.).

SOUTHERN CORNSTALK BORER (Diatraea crambidoides) - GEORGIA - Damaged young corn plants in Liberty County. (Peebles).

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - ALABAMA - Larvae in combination with other soil insects damaged corn in scattered fields in Geneva County. Increased infestations expected. (Reynolds et al.).

CORN FLEA BEETLE (Chaetocnema pulicaria) - MISSOURI - Ranged 0-18 (averaged 5) per corn plant. Feeding damage confined to bottom leaves in Reynolds County. (Hanning). OHIO - Adults ranged 2-3 per plant on newly emerging sweet and field corn in Morrow County. (Lyon). This species, vector of corn wilt bacteria. (Roach). MARYLAND - Adults less than 1 per yard of corn in Talbot, Caroline, Dorchester, and Somerset Counties. (U. Md., Ent. Dept.).

A GROUND BEETLE (Clivina impressifrons) - OHIO - Damage severe in 100-acre cornfield in Champaign County, replanting necessary. (Fleming).

SAND WIREWORM (Horistonotus uhlerii) - SOUTH CAROLINA - Damaged small area in cornfield in Horry County. First report of this species in 5-6 years. (Flowers, Nettles).

SMALL GRAINS

PALE WESTERN CUTWORM (Agrotis orthogonia) - SOUTH DAKOTA - Larvae damaged wheat in several fields in Oelrichs area, Fall River County. Larvae ranged 1-5 per linear foot. (Jones). WYOMING - Larvae ranged 0-4 (averaged 1.5) per linear foot in 2 wheatfields in Goshen County. Damage apparent. (Parshall). NEBRASKA - Damaged some small grains in northern Dawes County. (Hagen). No damage reported elsewhere in panhandle or in southwest areas. (Keith).

WHEAT HEAD ARMYWORM (Faronta diffusa) - NEW MEXICO - Larvae ranged 1-3 per 25 sweeps in wheat near Clovis, Curry County. (Mathews).

ENGLISH GRAIN APHID (Macrosiphum avenae) - MISSOURI - Ranged 3-14 per head on wheat in east-central area; 60 percent of heads infested. (Munson).

LYGUS BUGS (Lygus spp.) - NEW MEXICO - Adults and nymphs ranged 5-15 per 25 sweeps in Curry County wheat. (Mathews).

BROWN WHEAT MITE (Petrobia latens) - WYOMING - Collected in wheatfields of Weston, Crook, and Johnson Counties for new county records. Light in all fields. (Parshall). COLORADO - Light to moderate in northeastern area wheat. Damage occurring where conditions dry. (Hantsbarger).

TURF, PASTURES, RANGELAND

BLUEGRASS WEBWORM (Crambus teterrellus) - INDIANA - First adult of season taken by blacklight trap at Lafayette, Tippecanoe County, on May 22. (Schuder).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - NEW HAMPSHIRE - All stages numerous at Newmarket, Rockingham County. (Blickle). MASSACHUSETTS - Average per 100 sweeps of 2 alfalfa fields in Hampshire County: Adults 14, larvae 47.5. (Miller, May 15). MARYLAND - Pupating in central areas. Larval damage spotty and well below economic levels throughout State. Injury appears to be declining for third year. First cutting underway in Baltimore, Howard, Frederick, Carroll, Montgomery, and Prince Georges Counties. Larval damage less than 40 percent statewide. (U. Md., Ent. Dept.). WEST VIRGINIA - Larvae 175 and adults 9 per 100 sweeps of alfalfa in Greenbrier County. (W. Va. Ins. Sur., May 15). VIRGINIA - Medium to heavy on alfalfa in Amelia County. Damage heavier than in 1969 at this date. Many farmers sprayed and forced to cut after spraying as infestation built up. (Holmes). Damage in Botetourt and Montgomery Counties ranged light to medium with an occasional field heavy. (W.A. Allen).

OHIO - Alfalfa weevil eggs per square foot averaged 90 at Castalia, Erie County; 160 at Wooster, Wayne County. Damage below normal in southwest area. Bathyplectes sp. (an ichneumon wasp) parasitized larvae in Ross County. (Flessel). INDIANA - Larvae averaged 13 and adults 1 per sweep of alfalfa in northern district. Average of 37 percent of terminals showed feeding damage. (Meyer). ILLINOIS - Still heavy in fields south of State Highway 17. Damage moderate to severe in fields south of U.S. Highway 40. Most fields in area sprayed at least once; some severe damage to second crop and treatment needed. In area between Highways 40

and 17, damage light to moderate; most fields close to harvest. Number of larvae likely to remain high for 7-14 days in this area. North of State Highway 17, feeding noticeable but not economic. Greatest chance of injury could be on new growth of second crop. (Sur. Bull.). WISCONSIN - Generally light in alfalfa with 5 per 100 sweeps common in southern counties. (Wis. Ins. Sur.). MINNESOTA - Adults found for first time in Houston County, May 19, 1970. Collected and determined by R. Flaskerd. Confirmed by P.J. Clausen and J. Lofgren. This is a new State record. (Minn. Pest Rpt.). IOWA - Larvae collected by N.D. Miller in Mills County May 18. This is a new county record. (Iowa Ins. Sur.). MISSOURI - Larvae ranged 300-500 and new adults 30-60 per 10 sweeps of uncut alfalfa in central area. (Hanning). GEORGIA - Larvae decreasing on clover in northern areas. (Nolan).

OKLAHOMA - Alfalfa weevil larvae averaged 2 per 100 sweeps in Chelsea area of Rogers County; 1 adult and 5 larvae per 100 sweeps in Calvin area of Hughes County. These are new county records. Larval damage moderate in Tulsa County and light in Murray County. (Okla. Coop. Sur.). TEXAS - Larvae and/or adults detected in Anderson, Angelina, Bee, Cherokee, Delta, Franklin, Goliad, Grimes, Hardin, Harrison, Hopkins, Jackson, Jasper, Karnes, Leon, Liberty, Live Oak, Madison, Matagorda, Montgomery, Morris, Nacogdoches, Panola, Rusk, Sabine, San Augustine, Shelby, Titus, Upshur, Uvalde, and Wilson Counties. Determinations were made by D.M. Anderson. These are new county records. (Green et al.). COLORADO - Increasing in Weld, Larimer, and Boulder Counties. Adults ranged 0-100 and larvae 0-150 per 100 sweeps. Heaviest in Longmont area of Boulder County. (Johnson). WYOMING - Adults ranged 0-30 per 10 sweeps in Weston, Crook, Campbell, Johnson, and Sheridan Counties. Eggs in most alfalfa, no larvae noted. (Parshall). UTAH - Larvae ranged 100-150 (1 adult) per 10 sweeps of alfalfa in Washington County; larvae ranged 1-2 at Sutherland, Millard County. Damaged alfalfa at Rockville, Springdale, and Hurricane in Washington County. (Knowlton, Davis, May 18). NEVADA - Early instars ranged 5-10 per sweep in Lovelock, Pershing County, alfalfa. (Martinelli).

CLOVER HEAD WEEVIL (*Hypera meles*) - MISSOURI - Adults and larvae collected from white and hop clovers in Henry, St. Clair, Vernon, and Cedar Counties. These are new county records. (Munson).

CLOVER LEAF WEEVIL (*Hypera punctata*) - MINNESOTA - Larvae in most alfalfa; appear heavier than in past years. Larvae ranged 0-40 per 100 sweeps in southeast district. Hatch still underway; most in early instars. Damage noticeable in Winona and Houston Counties. (Minn. Pest Rpt.).

VETCH BRUCHID (*Bruchus brachialis*) - OKLAHOMA - Moderate on vetch in Love and Stephens Counties. (Okla. Coop. Sur.).

PEA APHID (*Acyrtosiphon pisum*) - UTAH - Ranged 10-130 per 100 sweeps of alfalfa at Washington fields and Hurricane, Washington County. Counts higher 3 weeks past. (Davis, Knowlton, May 18). NEW MEXICO - Building up in many areas. Counts per 25 sweeps in alfalfa ranged 18-100+ in Socorro County and 30-100+ in De Baca County. (Heninger, Mathews). KANSAS - Ranged 100-500 per 100 sweeps in alfalfa in Coffey, Linn, Miami, Johnson, Franklin, Morris, Geary, Woodson, Wilson, Butler, Wyandotte, Harper, Harvey, McPherson, and Marion Counties. (Guldner, Redding). NEBRASKA - Generally light in several alfalfa fields in Cass, Lancaster, and Saunders Counties. Averaged 350 per 10 sweeps in 2 Saunders County fields on May 18. (Kindler). Ranged 250-475 per 20 sweeps in 6 fields in Cass and Lancaster Counties. Predators increasing. (Keith). SOUTH DAKOTA - Ranged 2-4 per sweep of alfalfa in Lincoln, Clay, Davison, Brookings, and Minnehaha Counties. Predators, mainly coccinellids, very high; ranged 1-2 per sweep. (Kantack, Jones). MINNESOTA - Ranged 20-1,000 (averaged 150) per 100 sweeps of alfalfa in southeast district; predators, mostly lady beetles and nabids, ranged 0-150 per 100 sweeps. (Minn. Pest Rpt.). INDIANA - Averaged 4 per sweep in northern district alfalfa. (Meyer).

VARIEGATED CUTWORM (Peridroma saucia) - OKLAHOMA - Moderate to heavy on alfalfa in southwest, south-central, central, east-central, north-central, and northeast areas. Heaviest damage in fields cut and larvae numerous enough to prevent regrowth. Mostly late instars and will pupate soon. (Okla. Coop. Sur.).

TARNISHED PLANT BUG (Lygus lineolaris) - KANSAS - Ranged 150-200 per 100 sweeps in alfalfa in Barton, Rice, Stafford, and Reno Counties. (Martinez). Numerous in alfalfa in Harvey, McPherson, Marion, Morris, and Geary Counties. (Redding).

LYGUS BUGS (Lygus spp.) - UTAH - Ranged 12-25 per sweep (nymphs 80 percent) in alfalfa at Washington fields and Hurricane in Washington County. (Davis, Knowlton, May 18). WYOMING - Ranged 0-12 (averaged 4) per 10 sweeps in alfalfa of Weston, Crook, Campbell, Johnson, and Sheridan Counties. (Parshall). NEW MEXICO - Mostly nymphs ranged 4-12 per 25 sweeps of alfalfa in Socorro County. (Heninger).

MEADOW PLANT BUG (Leptopterna dolabrata) - MISSOURI - Light to moderate in fescue, orchard grass, and bluegrass throughout southern areas. Adults up to 100 per 10 sweeps. High counts on fescue in southwest area. Adults collected in Moniteau, Morgan, Henry, Christian, Taney, St. Clair, Cedar, Vernon, Barton, Newton, McDonald (Munson); Reynolds (Hanning); Stoddard, Mississippi, Ripley, Carter, and Dent Counties (Thomas). These are new county records. (Munson).

MEADOW SPITTLEBUG (Philaenus spumarius) - MINNESOTA - Ranged trace to 80 percent of alfalfa stems infested with spittle masses. Highest counts in Houston and Winona Counties. Nymphs still hatching and expected to increase. (Minn. Pest Rpt.).

GARDEN FLEAHOPPER (Halticus bracteatus) - MISSOURI - Heavy in alfalfa in north-west area. Ranged 600-800 per 10 sweeps in one field in Platte County. (Burgess).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - NEVADA - Medium to heavy on alfalfa in several fields in Pahump Valley, Nye County. Leaf and bud damage noticeable in heavily infested fields on May 15. (Bechtel, Zoller).

SOYBEANS

A NEMATODE (Heterodera lespedezae) - ILLINOIS - Cysts collected in soybean field at McLeansboro, Hamilton County, by B. Guillermo, January 26, 1970. Determined by V.H. Owens, confirmed by A.M. Golden. Also attacked Kobe lespedeza in tests conducted by D. Edwards. This is a new State record. (PPD).

COTTON

BOLL WEEVIL (Anthonomus grandis) - ALABAMA - Weevils that survived winter and emerged onto 2 to 9-leaf cotton much fewer than during past few years. Highest counts 4-35 per acre in lower southern counties and none in more northern counties. (McQueen). GEORGIA - Collected 16 overwintering adults in 21 wing traps in Randolph County. (Womack). MISSISSIPPI - No weevils in 11 wing traps located near hibernation sites in delta counties. (Pfrimmer et al.). LOUISIANA - Collected 276 weevils from 217 wing traps week ending May 14. Currently collected 112 weevils from 175 wing traps in Madison Parish; total to date 1,456. (Cleveland et al.). TEXAS - Weevils in 2 of 40 fields in McLennan and Falls Counties. Trapped 4 in wing traps near hibernation sites; total to date 111. (Cowan et al.).

BOLLWORMS (Heliothis spp.) - ALABAMA - Eggs and early instars increased on cotton in south and central areas. Small larvae infested 5-75 percent of buds in pre-square cotton in many fields. Predators and parasites plentiful and destroying most larvae. (McQueen). MISSISSIPPI - Collected 4 larvae on seedling cotton in delta counties. H. virescens 45 percent of larvae collected this spring. (Pfrimmer et al.). LOUISIANA - Collected 8 H. zea and 6 H. virescens in light trap in Madison Parish week ending May 14. Currently light. (Cleveland et al.). TEXAS - H. zea and H. virescens caused concern to farmers in Rio Grande Valley. Several Counties in south-central area reported bollworms in terminals of young

cotton. (Deer, Cole). Eggs and/or larvae taken on numerous wild hosts in McLennan and Falls Counties. Total to date on all host plants: H. zea 119 and H. virescens 26. (Cowan et al.).

TWO-SPOTTED SPIDER MITE (*Tetranychus urticae*) - SOUTH CAROLINA - Caused some damage especially in fields where systemic insecticides not used in Florence County. (Flowers). ALABAMA - Increased in all cotton in Autauga and Montgomery Counties. Increase in presquare cotton somewhat unusual at this time. (Pike et al.).

COTTON FLEAHOPPER (*Pseudatomoscelis seriatus*) - TEXAS - Present in most Rio Grande Valley fields; heavy populations decreased. Adults and nymphs heavy in Live Oak and Bee Counties. Built up in most south-central counties. (Deer, Cole).

COTTON APHID (*Aphis gossypii*) - TEXAS - Widespread throughout south-central area. Generally light in Brazos, Robertson, Bell, and McLennan Counties. One field near Prairie Hill, Limestone County, heavily infested. (Cole, Green).

THRIPS - SOUTH CAROLINA - Caused some damage, especially in fields where systemic insecticides not used, in Florence County. (Flowers). TENNESSEE - Light in western area. Damage light. (Gordon et al.). TEXAS - Very light on cotton throughout south-central and central areas. One field near Prairie Hill, Limestone County, heavily infested. (Cole, Green).

TOBACCO

TOBACCO FLEA BEETLE (*Epitrix hirtipennis*) - MARYLAND - First adults of season found on small tobacco plants in St. Marys County. No economic damage. (U. Md., Ent. Dept.).

SUGARBEETS

SUGAR-BEET ROOT MAGGOT (*Tetanops myopaeformis*) - COLORADO - Adults averaged 9 per trap per day May 16-18 in Fort Collins area, Larimer County. Counts increased to 25 per trap per day May 18-21. Adults moderate to heavy throughout Weld, Larimer, and Boulder Counties; eggs laid. (Gaskill et al.). WYOMING - First adults of season collected in sugarbeet fields in Park and Big Horn Counties. (Burkhardt). NORTH DAKOTA - Pupated and adults emerged in Walsh and Pembina Counties. Pupation ranged up to 50 (averaged 25) percent. Less than 2 percent of adults emerged. About 10 percent of beets planted and none up. (Kaatz).

SPINACH LEAF MINER (*Pegomya hyoscyami*) - COLORADO - Egg laying in Weld, Larimer, and Boulder Counties; counts light. (Johnson).

POTATOES, TOMATOES, PEPPERS

COLORADO POTATO BEETLE (*Leptinotarsa decemlineata*) - UTAH - On volunteer potatoes at Logan, Cache County. (Hanson, Knowlton, May 18). WYOMING - Adults mating on nightshade at Torrington, Goshen County. (Parshall). COLORADO - Egg laying in Weld County potato fields. (Johnson). OKLAHOMA - Moderate and damaging potatoes in Murray County home gardens. (Okla. Coop. Sur.). VIRGINIA - Light on potatoes in Amelia County. (Holmes). PENNSYLVANIA - Adults numerous in Clinton County on commercial potatoes, controls needed. (Gesell). NEW JERSEY - Eggs and adults common on tomatoes near Hammonton, Atlantic County, and Adelphi, Monmouth County. Adult feeding light. (Ins.-Dis. Newsltr.).

TOMATO FRUITWORM (*Heliothis zea*) - ALABAMA - Larvae widespread but light in several hundred acres of commercial tomatoes in Geneva County. Control efforts underway. (Barnett et al.).

BEET ARMYWORM (*Spodoptera exigua*) - FLORIDA - Larvae heavy and damaged most plants in 60 acres of bell peppers at Immokalee, Collier County. (Adlerz).

BEANS AND PEAS

MEXICAN BEAN BEETLE (Epilachna varivestis) - MARYLAND - First adults of season on young garden beans near Greenbelt, Prince Georges County. (U. Md., Ent. Dept.).

CUCURBITS

SEED-CORN MAGGOT (Hylemya platura) - NEW JERSEY - Damaged cucumber seedlings in Cumberland and Burlington Counties. (Ins.-Dis. Newsltr.).

STRIPED CUCUMBER BEETLE (Acalymma vittatum) - ALABAMA - Adults of this species and Diabrotica undecimpunctata howardi (spotted cucumber beetle) caused light damage to cucumber plants in commercial plantings in Lowndes County. Most damage by A. vittatum. Controls applied. (Barnett et al.).

HAWAII INSECT REPORT

Turf, Pastures - Larvae of a GRASS WEBWORM (Herpetogramma licarsisalis) 1 per square feet of Kikuyu grass pasture at Waihee, Haiku, Kaupakulua, and Makawao, Maui; eggs and adults nil. Adults moderate in border mixed stand of grass at Mililani Memorial Park, Oahu; other stages nil. (Ah Sam, Au).

Fruits and Nuts - BARNACLE SCALE (Ceroplastes cirripediformis) light in 120 acres of passionfruit (Passiflora edulis f. flavicarpa) at Kahului, Maui. Parasitism about 85 percent. (Ah Sam, Miyahira).

Ornamentals - SOUTHERN GREEN STINK BUG (Nezara viridula) nymphs and adults moderate on buds of 300 flowering Dendrobium and Vanda plants at Wailuku, Maui. (Miyahira). Nymphs and adults of a LEAFHOPPER (Protalobrella brasiliensis) heavy, 20-30 per sweep, on Wedelia trilobata ground cover at Kaneohe and Kahaluu, Oahu; light, 6-10 per sweep, on same host at Hawaii-kai, Oahu. (Funasaki, Nakao).

Forest and Shade Trees - Larvae of a NOCTUID MOTH (Melipotis indomita) moderate under old bark of almost completely defoliated kiawe (Prosopis pallida) trees; many pupating. (Ah Sam, Miyahira). MONKEYPOD MOTH (Polydesma umbricola) larvae light and scattered under loose, old bark of about 15 monkeypod (Samanea saman) trees at Punchbowl, Oahu. (Kawamura).

Miscellaneous Pests - About 350 snails (2-3 inches long) of GIANT AFRICAN SNAIL (Achatina fulica) found in 200 square feet of grassy wasteland at Schofield, Oahu. (Olson). FORMOSAN SUBTERRANEAN TERMITE (Coptotermes formosanus) swarms heavy throughout Oahu past few weeks; 300+ adults in most light traps. (Au).

DETECTION

New State Records - ALFALFA WEEVIL (Hypera postica) MINNESOTA - Houston County (p. 352). A NEMATODE (Heterodera lespedezae) ILLINOIS - Hamilton County (p. 353). PECAN WEEVIL (Curculio caryae) NEW MEXICO - Otero County (p. 357).

New County Records - ALFALFA WEEVIL (Hypera postica) IOWA - Mills; OKLAHOMA - Hughes, Rogers; TEXAS - Anderson, Angelina, Bee, Cherokee, Delta, Franklin, Goliad, Grimes, Hardin, Harrison, Hopkins, Jasper, Karnes, Leon, Liberty, Live Oak, Madison, Matagorda, Montgomery, Morris, Nacogdoches, Panola, Rusk, Sabine, San Augustine, Shelby, Titus, Upshur, Uvalde, Wilson (p. 352). BROWN RECLUSE SPIDER (Loxosceles reclusa) TENNESSEE - Lincoln (p. 360). BROWN WHEAT MITE (Petrobia latens) WYOMING - Crook, Johnson, Weston (p. 351). CEREAL LEAF BEETLE (Oulema melanopus) KENTUCKY - Adair, Pulaski, Wayne (p. 360). CLOVER HEAD WEEVIL (Hypera melis) MISSOURI - Cedar, Henry, St. Clair, Vernon (p. 352). EASTERN TENT CATERPILLAR (Malacosoma americanum) IOWA - Hardin (p. 356). FACE FLY (Musca autumnalis) CALIFORNIA - Glenn (p. 359). MEADOW PLANT BUG (Leptopterna dolabrata) MISSOURI - Barton, Carter, Cedar, Christian, Dent, Henry, McDonald, Mississippi, Moniteau, Morgan, Newton, Reynolds, Ripley, St. Clair, Stoddard, Taney, Vernon (p. 353).

DECIDUOUS FRUITS AND NUTS

PERIODICAL CICADAS (Magicicada spp.) - INDIANA - Adults began emergence May 13 at Madison, Jefferson County; May 14 at Salem, Washington County; and May 16 in northeast Brown County. (Matthew). Adults emerged May 16 near Youngs Creek, Orange County. (Hamilton). OHIO - Hundreds of newly emerged adults clinging to bark of 2 large sycamore trees in a backyard in Delaware County. Warm temperatures statewide probably responsible for slightly early emergence. Egg laying expected in 2 weeks. (Roach). MARYLAND - Heavy emergence underway in Prince Georges, Montgomery, and Baltimore Counties. Damage should become evident in 2-3 weeks. (U. Md., Ent. Dept.). First adult May 16 in Montgomery County. (Fluno). VIRGINIA - M. septendecim (periodical cicada) adults emerged May 18 in Frederick County. (Amos).

PEAR PSYLLA (Psylla pyricola) - CONNECTICUT - Eggs and adults in New Haven County. Lighter than usual. (Savos, May 19). NEW YORK - Eggs numerous, hatch slow. Few nymphs in east areas. (N.Y. Wkly. Rpt., May 18).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - IOWA - Larvae collected in Hardin County by G. Wallerich May 15 for a new county record. (Iowa Ins. Sur.). WISCONSIN - Common on apple, black cherry, chokecherry, flowering crab, and mulberry in south area. Damage increasing; no heavy defoliation. (Wis. Ins. Sur.). PENNSYLVANIA - Outbreak heavy on wild cherry and fruit trees in southern half of State. Outlook is for more widespread attacks than last year. (Nichols, For. Pest Rpt., May 15). Some small larvae migrating in Dauphin County May 10-16, probably due to exhausted food supply. (Simons).

TORTRICID MOTHS - CONNECTICUT - Archips argyrospilus (fruit-tree leaf roller) larvae moderately heavy in sprayed orchard at Storrs, Tolland County. Lighter in New London and New Haven Counties. Argyrotaenia velutinana (red-banded leaf roller) larvae appearing in above 3 counties. (Savos, May 19).

SPRING CANKERWORM (Paleacrita vernata) - OREGON - More numerous than in past few years on poorly sprayed or unsprayed cherry, apple, and peach orchards in mid-Columbia, Hood River, and Wasco Counties. (Peiffer, May 15).

CODLING MOTH (Laspeyresia pomonella) - OREGON - First adults of season in bait pans May 3 at Medford, Jackson County. (Gentner). Adults light on apple May 13 at Milton-Freewater, Umatilla County. (Burkhart).

PLUM CURCULIO (Conotrachelus nenuphar) - OKLAHOMA - Moderate on peach and apricot trees in Cleveland County. (Okla. Coop. Sur.). NEW JERSEY - Stings on small apple fruits May 18 near Hammonton, Atlantic County. Feeding punctures on peach and oviposition scars in south counties. (Ins.-Dis. Newsltr.). NEW HAMPSHIRE - In apple orchards at Durham May 9 and in blacklight trap May 11 at Lee, Strafford County. (Blickle).

CARPET BEETLE (Anthrenus scrophulariae) - MICHIGAN - Many adults collected from pear blooms. First time noted on pears. (Janes, May 18).

EUROPEAN RED MITE (Panonychus ulmi) - MICHIGAN - First hatch in Peach Ridge fruit belt. Eggs heavy in eastern orchards and survival high where no oil sprays applied. (Thompson, May 18). VIRGINIA - Abundant on apples and peaches in several Frederick County orchards. (Amos).

PHYLLOXERAS (Phylloxera spp.) - TEXAS - P. notabilis (pecan leaf phylloxera) heavy on pecan trees near Cuero, De Witt County. (Wright). OKLAHOMA - Phylloxera spp. moderate to heavy on pecan trees throughout central and south-central areas. (Okla. Coop. Sur.). MISSISSIPPI - P. notabilis heavy on pecan leaves and P. devastatrix (pecan phylloxera) heavy on pecan petioles in Franklin County. (Sartor). ALABAMA - P. devastatrix galls heavy on 6 pecan trees in 2 orchards

in Choctaw and Wilcox Counties. Additional controls needed. (Barnett et al.).
GEORGIA - *P. devastatrix* light; galls on pecan leaves in Bullock and Burke
Counties. (O'Stean, Miller). Infested hickory in Spalding County. (Dupree).

PECAN NUT CASEBEARER (*Acrobasis caryae*) - TEXAS - Treatment completed in most
south and south-central counties. Egg laying completed in Brazos, Milam, and
Bell Counties. (Green).

PECAN WEEVIL (*Curculio caryae*) - NEW MEXICO - Adult and larvae collected from
soil at Tularosa, Otero County, by B.G. Campbell, March 24, 1970. Determined by
R.E. Warner. This is a new State record. (N.M. Coop. Rpt.).

BLACK-MARGINED APHID (*Monellia costalis*) - MISSISSIPPI - Built up on pecans earlier
than usual in Lowndes, Oktibbeha, and Franklin Counties. (Sartor).

CITRUS

Citrus Insect Situation in Florida - Mid-May - CITRUS RUST MITE (*Phyllocoptura
oleivora*) infested 70 (norm 55) percent of groves; economic in 50 (norm 35)
percent. Population above normal on leaves and fruit. Leaf infestation in high
range; fruit infestation at moderate level. Decrease expected in May, followed
by increase in June if normal adequate rainfall occurs. Highest districts south,
west, and central. CITRUS RED MITE (*Panonychus citri*) in 52 (norm 52) percent
of groves; economic in 23 (norm 26) percent. Increased; near normal and in moder-
ate range. Little change expected. Highest districts west and south. TEXAS CITRUS
MITE (*Eutetranychus banksi*) in 31 (norm 53) percent of groves; economic in 14
(norm 29) percent. Increased but still in low range and much below normal. Further
increase expected. Highest district south. SIX-SPOTTED MITE (*Eotetranychus
sexmaculatus*) in 11 percent of groves; economic in 3 percent. Near normal and
generally in low range except for few scattered heavy infestations. Increase
expected until mid-June with decrease thereafter. GLOVER SCALE (*Lepidosaphes
gloverii*) in 85 (norm 82) percent of groves; economic in 12 (norm 27) percent.
Increased; approaching high range but still below normal. Increase into high
range expected. Highest districts south, east, north, and west. PURPLE SCALE
(*L. beckii*) in 73 (norm 81) percent of groves; economic in 6 (norm 11) percent.
YELLOW SCALE (*Aonidiella citrina*) in 64 (norm 65) percent of groves; economic in
4 (norm 9) percent. CHAFF SCALE (*Parlatoria pergandii*) in 44 (norm 68) percent
of groves; economic in 3 (norm 13) percent. BLACK SCALE (*Saissetia oleae*) in 9
(norm 32) percent of groves; economic in 2 (norm 13) percent. These 4 scales
below normal abundance. Not expected to increase importantly. Only few heavy
infestations likely to occur. An ARMORED SCALE (*Unaspis citri*) in 26 percent of
groves; moderate or heavy in 8 percent. Higher than in May of prior years. Little
change expected. WHITEFLIES in 76 percent of groves; moderate or heavy in 33
percent. Larval forms highest for May in 19 years of record. Increase expected.
MEALYBUGS will increase from present low level but not expected to become
important until mid-June. (W.A. Simanton (Citrus Expt. Sta., Lake Alfred)).

CITRUS THRIPS (*Scirtothrips citri*) - ARIZONA - Averaged one thrips per small
fruit in block of navel orange trees near Hyder, Yuma County. Protective treat-
ments continue in nurseries and groves. (Ariz. Coop. Sur.).

CITRUS RED MITE (*Panonychus citri*) - ARIZONA - One grove treated on Yuma Mesa,
Yuma County. (Ariz. Coop. Sur.).

SMALL FRUITS

A LEAF ROLLER MOTH (*Platynota stultana*) - CALIFORNIA - Damaged Fresno County
grapes. Increasing. Now established pest of grapes all season. (Cal. Coop. Rpt.).

A LARGID BUG (*Largus cinctus californicus*) - CALIFORNIA - Ranged 2-3 per
blackberry twig at Sacramento, Sacramento County. Unusually prevalent this
season. (Cal. Coop. Rpt.).

MEADOW SPITTLEBUG (Philaenus spumarius) - WISCONSIN - Common on strawberries and phlox in south counties. (Wis. Ins. Sur.).

FOREST AND SHADE TREES

OLETHREUTID MOTHS (Rhyacionia spp.) - MISSISSIPPI - R. frustrana (Nantucket pine tip moth) damage moderate in loblolly pines in Oktibbeha County. (Sartor). OKLAHOMA - R. frustrana larvae moderate; damaged tips of small pines in Pushmataha County. (Okla. Coop. Sur.). MICHIGAN - R. buoliana (European pine shoot moth) appears to be increasing. Infested about 25 percent of one acre of Scotch pine in Oakland County. Severely damaged buds; new growth wilting. (Hanna, May 18).

PINE TUSSOCK MOTH (Dasychira plagiata) - MINNESOTA - Larvae emerged May 18-19 in east-central area. Feeding on jack pine needles May 20. (Minn. Pest Rpt.).

CONIFER SAWFLIES (Neodiprion spp.) - MISSOURI - N. sertifer (European pine sawfly) moderate to heavy on Scotch pine in Adair County. (Gass). TENNESSEE - Probably N. taedae linearis caused major outbreak in central and west areas. Damage moderate to very heavy. Almost complete defoliation in some areas. Infestations more general and damage heavier than in 1969. Probably N. pratti pratti extensively damaged pines at Highland Rim. (Greene et al.). VIRGINIA - N. pratti pratti larval damage medium in some areas of Essex County. (Harrison).

COOLEY SPRUCE GALL APHID (Adelges cooleyi) - COLORADO - Moderate on spruce at Fort Collins, Larimer County. Forming galls although candles not yet expanding much. (Thatcher). WISCONSIN - Eggs on ornamentals about May 8 in Rock County. About 5 percent hatch May 13 in Dane County; additional 10 percent of eggs had eyespots. (Wis. Ins. Sur.). OHIO - Pupating on Douglas-fir in Licking County. (Walker).

PINE SPITTLEBUG (Aphrophora parallela) - MICHIGAN - Second instars common May 16; small spittle masses on Scotch pine in Ingham County. (Hanna). DELAWARE - Appearing on Virginia and loblolly pines in Sussex County. (Burbutis, Kelsey).

TORTRICID MOTHS - PENNSYLVANIA - Larvae, mainly Archips semiferanus, hatched in early May in north-central counties. Damage most prevalent on plateaus and ridges where chestnut oak and white oak predominate. This will be third year, fourth year in some cases, of heavy defoliation. Much tree mortality already. (Nichols, For. Pest Rpt., May 15).

LINDEN LOOPER (Erannis tiliaria) - PENNSYLVANIA - Heavy defoliation will occur again in Cornwall area, Lebanon and Lancaster Counties, and near Pine Grove Furnace, southern Cumberland County. May increase substantially in other areas. Hatched in late April. (Nichols, For. Pest Rpt., May 15).

GEOMETRID MOTHS - MINNESOTA - Damage very noticeable to leaves of most broadleaf trees. Palaecrita vernata (spring cankerworm) 96 percent and Alsophila pometaria (fall cankerworm) 4 percent in sample collected May 19. (Minn. Pest Rpt.). SOUTH DAKOTA - P. vernata defoliated Todd County trees; controls applied. (Jones et al.). NORTH DAKOTA - A. pometaria hatched in Cass County. (Brandvik).

SADDLED PROMINENT (Heterocampa guttivitta) - PENNSYLVANIA - Fewer overwintered pupae due to larval disease indicate much less defoliation this year for beech and sugar maple at Tobyhanna, Monroe County, and at Gouldsboro and Newfoundland, Wayne County. In northern Wayne County pupal numbers sufficient to result in moderate to heavy defoliation over several thousand acres. (Nichols, For. Pest Rpt., May 15).

TENT CATERPILLARS (Malacosoma spp.) - COLORADO - M. californicum fragile (western tent caterpillar) larvae appearing late this year. Populations one-fourth as heavy as in 1969. (Thatcher). WEST VIRGINIA - M. disstria (forest tent caterpillar) defoliated 30-40 percent of ash, maple, and oak in Marshall

County. (W. Va. Ins. Sur., May 13). PENNSYLVANIA - Eggs sufficiently numerous on sugar maple, oak, and other hardwoods in south Somerset County to result in defoliation of several thousand acres many times. Infestations increasing in other south counties. (Nichols, For. Pest Rpt., May 15).

ELM LEAF BEETLE (*Pyrrhalta luteola*) - CALIFORNIA - Adults one per elm leaf at Bakersfield, Kern County. Activity increased. Larvae damaging in other locations. Expect pest to be serious if no controls applied. (Cal. Coop. Rpt.). OKLAHOMA - Small larvae 3 per elm leaf in Major County. Defoliation moderate to occasionally heavy in Marshall and Cleveland Counties. (Okla. Coop. Sur.). MISSISSIPPI - Larvae heavy on Chinese elm in Calhoun County. (Sartor).

BLACK-HEADED ASH SAWFLY (*Tethida cordigera*) - MISSOURI - Heavy in nursery in Texas County; acre of green ash completely defoliated. (Gass).

MAN AND ANIMALS

SCREW-WORM (*Cochliomyia hominivorax*) - One case reported in U.S. May 17-23 as follows: ARIZONA - Inside Barrier in Cochise County. Total of 49 laboratory-confirmed cases reported in portion of Barrier Zone in Republic of Mexico as follows: Sonora 28, Chihuahua 13, Coahuila 1, Nuevo Leon 1, Tamaulipas 6. Total of 7 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 17,288,000; Arizona 100,000; Mexico 141,220,000. (Anim. Health Div.).

HORN FLY (*Haematobia irritans*) - TEXAS - Medium to heavy in Jackson and Hudspeth Counties. (Green). OKLAHOMA - Averaged 400 per cow in Payne, Noble, and Logan Counties. Ranged 300-800 per head in Garvin County and 200-300 per head in Marshall County. Moderate in Nowata, Murray, and Okfuskee Counties. (Okla. Coop. Sur.). NEBRASKA - Ranged 5-10 per head on dairy herd near Lincoln, Lancaster County; very few in feedlot. (Campbell, May 19). MISSOURI - Adults per head on Boone County cattle ranged 25-450 (averaged 222.2) on untreated animals and 0-100 (averaged 18.6) on treated animals. (Thomas). VERMONT - Starting to buildup on pastured cattle. (Nielsen, May 15).

FACE FLY (*Musca autumnalis*) - CALIFORNIA - Several flies per horse face at Elk Creek, Glenn County. This is a new county record. Widespread annoyance beginning. (Cal. Coop. Rpt.). OREGON - Averaged 8-12 per animal on 12 beef cattle at North Plains, Washington County, week of May 1. (Goeden). MISSOURI - Adults per head on Boone County cattle ranged 2-25 (averaged 13.7) on untreated animals and 2-20 (averaged 9.5) on treated animals. (Thomas). NEW HAMPSHIRE - Larvae at Durham, Strafford County, May 15. (Blickle). VERMONT - Common on cattle on warm days. (Nielsen, May 15).

HOUSE FLY (*Musca domestica*) - OKLAHOMA - Increased in and around homes in Payne County. Averaged 10 per Scudder grid in untreated barns. (Okla. Coop. Sur.). SOUTH CAROLINA - Problem around cattle and swine feedlots. (Kissam).

STABLE FLY (*Stomoxys calcitrans*) - OKLAHOMA - Averaged 4 per dairy cow in Payne County. (Okla. Coop. Sur.). NEBRASKA - Increased on feedlot animals. Up to 4 (averaged 1.5) per leg in feedlot near Lincoln. Up to 6 (averaged 2.0) per leg on dairy herd in Lancaster County. (Campbell).

HORSE BOT FLY (*Gasterophilus intestinalis*) - OKLAHOMA - Adults active in Payne County. Averaged about 1 per horse. (Okla. Coop. Sur.).

COMMON CATTLE GRUB (*Hypoderma lineatum*) - VERMONT - Last instars, some dropping to ground, averaged 10-20 per head of cattle. (Nielsen, May 15).

MOSQUITOES - GEORGIA - Annoying in many north areas. (Nolan). NEW HAMPSHIRE - Adult emergence, mainly Aedes trichurus and A. fitchii, peaked May 15 at Durham, Strafford County. (Blickle). MINNESOTA - Aedes vexans dominant in larval collections at Minneapolis and St. Paul. Some spring Aedes found. Emergence of A. vexans and spring Aedes adults almost complete May 21. Cool weather slowing larval development allowed treatment of all breeding sites. Annoyance from this early spring brood to be minimal. Heavy rain May 21-22 resulted in another hatch. (Minn. Pest Rpt.). WYOMING - Larvae and few adults at Newcastle, Weston County. (Coxe). First to third instars in flooded pastures and temporary pools May 14 on experiment farm at Laramie, Albany County. No pupae. (Lloyd).

A BITING MIDGE (Leptoconops kerteszi) - NEVADA - Extreme nuisance May 1 at Gerlach, Washoe County, and up to 50 miles away. Appears to have decreased. (Lukens).

MIDGES - WISCONSIN - Midges, including Chironomus plumosus, numerous locally near Lake Winnebago and Door County lakes and streams. Large emergence of C. plumosus May 1 near Oshkosh, Winnebago County. (Wis. Ins. Sur.).

A DERMESTID BEETLE (Trogoderma simplex) - NEVADA - This species and Tribolium madens (a darkling beetle) infested and destroyed up to 20 percent of nests of Megachile rotundata (alfalfa leafcutter bee) at Lovelock, Pershing County. T. simplex caused most of damage. (Martinelli).

CHICKEN BODY LOUSE (Menacanthus stramineus) - OHIO - Numerous in Morrow County. Apparently heaviest on Plymouth Rock hens. (Roach, Lyon).

SHEEP BITING LOUSE (Bovicola ovis) - OHIO - This species and Melophagus ovinus (sheep ked) very heavy on sheep flock in Morrow County. Sheep not sheared nor docked; wool completely littered with cast pupal cases. (Roach, Lyon).

HARD-BACKED TICKS - OKLAHOMA - Amblyomma maculatum (Gulf Coast tick) averaged 7 per cattle ear at Mill Creek, Johnston County. Continues on cattle at Bartlesville, Washington County, and Chouteau, Mayes County. Found 7 ticks on 2 dogs in Mayes County. All nearly engorged. A. americanum (lone star tick) larvae increasing in Cherokee County; nymphs and adults remain common; moderate to heavy in Pittsburg and Marshall Counties. Dermacentor variabilis (American dog tick) more common than usual in several central and south-central counties. (Okla. Coop. Sur.). COLORADO - D. andersoni (Rocky Mountain wood tick) heavy and active in foothills. (Thatcher).

BROWN RECLUSE SPIDER (Loxosceles reclusa) - TENNESSEE - Collected in Lincoln County for a new county record. Controls applied. (Winsett).

BENEFICIAL INSECTS

LADY BEETLES - KANSAS - Larvae abundant in alfalfa and wheat checked for greenbug and pea aphid. Adults very few except in Franklin County wheatfield. (Simpson).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

CEREAL LEAF BEETLE (Oulema melanopus) - KENTUCKY - Larvae light on oats for new county records as follows. Pulaski County, collected by J.H. Milner May 19. At Monticello, Wayne County, by H.E. Hurst May 19. At Columbia, Adair County, by J.L. Wheeler May 20. Determined by V.H. Owens; confirmed by R.E. White. (PPD). OHIO - Averaged 372 larvae and 102 adults per 100 sweeps of oats in Franklin County. (Walker). INDIANA - Averaged 2 eggs per linear foot and 1 larva per 2 linear feet of oats in northeast district. (Meyer).

EUROPEAN CLOVER LEAF TIER (Mirificarma formosella) - CALIFORNIA - Some larvae and pupae on Nevada County clovers. Populations moderate to heavy in area in 1969. Clover growth and larval survival poor due to dry weather. No adults. (Cal. Coop. Rpt.).

GRASS BUGS - UTAH - Labops hesperius and Irbisia pacifica 75 percent nymphs; discolored crested wheatgrass at Kanarraville, Iron County, and from Grass Valley to Pinto in Washington County. (Davis, Knowlton, May 18).

GRASSHOPPERS - NEW MEXICO - First and second instars 1-10 per 25 sweeps of Socorro County alfalfa. (Heninger). NEVADA - Aulocara elliotti and Oedaleonotus enigma hatched at Seven Troughs, Majuba Canyon area of Pershing County. Light, 0-3 per square yard. Mostly O. enigma hatching in Orovida and Pumpernickel Valley, Humboldt County; Betty O'Neil area, Lander County; and Clover Ranch area, Elko County, week of May 8. (Burnett). WYOMING - Cordillacris occipitalis starting to hatch May 20 at Guernsey, Platte County. Psoloessa delicatula 2.5 per 100 square feet at Glendo and 1.0 per 100 square feet at Guernsey; Eritettix simplex tricarinatus averaged 0.4 at Glendo, Platte County. (Parshall). NORTH DAKOTA - Percent egg development in Morton County: Clear 13 percent, coagulated 54, eyespot 25, and segmented 8. Thirty percent of egg pods destroyed by wire-worms and carabid larvae. No desiccated eggs evident. Melanoplus differentialis dominant in area. (Brandvik).

GYPSY MOTH (Porthetria dispar) - PENNSYLVANIA - Egg masses indicate Pike County rapidly becoming heavily infested; defoliation will be moderate to heavy in some areas. Heavy defoliation likely on 2,000-4,000 acres on Blue Mountain bordering Monroe and Northampton Counties south of Kunkletown. (Nichols, For. Pest Rpt., May 15). NEW JERSEY - Heavy at Scotch Plains, Fanwood, Mountainside, Summit, and Watchung in Union County. (Ins.-Dis. Newsltr.). CONNECTICUT - Larvae observed at East Lyme, New London County; New Haven, New Haven County; and Storrs, Tolland County. Egg mass counts indicate infestation could be serious in many areas. (Savos, May 19). VERMONT - Hatched week ending May 15. (Nielsen).

JAPANESE BEETLE (Popillia japonica) - DELAWARE - Larvae damaged many lawns. (Boys, May 20). VIRGINIA - Adults heavy in garden in Amelia County. First report of season May 13. (Holmes).

MORMON CRICKET (Anabrus simplex) - NEVADA - Third instars light at Seven Troughs, Majuba Canyon area of Pershing County, week of May 8. (Burnett).

PINK BOLLWORM (Pectinophora gossypiella) - Sterile moth releases May 15-21. CALIFORNIA - Coachella Valley 6,837,000, total to date 32,379,250; Kern County 1,280,000, total to date 6,407,700. ARIZONA - Redington, Pima County, 67,500, total to date 202,500. (PPD). TEXAS - One collected in light trap at Waco, McLennan County. (Cowan et al.).

WHITE-FRINGED BEETLES (Graphognathus spp.) - ALABAMA - Medium to heavy larval populations damaging corn, peanuts, and cotton in southeast area. Larvae averaged 2 per stalk in large cornfield near Cottonwood, Houston County; plant loss 50 percent in this field replanted because of earlier damage. Caused 25-percent loss of peanut plants in 10-acre field near Ashford; affected several other fields in Cottonwood area. Medium to heavy population damaged cotton near Cottonwood. Larvae light to medium and damaging commercial peas, squash, and okra near Ashford, Houston County. (Roney). GEORGIA - Moderate on peanuts in Wheeler County. (Williams).

CORRECTIONS

CEIR 20(21):341 - ... This and Tyloderma fragariae (strawberry crown borer) ... should read ... This and Aristotelia fragariae (strawberry crown miner) ... (Wessler, Shanks).

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Cooperative
**ECONOMIC INSECT
REPORT**

Issued by

PLANT PROTECTION DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE



AGRICULTURAL RESEARCH SERVICE

PLANT PROTECTION DIVISION

ECONOMIC INSECT SURVEY AND DETECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Economic Insect Survey and Detection
Plant Protection Division
Agricultural Research Service
United States Department of Agriculture
Federal Center Building
Hyattsville, Maryland 20782

COOPERATIVE ECONOMIC INSECT REPORT**HIGHLIGHTS**Current Conditions

ARMYWORM moths in light traps in several States. (pp. 365, 376).

BEET ARMYWORM larvae damaged several crops in Florida. (pp. 365, 366, 369).

LESSER CORNSTALK BORER caused heavy damage to Bahia grass in Florida. (p. 366).

ALFALFA WEEVIL larvae increasing in Colorado (p. 366) and heavy in Illinois. (p. 367). PEA APHID heavy on alfalfa in Colorado, Oklahoma, and Nebraska. (p. 367).

STRAWBERRY WEEVIL damaged strawberries in Michigan. (p. 371).

HORN FLY building up in Vermont, heavy in Alabama and Oklahoma. A BLACK FLY heavy on horses in North Dakota. (p. 373).

GRASS BUGS damaged crested wheatgrass in Utah and Idaho. (p. 374).

Detection

New State records include an ERIOPHYID MITE from Washington (p. 371) and a PERIODICAL CICADA from Maryland. (p. 370).

For new county records see page 369.

Special Reports

Estimates of Damage by the European Corn Borer to Grain Corn in the United States in 1969. (p. 377).

CONTENTS

Special Insects of Regional Significance.....365

Insects Affecting

Corn, Sorghum, Sugarcane.....	365	Cole Crops.....	369
Small Grains.....	366	Cucurbits.....	369
Turf, Pastures, Rangeland.....	366	General Vegetables.....	369
Forage Legumes.....	366	Deciduous Fruits and Nuts.....	370
Soybeans.....	368	Citrus.....	371
Cotton.....	368	Small Fruits.....	371
Tobacco.....	368	Ornamentals.....	371
Sugarbeets.....	368	Forest and Shade Trees.....	371
Potatoes, Tomatoes, Peppers.....	369	Man and Animals.....	373
Beans and Peas.....	369		

Detection..... 369

Beneficial Insects..... 374

Federal and State Plant Protection Programs..... 374

Hawaii Insect Report..... 375

Weather Bureau's 30-Day Outlook..... 375

Light Trap Collections..... 376

Estimates of Damage by the European Corn Borer to Grain Corn in the United States in 1969..... 377

WEATHER OF THE WEEK ENDING JUNE 1

HIGHLIGHTS: Severe weather hit wide areas in the central and southeast portions of the Country. Funnel clouds, hail, damaging winds, and flash flooding struck localities from the Rocky Mountains to the Mississippi River and from the Great Lakes to the Gulf of Mexico.

TEMPERATURE: The North Central States and the east coast experienced below normal temperatures, as did an area from New Mexico into Texas. The central part of the Country, along with Nevada and interior California, was warmer than normal. Early in the week a cold front moved eastward from the Great Plains, replacing warm, humid weather with a fresh flow of cool dry air. Ahead of the front maximum temperatures reached the upper 80's and low 90's from Texas northeastward to Ohio and Pennsylvania. Behind the front snow flurries occurred in northern Minnesota and Upper Michigan. Fargo, North Dakota, set a new low temperature record for the date on Tuesday the 26th when the mercury fell to 29°. Maxima remained in the 40's and 50's from North Dakota to northern Wisconsin. By Wednesday the front reached the east coast, bringing fine spring weather to the eastern third of the Nation, except along the immediate gulf coast and in Florida, where warm, muggy air held sway. A large HIGH drifting slowly southeastward through eastern Canada maintained a flow of dry, pleasant air over the Northeast into the weekend. On Friday and Saturday afternoon temperatures remained in the 70's from the Carolinas to New England, while minima ranged from the 50's and 60's in the Southeast to the 30's and 40's in New England, where scattered frost was reported. Nantucket, Massachusetts, set a record low for so late in the season with 34° on Saturday, May 30. The interior portions of Oregon and Washington reached the 80's and 90's on Monday, but a Pacific cold front moved inland late in the day and maxima remained in the 60's and 70's until the weekend, when noticeable warming occurred bringing readings in the 80's. The interior valleys of California reached over 100° on several days.

PRECIPITATION: The remnants of the season's first tropical storm, Alma, moved northeastward through Florida and Georgia on Monday, producing copious rains along its path. Fort Lauderdale reported 9.60 inches in a 24-hour period. A tornado was reported near Columbia, South Carolina. On Tuesday the weakening storm moved into southern Virginia, leaving 1 to 3-inch rains in its wake. Early in the week Weather of the week continued on page 376.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMYWORM (*Pseudaletia unipuncta*) - KANSAS - Early instars per square foot ranged 10-20 in bromegrass and 5-6 in wheat at Manhattan, Riley County. (Simpson, Gates). MISSOURI - Light to moderate in fescue, orchard, and brome grasses throughout State. (Munson). NEBRASKA - Moths still abundant at lights in Lincoln, Lancaster County. Half-grown larvae averaged 2 per 150 sweeps of grassy alfalfa in Richardson County. (Keith, Manglitz, May 26). ILLINOIS - Some fields of wheat infested as far as central area; high temperatures speeding up larval development as well as disease. Parasites present. Larvae small and abundant in wheat along east side of State. Populations lighter and larvae more mature in west and south. Time for maximum control passed, some fields may still warrant controls. (Sur. Bull.). MICHIGAN - Moth counts in Lenawee County blacklight trap heavier; highest, 94 on May 21. Possibility of local larval outbreaks when moth counts pass 100. Sampling counts similar at Livingston County light trap. (Newman). INDIANA - First-generation larvae damaged corn in Putnam and Dubois Counties. (Lehker). VIRGINIA - Late instars severely damaged corn in Franklin County. Determined by W.A. Allen. (Fretts). Larvae in Pulaski and Montgomery Counties widespread in sod-planted corn but not so severe as 1969. (Allen). Late instars severely damaged sod-planted corn in Orange and Spotsylvania Counties. One field of 30 acres practically destroyed. (Jones). MARYLAND - Expect increased damage over 1969 record low due to increased "no-tillage" practices of planting. (U. Md., Ent. Dept.). DELAWARE - Adults abundant in blacklight traps. (Boys, May 27).

ARMY CUTWORM (*Chorizagrotis auxiliaris*) - NEBRASKA - Moths increasing at Lincoln, Lancaster County, light trap; still light. (Keith).

ASTER LEAFHOPPER (*Macrosteles fascifrons*) - MINNESOTA - Counts of 1,000 per 100 sweeps of alfalfa and quackgrass at Grand Rapids, Itasca County, May 19 and 20. Ranged 2-5 per 100 sweeps in Lake of the Woods and Roseau Counties. Now moved northward to Canadian border. Counts variable due to cool temperatures and high winds in central district. Ranged trace to 400 per 100 sweeps of seedling oats. (Minn. Pest Rpt.). WISCONSIN - Most common in grain and alfalfa throughout southern half of State. Counts seldom over 7 (mostly 2 or 3) per 100 sweeps. (Wis. Ins. Sur.).

CORN EARWORM (*Heliothis zea*) - MISSISSIPPI - Last instars averaged 2 per plant on field corn and light on soybeans at State College, Oktibbeha County. (Sartor). GEORGIA - Moderate in whorls of field corn in Burke County. (Miller). SOUTH CAROLINA - Damage increased on corn in most coastal counties. (Thomas).

GREENBUG (*Schizaphis graminum*) - KANSAS - Averaged 10 per young milo plant in Cowley County field. Surveys negative in Chautauqua, Butler, McPherson, Harvey, Sedgwick, and Sumner Counties. (Redding). Light on milo in Crawford County. Some winged forms. (Simpson). NEBRASKA - Negative in 6 wheatfields in Jefferson County May 27. (Keith et al.). Catches unusually light in suction trap at Lincoln, Lancaster County. (Pruess).

POTATO LEAFHOPPER (*Empoasca fabae*) - WISCONSIN - Adults appearing in many alfalfa fields in southern counties; ranged up to 5 per 50 sweeps in some Dane County fields, declined rapidly farther north. (Wis. Ins. Sur.).

SPOTTED ALFALFA APHID (*Therioaphis maculata*) - KANSAS - Trace in some alfalfa in Atchison, Doniphan, Brown, and Nemaha Counties. (Iselin).

CORN, SORGHUM, SUGARCANE

ARMYWORMS - FLORIDA - *Spodoptera exigua* (beet armyworm) larvae unusually abundant and damaged sweet corn; damaged buds on young corn, silks and kernels on tips of ears of older corn at Belle Glade; also damaged sorghum. Control difficult. (Janes). Mixed populations of beet armyworm and *S. frugiperda* (fall armyworm)

larvae damaged 80-85 percent of untreated sweet corn at Belle Glade. (Fla. Coop. Sur.). Fall armyworm caused some damage to sweet corn, mostly buds, at Belle Glade, Palm Beach County. (Janes). TENNESSEE - Unspecified larvae heavily damaged young corn in Giles County. (Watson, Robinson).

EUROPEAN CORN BORER (*Ostrinia nubilalis*) - NEW YORK - Moths emerged from caged pupae May 25 in Ulster County. Moths trapped in blacklight at Geneva, Ontario County. (N.Y. Wkly. Rpt.). NEW JERSEY - Moths very heavy in weeds and grass bordering fields in Burlington County. Egg laying observed on seedling corn plants. First egg hatch in about 7-10 days. (Ins.-Dis. Newsltr.). DELAWARE - Adults averaged 10 per night in blacklight trap in Sussex County and 6 per night in Kent County. (Burbutis). ILLINOIS - Pupation and emergence earlier than usual; moths may concentrate in fields to lay eggs. Pupation of overwintered borers complete in south area; moths flying and laying eggs. Pupation nearly completed in central area, moth emergence begun and egg laying imminent. In northern area, pupation progressing rapidly, no moth emergence yet. (Sur. Bull.). IOWA - Pupation at Ankeny 64 percent and adult emergence 8 percent on May 28. (Iowa Ins. Sur.). MISSOURI - Eggs ranged 20-80 masses per 100 plants on 30 to 38-inch corn in central and east-central areas. Only 8-10 percent of corn this tall. No hatching. (Munson). NEBRASKA - Adults numerous on alfalfa in Richardson County. (Keith).

CORN ROOT WEBWORM (*Crambus caliginosellus*) - MINNESOTA - Damage in 2 cornfields in Sibley County previously in alfalfa-grass sod; 30 percent stand reduction in one field treated and replanted; 15 percent of plants showed injury in another field. (Minn. Pest Rpt.).

SUGARCANE BEETLE (*Euethoea rugiceps*) - ALABAMA - Destroyed several small corn plantings and 25 percent of plants in 40-acre field; controls applied at Megargel in Monroe County. (Lemons).

SMALL GRAINS

PALE WESTERN CUTWORM (*Agrotis orthogonia*) - WYOMING - Treatments needed on 80 acres of wheat in Pine Bluffs area, Laramie County. (Anderson). Only report this spring. (Parshall).

HESSIAN FLY (*Mayetiola destructor*) - ALABAMA - Larvae ranged 1-4 per stalk in one field of wheat in east Colbert County. Spotty throughout field. Caused some plants to die and fall. (Holloway).

TURF, PASTURES, RANGELAND

LESSER CORNSTALK BORER (*Elasmopalpus lignosellus*) - FLORIDA - Caused heavy damage (typical deadheart) to young Argentine Bahia grass at ranch near Belle Glade, Palm Beach County. About 1,700 acres heavily infested; several hundred acres will need to be reseeded; moths present. Population appears to be decreasing after several days of rain, following 55 days of drought. (Genung).

FORAGE LEGUMES

ALFALFA WEEVIL (*Hypera postica*) - WASHINGTON - Adults and first to third instars moderate in one field and trace in 2 fields at Ellensburg, Kittitas County, May 26. Small larvae and winter adults on alfalfa and legumes at Pullman, Whitman County. (Retan, Johansen). IDAHO - Adults ranged 0-3 per 5 sweeps of alfalfa in Camas prairie area, Idaho County, May 21. Foliar damage trace. (Mink, Portman). UTAH - Larvae damaging in many Grand and Iron County alfalfa fields. (Thornley, May 28). WYOMING - Larvae appearing in Washakie and Big Horn Counties. Adults ranged 0-35 per 10 sweeps. Alfalfa 8-18 inches tall. None found in Fremont and Hot Springs Counties. Weevil development 1-2 weeks behind normal. (Parshall). COLORADO - Larvae still increasing in Weld, Larimer, and Boulder Counties; ranged 100-600 per 100 sweeps. Damage light, heaviest in Longmont area, Boulder County. (Johnson). OKLAHOMA - Collected 2 adults from alfalfa in Cotton County. This is a new county record. (Okla. Coop. Sur.). ARKANSAS - Activity appears

about over for spring season in northeast area. Occasional larvae and adults observed in control test plots in Mississippi County. (Dumas). MISSOURI - Alfalfa weevil ranged 0-12 larvae and 1-15 adults per sweep in central area. Larval and adult damage on new growth of second crop. (Thomas, Peters). Pupation averaged 75 percent in Boone County. (Huggans). ILLINOIS - Population peaked in southern half of State, populations of economic importance still on first and second cuttings of alfalfa. Larvae per 100 sweeps by county as follows: Monroe 3,600; St. Clair 3,200; and Scott 1,200. (Sur. Bull.). WISCONSIN - Pupation near in some advanced areas of State. Highest larval counts in western Dane County, averaged 15 per 50 sweeps. Averaged about 1 per 100 sweeps in Sauk, Adams, Waushara, Marquette, and Columbia Counties; may be misleading due to cool temperatures and strong winds. (Wis. Ins. Sur.). MICHIGAN - Eggs hatching throughout State. (Ruppel, May 25). VERMONT - Adults appear more numerous than at this time in 1969; eggs common on new growth in Burlington County. (Nielsen, May 25). NEW YORK - Adult and larval counts about same, 1 per 2 sweeps to 1 per 10 sweeps of alfalfa in Broome County. First instars heavy in some Livingston County fields. (N.Y. Wkly. Rpt., May 25). MASSACHUSETTS - Adults 5 and larvae 101 per 100 sweeps of alfalfa in one Hampshire County field. (Miller).

MARYLAND - Alfalfa weevil heaviest in first-growth alfalfa, ranged 18-23 per sweep, near Beltsville, Prince Georges County. Larvae less than 5 to 10 per sweep in second-growth alfalfa statewide. (U. Md., Ent. Dept.). WEST VIRGINIA - Larvae 284 and adults 43 per 100 sweeps of alfalfa in Jackson County May 21. (W. Va. Ins. Sur.). OHIO - Eggs declined with hatch at Castalia, presently 54 eggs per square foot. *Bathyplectes* sp. (an ichneumon wasp) parasitizing alfalfa weevil larvae in Fayette and Wayne Counties. About 25 percent of larvae in Fayette County and 10 percent of larvae in Wayne County parasitized. (Flessel). INDIANA - Larval populations reduced in southern districts due to pupation. Damage in uncut fields ranged from nearly complete defoliation to damage to upper 6-8 inches of plant. In severely damaged fields, especially where larvae suffered starvation, newly emerged adults numerous. (Meyer).

ALFALFA SNOUT BEETLE (*Brachyrhinus ligustici*) - NEW YORK - Collected from damaged alfalfa in Wayne County, May 2, by A. Arnold. Determined by G. Gyrisco and C.M. Edmonds. This is a new county record. Now found in Oswego, Jefferson, and Cayuga Counties, and small area of Ontario, Canada. (N.Y. Wkly. Rpt.).

LESSER CLOVER LEAF WEEVIL (*Hypera nigrirostris*) - FLORIDA - Adults common April 30 in roadside planting of crimson clover at Tallahassee, Leon County. (Mead, Habeck). This is a new county record. (Fla. Coop. Sur.).

PEA APHID (*Acyrtosiphon pisum*) - COLORADO - Ranged 1,000-2,000 per 100 sweeps of alfalfa in Weld, Boulder, and Larimer Counties. (Johnson). OKLAHOMA - Heavy in alfalfa in Mayes County. Remains moderate in several southwest counties. (Okla. Coop. Sur.). KANSAS - Ranged 10-100 per 100 sweeps of alfalfa in Osage, Douglas, Shawnee, Jackson, Atchison, Doniphan, Brown, and Nemaha Counties. (Simpson). NEBRASKA - Increased on forage legumes in Dawson County, heaviest in east. Near Overton, ranged up to 2,500 per 100 sweeps. (Manglitz, May 21-22). Ranged 150-375 per 150 sweeps in 6 Richardson County fields. Predators numerous and increasing. (Keith, Manglitz, May 26). SOUTH DAKOTA - Ranged 2-4 per sweep in 5 alfalfa fields in Moody and Brookings County. Lady beetles present, one per 10 sweeps. (Jones, Kantack). MISSISSIPPI - Moderate on second-cutting alfalfa in Pontotoc County. (Sartor).

MEADOW SPITTLEBUG (*Philaenus spumarius*) - MARYLAND - Adults and fourth instars ranged 10-15 per sweep in alfalfa in Carroll, Frederick, Baltimore, and Prince Georges Counties. Spittle masses ranged 3-13 per square foot in red clover in same counties. (U. Md., Ent. Dept.). WEST VIRGINIA - Nymphs 97 and adults 74 per 100 sweeps of clover in Jackson County May 21. (W. Va. Ins. Sur.). INDIANA - Adults numerous in most uncut alfalfa in southern district; counts of 80 per sweep common. (Meyer).

TARNISHED PLANT BUG (Lygus lineolaris) - KANSAS - Average per 100 sweeps in alfalfa by county: McPherson 600; Harvey 100; Sedgwick 300; Sherman 200; Butler 200; Cowley 200; and Chautauqua 150. (Simpson).

VARIEGATED CUTWORM (Peridroma saucia) - OKLAHOMA - Remains moderate to occasionally heavy in alfalfa in some areas, especially in south-central, central, north-central, and northeast. Pupating in Noble County. (Okla. Coop. Sur.).

SOYBEANS

BEAN LEAF BEETLE (Cerotoma trifurcata) - INDIANA - Adults damaged soybeans in Marion and Johnson Counties. (Lehker). About 2 per linear foot in southwest district. (Meyer).

COTTON

BOLL WEEVIL (Anthonomus grandis) - TEXAS - In McLennan and Falls Counties, collected weevils in 2 of 27 treated fields, averaged 6 (maximum 12) per acre. Weevils in 2 of 20 untreated fields, averaged 23 (maximum 1,000) per acre. None caught on flight screen; total to date 1. (Cowan et al.). OKLAHOMA - Collected 2 adults in wing traps in Blair area of Jackson County, one in Mountain View area of Kiowa County. (Okla. Coop. Sur.). ARKANSAS - Collected 9 weevils in 45 pheromone-baited wing traps in Lafayette and Miller Counties. Compares with 37 weevils taken past period. (Boyer et al.). LOUISIANA - In Madison Parish, collected 90 weevils from 175 wing traps; total to date 1,546. Recovered 2,321 last year at this date. (Cleveland et al.). MISSISSIPPI - None recovered in 11 wing traps near hibernation sites in delta counties. Last year 12 traps caught total of 198 weevils by this date. (Pfrimmer et al.). ALABAMA - Weevils remain light in pre-square cotton in south and central areas, none in northern area. (Teague et al.). GEORGIA - Collected 8 weevils in 21 wing traps in Randolph County. (Womack).

BOLLWORMS (Heliothis spp.) - TEXAS - In McLennan and Falls Counties, eggs and/or larvae collected on wild hosts. Of larvae previously taken from wild hosts 34 identified H. zea. Total to date on all hosts H. zea 153 and H. virescens 26. (Cowan et al.). LOUISIANA - In Madison Parish light trap 7 H. zea and 2 H. virescens moths collected. (Cleveland et al.). ALABAMA - Moth flights of H. zea still heavy in south and central areas; egg laying on cotton, corn, peanuts, tomatoes, roses, dahlia, and other hosts. No economic damage yet on cotton. (McQueen). GEORGIA - Averaged 2 eggs per 100 terminals in 10 fields in Randolph County. (Womack).

COTTON FLEAHOPPER (Pseudatomoscelis seriatus) - TEXAS - In McLennan and Falls Counties, averaged 4.7 per 100 terminals in 27 treated fields. Averaged 10.7 in 20 untreated fields. (Cowan et al.).

THRIPS (Frankliniella spp.) - MISSISSIPPI - Heavy in 6 of 8 fields and light in 2 in delta counties. Effect of seed treatments with systemics apparently decreased. (Pfrimmer et al.). TENNESSEE - Moderate to heavy on cotton in Hardin County. Damage apparent. (Johnson).

TOBACCO

A WIREWORM (Aeolus mellillus) - TENNESSEE - Heavy and caused extensive damage to young tobacco in one field in Hickman County. (Bruer).

SUGARBEETS

SPINACH LEAF MINER (Pegomya hyoscyami) - Larvae appearing in Weld, Larimer, and Boulder Counties. (Johnson).

SUGAR-BEET ROOT MAGGOT (Tetanops myopaeiformis) - IDAHO - Adult emergence reached peak in Jerome County. Peaked about May 29 in Minidoka County. (Peay, Swenson). WYOMING - Adults in Hot Springs, Washakie, Big Horn, and Park Counties. (Parhsall). COLORADO - Adults still in Weld County. Controls recommended. (Robertson, Gaskill).

POTATOES, TOMATOES, PEPPERS

POTATO FLEA BEETLE (Epitrix cucumeris) - TENNESSEE - Caused light to moderate damage to potatoes and tomatoes in middle areas. (Gordon).

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - TENNESSEE - Immatures and adults caused light to moderate damage to potatoes in middle and west areas. Controls effective when applied. (Gordon).

BEANS AND PEAS

PEA APHID (Acyrtosiphon pisum) - WISCONSIN - Variable but generally light in peas (less than 1 per sweep). Winged forms present. Parasites scarce. (Wis. Ins. Sur.).

BEAN LEAF BEETLE (Cerotoma trifurcata) - MISSISSIPPI - Adults caused heavy damage to snap beans in Oktibbeha County. (Sartor).

COLE CROPS

BEET ARMYWORM (Spodoptera exigua) - FLORIDA - Larvae caused heavy damage to cabbage in Belle Glade area, Palm Beach County; hard to control. (Genung).

CUCURBITS

STRIPED CUCUMBER BEETLE (Acalymma vittatum) - MISSISSIPPI - Adults ranged 0-7 per 10 cucurbit plants at State College, Oktibbeha County. Replanting necessary in other areas due to heavy populations. (Sartor).

GENERAL VEGETABLES

ASPARAGUS BEETLES (Crioceris spp.) - VIRGINIA - Adults of C. asparagi (asparagus beetle) and C. duodecimpunctata (spotted asparagus beetle) damaged asparagus in Montgomery County. (Kosztarab). COLORADO - C. asparagi adults damaged asparagus in Loveland area, Larimer County. (Thatcher). WASHINGTON - Adults of spotted asparagus beetle up to 12 per fern, mating at Pullman, Whitman County; outnumber adults of asparagus beetle 19:1. (Johansen).

BEET ARMYWORM (Spodoptera exigua) - FLORIDA - Larvae caused heavy damage to celery in Belle Glade area, Palm Beach County. (Genung).

ONION MAGGOT (Hylemya antiqua) - OREGON - Infested onions in experimental plots and one commercial planting at Lake Labish, Marion County. (Crowell).

DETECTION

New State Records - An ERIOPHYID MITE (Cecidophyopsis psilaspis) WASHINGTON - Pierce County (p. 371). A PERIODICAL CICADA (Magiccicada septendecula) MARYLAND - Prince Georges County (p. 370).

New County Records - ALFALFA SNOUT BEETLE (Brachyrhinus ligustici) NEW YORK - Wayne (p. 367). ALFALFA WEEVIL (Hypera postica) OKLAHOMA - Cotton (p. 366). CEREAL LEAF BEETLE (Oulema melanopus) KENTUCKY - Clinton, Edmonson, Grayson (p. 374). FOREST TENT CATERPILLAR (Malacosoma disstria) WEST VIRGINIA - Greenbrier, Summers, Upshur (p. 372). LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) FLORIDA - Leon (p. 367). A PERIODICAL CICADA (Magiccicada septendecula) MARYLAND - Anne Arundel (p. 370). WHITE-FRINGED BEETLES (Graphognathus spp.) FLORIDA - Hamilton (p. 375).

DECIDUOUS FRUITS AND NUTS

ORIENTAL FRUIT MOTH (*Grapholitha molesta*) - WASHINGTON - First adults in bait traps at 2 sites in Yakima County week ending April 28. Increased following week; reduced thereafter through May 19. First-brood larval entry in peach shoot May 20 at Zillah, Yakima County. (Hudson, Johnson). COLORADO - Adults 0-90 per trap May 21 in Palisade and Vineland District, Mesa County. Appears to be split peak of brood. (Sisson, Anderson). NEW YORK - Moths in baited jars May 21 in Monroe and Orleans Counties. (N.Y. Wkly. Rpt.).

CODLING MOTH (*Laspeyresia pomonella*) - OREGON - Larvae burrowing and feeding in green cherries at Salem, Marion County. (Tarter). WASHINGTON - Flights peaked nights of May 16 and 17 in Yakima Valley. First larva found May 22. (Johnson). NEW JERSEY - First-generation adults approaching peak in central and south counties. (Ins.-Dis. Newsltr.).

RED-HUMPED CATERPILLAR (*Schizura concinna*) - CALIFORNIA - Increased occurrence; 1-10 colonies per branch of apple and prune trees at Sacramento, Sacramento County. Primarily in scattered backyard plantings. (Cal. Coop. Rpt.).

PEACH TWIG BORER (*Anarsia lineatella*) - ARIZONA - Heavy in many peach trees at Elfrida, Cochise County. Trees 2 to 4 years old and cover 90 acres. (Ariz. Coop. Sur.).

PLUM CURCULIO (*Conotrachelus nenuphar*) - NEW JERSEY - Abundant with noticeable injury in unsprayed peach blocks. (Ins.-Dis. Newsltr.). MICHIGAN - Egg laying scars on forming fruit in several abandoned plum orchards. Migration of adults from winter quarters should peak in south counties May 29. (Thompson).

PERIODICAL CICADAS (*Magicicada* spp.) - TENNESSEE - *M. septendecim* emergence peaked in east counties. (Hammett, Snodgrass). VIRGINIA - *M. septendecim* emerged May 27 at Roanoke. (Allen). MARYLAND - *M. septendecim* emergence peaked in Prince Georges, Baltimore, and Anne Arundel Counties. (U. Md., Ent. Dept.). NEW JERSEY - *Magicicada* spp. first emerged May 26 in Union Township, Hunterdon County. Active at Princeton, Mercer County. (Ins.-Dis. Newsltr.).

A PERIODICAL CICADA (*Magicicada septendecula*) - MARYLAND - Collected at College Park, Prince Georges County, by B. Bradford May 18, 1970. Determined by B. Bellinger. Collected near Fort George G. Meade, Anne Arundel County, by G. Williams May 28. Determined by J. Hellman. These are new State and new county records. (U. Md., Ent. Dept.).

ROSY APPLE APHID (*Dysaphis plantaginea*) - CONNECTICUT - Curled fruit leaves at East Lyme, New London County; New Haven, New Haven County; and Storrs, Tolland County. (Savos, May 26).

WHITE APPLE LEAFHOPPER (*Typhlocyba pomaria*) - MICHIGAN - Nymphs becoming more numerous in problem orchards throughout southwest area. (Thompson, May 25).

WESTERN CHERRY FRUIT FLY (*Rhagoletis indifferens*) - WASHINGTON - First adult in ammonium carbonate trap May 24 at Selah, Yakima County. (Hudson, Johnson).

EUROPEAN RED MITE (*Panonychus ulmi*) - WISCONSIN - Hatch 50 percent on Door County apple trees May 20, 5 days earlier than in 1969. (Wis. Ins. Sur.). NEW JERSEY - Adults and eggs in several southern apple orchards. (Ins.-Dis. Newsltr.). CONNECTICUT - Few at Bantam, Litchfield County; East Lyme, New London County; and New Haven, New Haven County. (Savos, May 26).

PECAN NUT CASEBEARER (*Acrobasis caryae*) - OKLAHOMA - First eggs May 22 in Marshall County. White and occasional red eggs in most pecan areas. Infestations up to 40 percent in Tulsa County; 10-22 percent in Carter, Pontotoc, Love, and Murray Counties; and 2-8 percent in Marshall, Garvin, Bryan, Jefferson, Okfuskee, Seminole, Lincoln, and Payne Counties. (Okla. Coop. Sur.).

FALL WEBWORM (Hyphantria cunea) - OKLAHOMA - Eggs on pecan in several south-central, central, and north-central counties. One egg mass in Murray County hatched. (Okla. Coop. Sur.). ALABAMA - Larvae light but increasing on pecan and sweetgum trees throughout Baldwin and Mobile Counties. (Seibels).

PECAN PHYLOXERA (Phylloxera devastatrix) - OKLAHOMA - Light to very heavy on pecans in south-central counties. Heavy on scattered trees in most areas. Galls beginning to open and adults emerged. Galls heavy and adults emerged in Tulsa County. (Okla. Coop. Sur.). ALABAMA - More galls on pecans in west than in other areas. Occurs over most of Choctaw County. Heavy on many trees at Linden and Demopolis, Marengo County. (Sexton et al.).

A PLANT BUG (Plagiognathus caryae) - OKLAHOMA - Ranged 1-2 on 35 percent of pecan terminals in Payne County. Averaged 0.7 per terminal in Garvin County. Lighter on pecans in Murray, Pontotoc, Seminole, Pottawatomie, and Lincoln Counties. (Okla. Coop. Sur.).

CITRUS

CITRUS RED MITE (Panonychus citri) - ARIZONA - Total of 5,598 host plant inspections as of May 13 on 2,042 properties in Salt River Valley, Maricopa County. All 69 infested plants treated. (Ariz. Coop. Sur.).

SMALL FRUITS

STRAWBERRY WEEVIL (Anthonomus signatus) - MICHIGAN - Severe in 2 and 3-year-old strawberry plantings near Watervliet, Berrien County. About 50-60 percent loss of fruit buds. (Thompson, May 25).

GRAPE FLEA BEETLE (Altica chalybea) - OHIO - Larvae abundant on Portage County grapes. Feeding by overwintered adults on decline. (Miller).

CRANBERRY FRUITWORM (Acrobasis vaccinii) - NEW JERSEY - Eggs of this species and Grapholitha packardii (cherry fruitworm) in all blueberry areas. Larval entries into berries will begin June 1. (Ins.-Dis. Newsltr.).

ORNAMENTALS

AN ERIOPHYID MITE (Cecidophyopsis psilaspis) - WASHINGTON - Infested most buds of Taxus sp. in nursery at Puyallup, Pierce County. Collected by D. Barstow and J.L. Saunders February 10, 1970. Determined by H.H. Keifer. This is a new State record. (Barstow).

FOREST AND SHADE TREES

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - VIRGINIA - Damage localized in several counties. Low temperatures killed up to 90 percent of overwintering broods in January in central and southern Piedmont but not along Coastal Plain. Some problems on Eastern Shore along State line. (For. Pest Sur. Rpt., Apr.).

OLETHREUTID MOTHS - WASHINGTON - Taniva albolineana (spruce needle miner) starting to pupate at Pullman, Whitman County. Damaged spruce, with pupae present, found May 27 at Moses Lake, Grant County. (Johansen, Hunter). ALABAMA - First-generation Rhyacionia frustrana (Nantucket pine tip moth) larvae damaged large planting of loblolly pine in Turn Round area of Conecuh County. Browning top effect as tips died back. Moths flying. (Lemons).

JACK-PINE BUDWORM (Choristoneura pinus) - WISCONSIN - First larva of season spinning down from red pine in Adams County May 7. Still in first instar in west counties May 20. Primarily in third instar by May 26 in Jackson County. Some still in second instar; appears correlated with hard staminate flowers of jack-pine. (Wis. Ins. Sur.).

RED-HEADED PINE SAWFLY (Neodiprion lecontei) - OHIO - Larvae feeding on shortleaf pine in Scioto County. First observance in State forests this year. (Hauf).

PINE NEEDLE SCALE (Phenacaspis pinifoliae) - NORTH DAKOTA - Ranged 1-12 per needle on half of needles on bottom half of several spruce at Minot, Ward County. Eggs and crawlers present. (Kaatz).

WHITE-PINE APHID (Cinara strobi) - TENNESSEE - Very heavy on nursery and forest-grown white pine in east area. (Hammett).

PINE SPITTLEBUG (Aphrophora parallela) - WISCONSIN - Hatch underway May 7 in Waushara County. Mostly in fourth instar by May 25-26 in Jackson, Iowa, Dane, and Adams Counties; spittle masses becoming increasingly noticeable on white, jack, and Scotch pines. (Wis. Ins. Sur.).

COOLEY SPRUCE GALL APHID (Adelges cooleyi) - WISCONSIN - Eggs on Douglas-fir May 12 in Rock County. All hatched by May 25 on this host in Dane County with crawlers beginning to form flocculence. (Wis. Ins. Sur.). RHODE ISLAND - Hatched in Washington County May 22. (Kerr).

ELM LEAF BEETLE (Pyrrhalta luteola) - ARIZONA - Infesting Chinese elms at Cherry, Yavapai County. (Ariz. Coop. Sur.). UTAH - Damaged about 20 percent of elm leaf surface at Moab, Grand County. (Judd, May 25). KANSAS - Larvae lightly damaged Siberian elm in Sedgwick County. (Redding). Feeding by first-generation larvae heavy in Barton County. (Simpson).

COTTONWOOD LEAF BEETLES (Chrysomela scripta complex) - TENNESSEE - Immatures and adults continue to cause extensive damage to willows in central and west areas. (Gordon). ALABAMA - Adults heavy on willows throughout Mobile County. New generation larvae expected soon. (Seibels).

GEOMETRID MOTHS - MINNESOTA - Alsophila pometaria (fall cankerworm) and Paleacrita vernata (spring cankerworm) caused defoliation where populations heavy in Minneapolis and St. Paul area. More widespread than in 1969. Defoliation not severe except in several spots in St. Paul. (Minn. Pest Rpt.).

FOREST TENT CATERPILLAR (Malacosoma disstria) - WEST VIRGINIA - Larva collected in Greenbrier County May 14, 4 larvae in Upshur County May 19, and larva in Summers County May 19 for new county records. (W. Va. Ins. Sur.). NORTH DAKOTA - Hatched May 22 at Fort Totten, Benson County. Cool, wet weather since hatch expected to reduce populations and severity of defoliation. (Frye).

WESTERN TENT CATERPILLAR (Malacosoma californicum) - UTAH - Averaged 5 tents per weeping willow at several residences in Moab, Grand County. (Judd, May 25). OREGON - M. c. pluviale larvae in Washington County week of May 22. Most colonies in last instar. Large percentage seeking pupation sites. (Goeden).

SALT-MARSH CATERPILLAR (Estigmene acrea) - ALABAMA - Larvae very heavy, emerged from marsh areas near Prichard, Chickasaw, and Plateau in Mobile County. Devoured willows, weeds, and garden crops. (Seibels).

AN APHID (Asiphum pseudobyrsum) - CALIFORNIA - Infested poplars at Galt, Sacramento County. Represents extension of range from previously known infestations in North Sacramento, Rancho Cordova, and Perkins in northern and eastern parts of Sacramento County. (Cal. Coop. Rpt.).

EUROPEAN FRUIT LECANIUM (Lecanium corni) - OKLAHOMA - Crawlers very numerous on elms and other trees in Payne County. (Okla. Coop. Sur.).

MAN AND ANIMALS

SCREW-WORM (*Cochliomyia hominivorax*) - Total of 2 cases reported in U.S. May 24-30 as follows: CALIFORNIA - Imperial; TEXAS - Medina. Total of 57 cases reported in portion of Barrier Zone in Republic of Mexico as follows: Sonora 45, Chihuahua 9, Nuevo Leon 1, Tamaulipas 2. Total of 20 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 17,668,000; Arizona 200,000; California 1,120,000; Mexico 126,970,000. (Anim. Health Div.).

HORN FLY (*Haematobia irritans*) - VERMONT - Beginning to build up. (Nielsen, May 25). FLORIDA - Averaged 34 per milk cow and 15 per dry cow at dairy farm near Gainesville, Alachua County. (Butler). Averaged 600 per animal on beef cattle at Belle Glade, Palm Beach County. (Janes). ALABAMA - Heavy on most untreated cattle in Wilcox and Bibb Counties. Irritating most cattle in Elmore County. (Farquhar et al.). MISSISSIPPI - Averaged 100 per head on 107 steers in Oktibbeha County. (Sartor). MISSOURI - Up to 55 (averaged 9.7) per head in herd with treated back rubber in Boone County. Ranged 45-650 (averaged 199.5) per head in untreated herd. (Thomas). OKLAHOMA - Ranged 300-400 per head on Payne County cattle. Moderate to heavy in Cleveland County. Light to moderate in Garvin and Nowata Counties. (Okla. Coop. Sur.). NEBRASKA - Up to 200 per side on herd pastured near Falls City, Richardson County. (Keith, Manglitz, May 26). UTAH - Light on dairy cattle at Santa Cruz, Washington County. (Knowlton, Davis, May 25). First observed at Richmond, Cache County, on cattle. (Thornley, May 28).

FACE FLY (*Musca autumnalis*) - NEW JERSEY - Annoying beef cattle in Middlesex County. (Ins.-Dis. Newsltr.). MARYLAND - Ranged 10-60 per head of cattle in Frederick, Montgomery, Carroll, and Howard Counties. Averaged 20 per head in most herds. (U. Md., Ent. Dept.). MISSOURI - Up to 25 (averaged 4.4) per head in herd with treated back rubber in Boone County. Ranged 1-30 (averaged 4.4) per head in untreated herd. (Thomas).

STABLE FLY (*Stomoxys calcitrans*) - FLORIDA - Averaged 6 per milk cow, 2 per dry cow, at dairy near Gainesville, Alachua County. (Butler). MISSISSIPPI - Averaged 15 per head on dairy cattle at State College, Oktibbeha County. (Sartor). NEBRASKA - Averaged 2-3 per leg in 2 herds of feedlot animals near Lincoln, Lancaster County. (Campbell, May 28).

MOSQUITOES - ARKANSAS - *Culex salinarius* and *C. territans* moderate to heavy locally, annoyed residents in Lawrence County. (Nelson et al.). MINNESOTA - Light traps at Minneapolis and St. Paul for week ending May 22 caught 709 females, of these 497 *Aedes vexans*. Light trap at Lino Lakes during three nights collected 3,000 mosquitoes. Rain May 21-23 over district; resultant larvae now in second and third instars. Heavy rains May 27 produced another hatch. Annoyance within district expected to be minimal. Nuisance level will increase sharply as weather warms and present brood begins to emerge. (Minn. Pest Rpt.). WYOMING - Adults appearing in Hot Springs, Washakie, and Big Horn Counties. (Parshall). UTAH - *Aedes* spp. second to fourth instars abundant in borrow pits and roadside ditches at Dushesne, Dushesne County. (Roberts, May 25).

A BLACK FLY (*Simulium venustum*) - NORTH DAKOTA - Adults emerged along Sheyenne River in Cass County May 22, about 2 weeks later than last year. Averaged 500 per horse. Cool cloudy weather slowed activity. (Brandvik).

HARD-BACKED TICKS (*Dermacentor* spp.) - MASSACHUSETTS - *D. variabilis* (American dog tick) adults numerous on dairy cattle in Franklin and Hampshire Counties May 15 and 18. (Jensen). WYOMING - *D. andersoni* (Rocky Mountain wood tick) active in most areas. (Parshall).

BENEFICIAL INSECTS

LADY BEETLES - ARIZONA - Hippodamia convergens (convergent lady beetle) averaged 400 per 100 sweeps in 3 sugarbeet seed fields on west side of Salt River Valley, Maricopa County. (Ariz. Coop. Sur.). WYOMING - Unspecified lady beetle adults averaged 3 per 10 sweeps of alfalfa in Fremont, Washakie, Hot Springs, and Big Horn Counties. (Parshall). WASHINGTON - Coccinella transversoguttata (transverse lady beetle) larvae feeding May 21 in colonies of woolly apple aphid at Wenatchee, Chelan County. Many egg masses and adults May 14 on apple leaders and limbs. (Hoyt).

GREEN LACEWINGS (Chrysopa spp.) - ARIZONA - Averaged 1 egg per young cotton plant. Most numerous beneficial insect on apricots, plums, citrus, grapes, roses, and many ornamentals. (Ariz. Coop. Sur.). WASHINGTON - C. coloradensis and C. oculata (golden-eye lacewing) adults numerous adjacent to orchard in Wenatchee, Chelan County, May 20. Believed to be relatively uncommon prior to this time. (Hoyt).

A FLOWER BUG (Orius sp.) - ARIZONA - Averaged 200 per 100 sweeps in sugarbeet seed fields at Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

BROWN-TAIL MOTH (Nygmia phaeorrhoea) - MAINE - Surveys completed. Infestations light and scattered along coastal areas from Cape Elizabeth to Phippsburg. Heavy on 4 islands in Casco Bay. NEW HAMPSHIRE - Surveys negative. (PPD. East. Reg., Apr.).

CEREAL LEAF BEETLE (Oulema melanopus) - KENTUCKY - Light on oats as follows: Larvae collected April 27 by J.H. Milner in Clinton County; and May 27 by Breidenbach and Wheeler in Edmonson County; adults collected May 28 by W. Breidenbach in Grayson County. Determined by R.E. White. These are new county records. (PPD). WEST VIRGINIA - Counts per 100 sweeps by county: Wood - larvae 27 on wheat; larvae 14, adults 18 on oats May 20; Putnam - larvae 5, adults 2 on oats May 21; Mason - larvae 4, adult 1 on oats May 21; Randolph - larvae 7 on oats and 5 on rye May 27. Damaged 50 percent of leaf tissue on 80 percent of wheat in Wood County. (W. Va. Ins. Sur.). OHIO - Larval damage in wheat more severe than expected. Damaged wheat in Knox, Licking, Fairfield, Perry, Ross, Muskingum, Coshocton, Franklin, and Tuscarawas Counties. Very few eggs and few adults remain in wheat. (Blair, Treece). INDIANA - Eggs and larvae 1 per linear foot in oatfield (extended leaf height up to 18 inches) in Dearborn County. Fewer farther south in same county. None in few other oatfields in south-east or south-central districts. (Meyer). MICHIGAN - Hatched. (Ruppel, May 25).

FORMOSAN SUBTERRANEAN TERMITE (Coptotermes formosanus) - LOUISIANA - First flight indicated by blacklight trap at Algiers navy yard in New Orleans, Orleans Parish; 30 specimens in trap. (PPD South. Reg., Apr.).

GRASS BUGS - UTAH - About 450 Labops hesperius per square foot of crested wheat-grass in Brimhall Canyon, Uinta National Forest, Utah County. (Judd, May 25). IDAHO - Labops spp. damaged about 35 percent of 80-acre field, mainly crested wheatgrass, May 17 at Ola, Gem County. (Homan). Migrated from range into droughty barley field at Caldwell, Canyon County. Much injury May 18. (Linford). OREGON - L. hesperius nymphs up to 10 per sweep and appearing in National Forest grass reseeded area in Baker County. Heaviest in improved pastures at lower elevations. (Berry). WASHINGTON - Irbisia pacifica and another species associated with stippling and retarded growth of timothy at Cle Elum, Kittitas County. Light to moderate in several fields within Cle Elum and Ellensburg area. (Pennell, Retan).

GRASSHOPPERS - ARIZONA - Aulocara elliotti and Melanoplus sanguinipes 25-50 per square yard on 5,000 acres at Bear Canyon, Gila County. Treated. (Ariz. Coop. Sur.). NEBRASKA - Mostly Melanoplus spp. first instars May 18-19 near Lincoln, Lancaster County, and May 19 near Humboldt, Richardson County. (Campbell et al.). MINNESOTA - Egg development in Carver County: Melanoplus bivittatus in eyespot,

M. femurrubrum coagulated. All fields in heavier soil areas with good vegetation cover. (Minn. Pest Rpt.).

GYPSY MOTH (Porthetria dispar) - CONNECTICUT - Larvae at New Haven, New Haven County, and at Storrs, Tolland County. (Savos, May 26).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - ALABAMA - This species and Euetheola rugiceps (sugarcane beetle) damaged 15 acres of corn in Washington County; destroyed 10 percent of plants. (Lemons).

MEXICAN FRUIT FLY (Anastrepha ludens) - TEXAS - Find of 2 more infestations in Hidalgo County, 1 female and 1 larva. (PPD South. Reg., Apr.).

PINK BOLLWORM (Pectinophora gossypiella) - Sterile moth releases May 22-27. CALIFORNIA - Coachella Valley 4,407,000, total to date 36,786,250; Kern County 1,000,000, total to date 7,407,700. ARIZONA - Redington, Pima County, 67,500; total to date 270,000. (PPD).

WHITE-FRINGED BEETLES (Graphognathus spp.) - FLORIDA - Larvae heavy under tobacco on farm at Jennings, Hamilton County, for a new county record. Collected by J.T. Smith April 14. Determined by V.H. Owens; confirmed by D.M. Anderson. (PPD).

GEORGIA - Larvae heavy on potato tubers in Coffee County. (Keen). ALABAMA - Larvae damaged several peanut fields in Crenshaw County. No adults yet. (Smith).

HAWAII INSECT REPORT

General Vegetables - BEAN FLY (Melanagromyza phaseoli) larvae light on 25 percent of yardlongbean (Vigna sesquipedalis) petioles; adults light. Not treated. (Miyahira). MELON APHID (Aphis gossypii) light on zucchini flowers and stems in 0.25 acre at Mikiloa, Oahu. CABBAGE WEEWORM (Hellula rogatalis) larvae moderate in mustard cabbage (Brassica juncea) and daikon (Raphanus sativus longipinnatus) at Waianae, Oahu; heavy, 1 larva per plant, in 0.25 acre of daikon in same area. (Kawamura).

Fruits - A STINK BUG (Plautia stali) light, 8 adults, on fruits of "waiawi" (Psidium littorale) at Lanikai, Oahu; egg clusters, 12 eggs per cluster, moderate on bottom surface of leaves. (Davis). Larval mines of LEAF MINER FLIES (Liriomyza spp.) moderate on older leaves in 3 acres of watermelon at Nanakuli, Oahu; adults trace to light, (Kawamura).

WEATHER BUREAU'S 30-DAY OUTLOOK

JUNE 1970

The Weather Bureau's 30 day outlook for June is for temperatures to average above seasonal normals west of the Continental Divide as well as in the northern Plains and along the middle and north Atlantic coast. Below normal temperatures are expected over the gulf coast region and the southern Plains. Elsewhere near normal temperatures are in prospect. Rainfall is expected to exceed normal over the southern Plains as well as the gulf and south Atlantic coast regions. Subnormal totals are indicated for the northern Plains, the upper Mississippi Valley, the Intermountain Region, and the south Pacific coast. In unspecified areas near normal rainfall is expected.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price \$5.00 a year.

Estimates of Damage by the European Corn Borer
To Grain Corn in the United States in 1969

Compiled by the Economic Insect Survey and Detection Staff,
PPD, ARS

The loss to grain corn attributed to the European corn borer (*Ostrinia nubilalis*) in 1969 is estimated to be approximately 163,501,000 bushels in 15 corn-producing States. In these States the loss was 4.03 percent of the production. This loss is approximately 3.57 percent of the total national crop estimated at 4,577,864,000 bushels. ^{1/} The value of the loss, based on the season average prices received by farmers for corn ^{2/}, is \$182,509,000. These loss estimates are only for the States shown in Table 1, and are based on the counties or districts surveyed during the fall of 1969 within these States. ^{3/}

Table 1 is a composite of State and Federal estimates. These estimates were prepared by using production data ^{1/}, and prices received ^{2/}, released by the Statistical Reporting Service. The basis for the loss estimates was determined by the survey of European corn borer populations during the fall of 1968. ^{3/} The index of 3 percent loss per borer per plant was used to compute the loss in bushels.

Estimated losses to grain corn for the past 18 years in States where the fall abundance survey was conducted are as follows:

1969	163,501,000	Bushels	\$182,509,000
1968	154,554,000	"	162,287,000
1967	59,661,000	"	63,837,000
1966	121,236,000	"	155,876,000
1965	54,318,100	"	59,374,160
1964	87,116,000	"	97,478,000
1963	120,647,000	"	127,838,000
1962	88,245,000	"	93,695,000
1961	65,044,000	"	68,998,000
1960	102,991,000	"	96,085,000
1959	67,763,000	"	71,979,000
1958	100,699,000	"	98,434,000
1957	180,897,000	"	158,841,000
1956	97,971,000	"	119,535,000
1955	155,355,000	"	182,579,000
1954	191,614,000	"	261,415,000
1953	90,000,000	"	125,466,000
1952	53,270,000	"	77,205,000

^{1/} Crop Production, 1969 Annual Summary by States, Crop Reporting Board, Statistical Reporting Service, USDA, December 19, 1969.

^{2/} Crop Values, Season Average Prices Received by Farmers and Value of Production 1968 and 1969 - by States, Crop Reporting Board, Statistical Reporting Service, USDA, December 23, 1969.

^{3/} Cooperative Economic Insect Report 20(5):51-57, 1970.

Table 1. Estimates of Damage by the European Corn Borer to Corn Grown for Grain in the United States in 1969

State	Districts Included 1/	Total State Production	Estimated Data			
			Value per Bushel	Value of Production	Loss of Crop	
			Dollars	\$1,000	1,000 Bu.	\$1,000
Arkansas	3	1,504	1.26	1,895	3	4
Delaware	1	13,260	1.23	16,310	1,590	1,956
Illinois	7	956,774	1.14	1,090,722	37,993	43,312
Indiana	12	446,016	1.10	490,618	5,369	5,905
Iowa	12	922,768	1.10	1,015,045	53,571	58,928
Kansas	3	91,464	1.15	105,184	4,607	5,298
Maryland	3	38,799	1.22	47,335	2,180	2,659
Michigan	1	93,684	1.11	103,989	1,705	1,892
Minnesota	7	355,640	0.99	352,084	7,282	7,210
Missouri	7	182,210	1.20	218,652	14,161	16,993
Nebraska	5	433,659	1.10	477,025	19,435	21,378
North Dakota	1	6,765	0.97	6,562	341	331
Ohio	5	232,900	1.17	272,493	5,362	6,274
South Dakota	6	139,479	1.02	142,269	7,648	7,800
Wisconsin	9	139,772	1.14	159,340	2,254	2,569
Totals		4,054,694		4,499,423	163,501	182,509

1/ Cooperative Economic Insect Report 20(5):51-57, 1970

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Cooperative
**ECONOMIC INSECT
REPORT**

Issued by

PLANT PROTECTION DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE



AGRICULTURAL RESEARCH SERVICE

PLANT PROTECTION DIVISION

ECONOMIC INSECT SURVEY AND DETECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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Plant Protection Division
Agricultural Research Service
United States Department of Agriculture
Federal Center Building
Hyattsville, Maryland 20782

COOPERATIVE ECONOMIC INSECT REPORT

HIGHLIGHTS

Current Conditions

ARMYWORM larvae damaged corn in Virginia, Maryland, Delaware, and Ohio. ASTER LEAFHOPPER buildup could result in aster yellows problem in North Dakota; aster yellows expected to be more severe in Wisconsin than in 1968 and 1969. (p. 381).

BLACK CUTWORM larvae damaged 50,000 acres of corn in Iowa. Other CUTWORMS damaging corn in Nebraska, Oklahoma, and Wyoming. (pp. 382-383).

ALFALFA WEEVIL larvae heavy in Colorado, New Mexico, and increasing in parts of Nebraska; damage heavy in southern Michigan. PEA APHID heavy on alfalfa in New Mexico, Oklahoma, and Colorado. (pp. 383-384).

LINDEN LOOPER caused heavy defoliation to several species of trees in Maryland. CANKERWORMS defoliated many trees in limited area of Minnesota. PERIODICAL CICADA damage heavy in Maryland and Pennsylvania. (p. 390).

FACE FLY building up in all dairy areas of New Jersey; still moderate to heavy on cattle in Maryland. HOUSE FLY building up in dairy areas of New Jersey, increasing in untreated barns in Oklahoma. MOSQUITOES annoying dairy cattle in Wisconsin and livestock in New Mexico. Annoyance could be severe by mid-June in Minnesota. Increase expected in New Jersey. (p. 391).

GRASSBUGS common on crested wheatgrass throughout Nebraska Panhandle; heavy on same host in Platte County, Wyoming. (p. 393).

Detection

A DARKLING BEETLE described from Utah. Also recorded from 19 other States and 6 Provinces in Canada. This is a new North American record. (p. 396).

TAWNY GARDEN SLUG reported for the first time from Nevada. (p. 387).

For new county records see page 387.

Special Reports

A New Species of Tribolium from North America. (p. 396).

CONTENTS

Special Insects of Regional Significance.....381

Insects Affecting

Corn, Sorghum, Sugarcane.....	382	Potatoes, Tomatoes, Peppers.....	386
Turf, Pastures, Rangeland.....	383	General Vegetables.....	387
Forage Legumes.....	383	Deciduous Fruits and Nuts.....	388
Soybeans.....	385	Small Fruits.....	389
Cotton.....	385	Forest and Shade Trees.....	389
Sugarbeets.....	386	Man and Animals.....	390

Detection.....387

Corrections.....387

Beneficial Insects.....392

Federal and State Plant Protection Programs.....394

Hawaii Insect Report.....394

Light Trap Collections.....395

A New Species of Tribolium from North America.....396

WEATHER OF THE WEEK ENDING JUNE 8

HIGHLIGHTS: Very warm, dry weather prevailed over the West, while the South Central States were exceptionally cool. Widespread heavy showers and thunderstorms occurred over the eastern half of the Country.

PRECIPITATION: Heavy showers and thunderstorms continued over mid-America early in the week as a frontal system moved slightly eastward. Many of the areas drenched by heavy rains the previous week were again receiving excessive amounts of water. On Monday, tornadoes and funnel clouds were sighted from Texas north-east to Illinois and Michigan. Near Carbondale, Illinois, some injuries and property damage were reported due to a tornado. Nearly 5 inches of rain cascaded from the skies near West Plains, in south-central Missouri on Monday evening. Early Tuesday heavy rains inundated parts of southeast Wisconsin and northern Illinois, flooding small streams and closing highways; up to 5 inches was reported north of De Kalb, Illinois. The heaviest shower activity moved slowly east and south with the frontal system. Early Wednesday 2 to 4 inches of rain were measured at several locations in Alabama, with Brewton reporting 6.45 inches. Pensacola, Florida, had a 6-hour fall of 5.5 inches. Twenty-four hour totals at 8 a.m. Thursday included: Milligan, Florida, 8 inches; Elba, 6.10 inches and Kingston, Alabama, 5.83 inches. Flooding was reported extensive in portions of Texas, Oklahoma, Kansas, Missouri, Illinois, Kentucky, and Alabama. On Friday the main shower activity was concentrated from the Ohio Valley to New England and in parts of the Southeast. Tornadoes were reported near Nashville, Tennessee, and southwest of Dayton, Ohio, while hail covered the ground north of Spartansburg, North Carolina. By the weekend, most of the shower activity in the East had ended, except along the immediate coastal region, where hail and high winds accompanied a few of the more severe storms. The West was generally dry until late in the week, when light showers developed in parts of the Southwest. By Sunday, scattered showers and thundershowers were occurring from the western Plateau region to the Rockies. A few heavy rainfall amounts were reported in west Texas.

TEMPERATURE: Sharply contrasting temperature regimes dominated wide sections of The Nation. The Western States, from southern California to northern Montana averaged 9° to 15° above normal, except along the immediate coast. The South Central States, meanwhile averaged 6° to 12° below normal. Most of New England was 3° to 4° warmer than normal, while the remainder of the East was near to slightly above normal. Early in the week a frontal system lay north-south from Wisconsin to Texas. The Eastern States experienced warm, humid weather with temperatures in the upper 80's and low 90's as far north as northern New England. Burlington, Vermont, set a record high for June 2 with 89°. Behind the front, quite cool weather covered the central portion of the Nation for much of the week. Weather of the week continued on page 387.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMYWORM (*Pseudaletia unipuncta*) - VIRGINIA - Larval damage severe in corn in Montgomery County. Spraying in progress in one area of Craig County. Damage more widespread than in 1969 and largely on sod-planted corn. (Allen). MARYLAND - Larvae averaged 1 per square foot of corn; estimated 150 acres needed control on Eastern Shore. Found primarily in untilled corn. In 30 acres of corn near Westminster, Carroll County, controls needed. (U. Md., Ent. Dept.). DELAWARE - Larvae numerous on barley and wheat; corn injury heavy in some areas of Kent and Sussex Counties. (Barbutis et al.). OHIO - Destroyed untilled cornfield in Licking County. Infested other untilled corn. (Blair). MICHIGAN - Blacklight trap collections reached 100+ per night twice at Lenawee County station. Blacklight collections in Livingston and Van Buren Counties well within normal limits. (Newman, June 1). ILLINOIS - Generally light and noneconomic throughout central third of State; larvae 6 per linear foot in scattered wheatfields on east side (mainly east-southeast). (Ill. Ins. Rpt.). MINNESOTA - Light trap catches continue relatively heavy at Rochester, Olmsted County, and Fergus Falls, Otter Tail County. No infestations found. (Minn. Pest Rpt.). NEBRASKA - Catches at Lincoln, Lancaster County, blacklight trap peaked second and third weeks in May, now declining. Few reports of damage from Lancaster, Otoe, and Nemaha Counties. Larvae averaged 4-5 per square foot in wheat near Greenwood in Lancaster County, controls applied. Larvae estimated at 12-20 per square foot in one ryefield near Raymond. Most larvae should remain active for about 10-14 days. (Keith, June 1). MISSOURI - Second and third instars ranged 4-18 (averaged 5) per square foot in small grain and grass mixtures in northwest areas. (Munson). KANSAS - Infested lodged wheat in Ottawa and Lincoln Counties. (Simpson).

ARMY CUTWORM (*Chorizagrotis auxiliaris*) - SOUTH DAKOTA - Larval counts of 1-2 per corn plant in field near Alexandria, Hanson County. Damaged third of field, replanting required. (Berndt).

ASTER LEAFHOPPER (*Macrostelus fascifrons*) - NORTH DAKOTA - Adults up to 10 per 100 sweeps of roadside grasses and alfalfa in south Cass County. With high acreage of late seeded flax in State, aster yellows could be problem with leafhopper buildup. (Brandvik). MINNESOTA - Still threat; greenhouse checks show 8 percent of leafhoppers carry aster yellows. Counts per 100 sweeps of small grain and alfalfa by district: Southwest 120-650, west-central 0-550, and central 40-700. (Minn. Pest Rpt.). WISCONSIN - Aster yellows predicted to be more severe in 1970 than in 1968 and 1969, but not so severe as in 1967. (Wis. Ins. Sur.).

BEET LEAFHOPPER (*Circulifer tenellus*) - CALIFORNIA - Survey in Imperial Valley, Imperial County, indicates no significant infection of curly top. Infestation prevalent in 40 acres of squash in Holtville area, leafhoppers medium. Infection ranged 1-3 percent in late-planted tomatoes in Brawley area. Damage to cantaloup by curly top should not be extensive. Sugarbeets in Rosamond area, eastern Kern County, show 15-20 percent curly top infection, one field showing 30 percent. (Cal. Coop. Rpt.).

CORN EARWORM (*Heliothis zea*) - NEW JERSEY - First moths of year caught in blacklight traps at Seabrook, Vineland, and Cedarville in Cumberland County. Indicates some overwintered in State. (Ins.-Dis. Newsltr.). FLORIDA - Light in Zellwood area, Orange County; 82 percent of untreated sweet corn "worm" free. Untreated sweet corn plots at Sanford, Seminole County, 100 percent infested. Areas differ; probably insecticide concentration generally much higher throughout Zellwood area. (Greene). ARIZONA - One larva per 2 silks on experimental corn at Yuma, Yuma County. Damaged pecans on few trees at Sahuarita, Pima County. (Ariz. Coop. Sur.).

CORN LEAF APHID (*Rhopalosiphum maidis*) - KANSAS - Noneconomic on all corn and sorghum examined in southeast and south-central districts. (Simpson). OKLAHOMA - Ranged 125-350 per plant on young grain sorghum in Jackson, Tillman, and Harmon Counties. Ranged 50-100 per plant in Pawnee County. (Okla. Coop. Sur.).

GREENBUG (Schizaphis graminum) - NEW MEXICO - Ranged 1-3 per plant on young sorghum in Curry County. (Campbell). TEXAS - Light to heavy on sorghum in Trans-Pecos area week ending May 29. Currently light to moderate in Pecos and Reeves Counties, light in El Paso County, noted in Panhandle area; some fields treated. (Rummel et al.). OKLAHOMA - Ranged 5-15 per plant in occasional fields of 18-inch grain sorghum in Jackson and Tillman Counties. (Okla. Coop. Sur.). KANSAS - Averaged 10 per plant in colonies on underside of lower leaves of 4 to 6-inch sorghum in Crawford County. Extremely light or negative in all other areas of southeast and south-central districts. (Simpson). NEBRASKA - Damaged seedling sorghum in North Platte area, Lincoln County. (Roselle). Few on sorghum in Jefferson County, no damage. (Dawes). Increased slightly in suction trap at Lincoln, Lancaster County; still light. (Pruess).

POTATO PSYLLID (Paratrioza cockerelli) - COLORADO - Adult and eggs on Lycium at Greeley, La Salle, and Gilcrest in Weld County, no nymphs. No adults in potato fields. (Johnson). WYOMING - Adults 32 per 50 sweeps on Lycium sp. at Torrington, Goshen County; eggs few. None in 600 sweeps of 2 potato fields. (Parshall):

SPOTTED ALFALFA APHID (Therioaphis maculata) - NEW MEXICO - Treatments started in Chaves County alfalfa. (Mathews, May 29). Beginning to build up on alfalfa in Dona Ana County. Honeydew shows on lower portions of stem. (N.M. Coop. Rpt.). TEXAS - Light on alfalfa in Winkler County. (Neeb). OKLAHOMA - Still light to moderate on alfalfa in Harmon County. (Okla. Coop. Sur.).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - NEW YORK - Moth emergence from stalk pieces still early and trap catches low. Moths ranged 1-12 per 100 sweeps on weeds on May 28 and 30. On May 28 out of 300 plants at Stone Ridge found one fresh egg mass. (N.Y. Wkly. Rpt., June 1). NEW JERSEY - Moths very abundant in grass bordering sweet corn fields. (Ins.-Dis. Newsltr.). OHIO - First-generation peaked. (Roach). MICHIGAN - Collected 5 males at Lenawee County blacklight trap station on May 24; 2 at Livingston County station on May 25. Females expected to emerge within few days. Some mating will occur and egg laying will start within 10 days. (Newman). WISCONSIN - First adults of season appearing in Madison County blacklight trap. (Wis. Ins. Sur.). INDIANA - Egg masses 12 per 10 plants by May 27 on corn 30 inches tall and 2-4 on sweet corn under 6 inches in Gibson County. (Huber). ILLINOIS - Pupation complete in southern two-thirds of State and emergence well underway. (Ill. Ins. Rpt.). IOWA - Percent development as of June 4: Larvae 18, pupae 52, emerged 30, no eggs. Female moths 1 and males 2 in light trap at Ankeny June 3. Overwintered caged larvae in cornstalks at Ankeny 30 percent parasitized by Macrocentrus grandii (a braconid), unusually high. (Iowa Ins. Sur.). MINNESOTA - Pupation of overwintered borers started in southern two-thirds of State. Pupation ranged 23 percent in southwest district to less than 1 percent in northwest district. (Minn. Pest Rpt.).

CUTWORMS - NEBRASKA - Feltia subgothica (dingy cutworm), Agrotis ipsilon (black cutworm), and Euxoa detersa damaged corn; F. subgothica most prevalent. A. ipsilon heavy locally. Infestations in Dawson, Otoe, Dundy, Hitchcock, Knox, Saunders, and Nemaha Counties. E. detersa destroyed few fields in Antelope and Pierce Counties. (Kumpost, Ehlers). Dingy cutworm averaged about 1 per square foot, black cutworm about 0.05 per square foot in one cornfield in Saunders County; corn destroyed. (Keith, Berogan). Less than 1 percent of dingy cutworm pupated on June 2. Activity expected to continue for another week. (Keith).

BLACK CUTWORM (Agrotis ipsilon) - DELAWARE - Very numerous in young corn in east Kent County. (Burbutis et al.). IOWA - Damaging corn 2 to 10-inches tall. Estimate 50,000+ acres damaged. Chemical treatments applied where larvae above ground. In 30 percent of fields feeding below surface in western half of State. (Iowa Ins. Sur.).

FALL ARMYWORM (Spodoptera frugiperda) - FLORIDA - Increased and damage appeared on small sweet corn at Sanford, Seminole County. Populations lower in May than observed in previous years at this time. (Greene).

PALE WESTERN CUTWORM (Agrotis orthogonia) - OKLAHOMA - Destroyed corn in isolated fields planted in wheat stubble in Texas County. Last instars present. (Okla. Coop. Sur.). WYOMING - Half-grown larvae cutting off about 10 percent of corn in 8-acre field near Wheatland, Platte County. Field treated. (Parshall).

STALK BORER (Papaipema nebris) - OHIO - Destroying untilled corn following blue grass sod in Wayne County. (Musick). IOWA - Larvae killing seedling corn in 3 fields totaling 200 acres in Polk, Jasper, and Carroll Counties. (Iowa Ins. Sur.).

CHINCH BUG (Blissus leucopterus) - TEXAS - Damaged grain sorghum in Archer and Throckmorton Counties. Migrated out of barley and killed grain sorghum in first 10+ rows of adjoining field in Archer County. (Boring).

SOUTHWESTERN CORN BORER (Diatraea grandiosella) - ARIZONA - Early instars averaged 5 per corn plant on Salt River Indian Reservation at Scottsdale, Maricopa County. (Ariz. Coop. Sur.).

CORN FLEA BEETLE (Chaetocnema pulicaria) - MARYLAND - Adults less than 2 per row yard in Caroline, Talbot, Dorchester, and Wicomico Counties. (Maryland Ins. Serv.).

TURF, PASTURES, RANGELAND

BANKS GRASS MITE (Oligonychus pratensis) - NEVADA - Damage heavy to 1,000 acres of crested wheatgrass near Lida, Esmeralda County. (Burris). This is a new county record. (Bechtel).

BROWN WHEAT MITE (Petrobia latens) - NEVADA - Caused some damage in crested wheatgrass near Lida, Esmeralda County. (Burris). This is a new county record. (Bechtel).

WESTERN TENT CATERPILLAR (Malacosoma californicum fragile) - OREGON - Heavy on bitterbrush in 65-acre winter range planting in Wamic White River area, Wasco County. Heavy at Chemult, Klamath County. (Maben).

TWO-LINED SPITTLEBUG (Prosapia bicincta) - ALABAMA - Larvae heavy in spittle on Bermuda grass sod at Auburn, Lee County. Controls planned. First adults noted about May 15. (Dickens et al.).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - IDAHO - Egg deposition increased on alfalfa near Aberdeen, Bingham County. Adults averaged 48 per 50 sweeps. (Carpenter). Controls needed on 16,000 acres of Canyon County alfalfa. (Homan, May 28). Adults 31, larvae 5, and lady beetles 34 per 1,000 sweeps. Less than one percent of tips infested at north Shoshone and Dietrich, Lincoln County. (Hopkins, May 28). NEVADA - Larvae increased to 100+ per sweep in untreated Douglas County alfalfa. (Arnett). Larvae ranged 15-25 per sweep in several early treated fields at Lovelock, Pershing County. Cutting in progress. (Martinelli). UTAH - Development slow due to cool weather. Larval counts in Logan area 20 per sweep, many counts lower (Davis); 30 per sweep in Richmond area (Thornley, Knowlton). Adults ranged 0-4 per 10 sweeps in Cache County alfalfa. Injury appearing. Up to 25 larvae and 4 adults per sweep in Vernal area of Uintah County, injury noticeable (Wayland); larvae 128 and adults 2 in 10 sweeps at Salt Lake City, Salt Lake County (Knowlton, June 4). WYOMING - Larvae just appearing in southeast area. Up to 22 per 10 sweeps in 20 alfalfa fields in Goshen, Platte, Laramie, and Converse Counties. Adults 0-18 per 10 sweeps. No larvae or adults in Niobrara County. (Parshall). COLORADO - Larvae ranged 150-1,000 per 100 sweeps of alfalfa

in Weld, Larimer, and Boulder Counties. Damage light to moderate; damage heavy in some. (Johnson). NEW MEXICO - Alfalfa weevil larvae heavy and widespread, ranged 88-153 per 25 sweeps of alfalfa in Bernalillo County. Fields show considerable damage. (Henger). NEBRASKA - Increasing in 12 fields in western Dawson County near Gothenburg and Cozad; larvae ranged 1-1,085 and adults 0-44 per 100 sweeps of alfalfa. Larvae ranged 0-56 and adults 0-1 per 100 sweeps in 12 fields near Lexington and Overton. (Manglitz, June 3-4). MISSOURI - Adults and larvae taken from alfalfa in Harrison and Daviess Counties by J.L. Huggans and in Clinton, De Kalb, and Clay Counties by L.L. Peters. These are new county records. (Munson). IOWA - Larvae averaged 3 per 10 sweeps in several fields in Scott County, May 28. One adult collected May 28. (Iowa Ins. Sur.). SOUTH DAKOTA - Adults up to 142 per 100 sweeps of new alfalfa near Spearfish, Lawrence County. (Jones). MINNESOTA - Found near Winona, Winona County, for a new county record. Another 4 fields infested in Houston County. (Minn. Pest Rpt.). MICHIGAN - Larval damage very heavy in southern area, moderate to heavy in central area. (Ruppel, June 1). ILLINOIS - Cool wet weather slowed development, some economic fields in Stark and Marshall Counties. New larvae abundant, tip feeding ranged 10-100 percent. (Ill. Ins. Rpt.). INDIANA - Larvae 0-30 (averaged 9) per sweep of central area alfalfa. Feeding generally not severe. (Meyer). OHIO - Ranged 10 percent damage and no larvae per stem, up to 50 percent damage and 3 larvae per stem in Medina County. (Thoburn, May 25). Larvae 237 per sweep May 27 in Logan County. (Forrester). Bathyplectes spp. (an ichneumon wasp) parasitism about 10 percent in Tuscarawas County; alfalfa weevil eggs 3 per square foot at Castalia, Erie County. (Flessel).

NEW JERSEY - Alfalfa weevil caused noticeable injury in several fields of alfalfa in Warren County. (Ins.-Dis. Newsltr.). NEW YORK - Damage in fields ranged 10-15 (some with 40-50) percent in Dutchess County. (N.Y. Wkly. Rpt., June 1). MASSACHUSETTS - Adults 15 and larvae 434 per 100 sweeps of alfalfa in 2 fields in Berkshire County, tip damage 64.5 percent. (Miller). VERMONT - Adults and larvae still light at Shoreham and North Ferrisburg, Addison County, and at Shelburne, Brandon, and Clarendon, Rutland County. Tip damage light. Eggs on 30-45 percent of stems at Shoreham and North Ferrisburg. (Nielsen, June 1).

LESSER CLOVER LEAF WEEVIL (Hypera nigrirostris) - WISCONSIN - Adults averaged 3 per 10 sweeps in field of alfalfa-clover mixture in northeastern Iowa County. Pest not common. (Wis. Ins. Sur.).

PEA APHID (Acyrtosiphon pisum) - IDAHO - Averaged 25 per 50 sweeps of alfalfa May 25 at Aberdeen, Bingham County. (Carpenter). Unusually heavy numbers of Aphidius spp. and lady beetles kept pea aphid low in Canyon County. (Homan, May 28). NEVADA - A. pisum trace to light, and spotted, in alfalfa in Churchill, Douglas, Lyon, and Pershing Counties. Predators, especially lady beetles, and parasites heavy. (Adams et al., May 29). ARIZONA - Counts per 100 sweeps by county as follows: Maricopa, 25 in Salt River Valley; Pinal 70; decreased to 200 in Yuma. (Ariz. Coop. Sur.). NEW MEXICO - Heavy on alfalfa in many areas. (N.M. Coop. Rpt.). OKLAHOMA - Heavy on alfalfa in Mayes County and in scattered fields in Payne County, and moderate in Harmon County. (Okla. Coop. Sur.).

COLORADO - Ranged 1,000-2,000 per 100 sweeps of alfalfa in Weld, Larimer, and Boulder Counties. (Johnson). WYOMING - Up to 250 per 10 sweeps in 24 alfalfa fields in Goshen, Platte, Laramie, Niobrara, and Converse Counties. Heaviest in Platte County. (Parshall). NEBRASKA - Damaged vetch in Stanton County. (Bstandig). Declined in Dawson County as predators increased. Ranged 50-150 in older growth, up to 500 per 100 sweeps in recent growth following first cutting. Predators built up in uncut alfalfa, ranged up to 200 coccinellid larvae per 100 sweeps. (Manglitz, June 3, 4). WISCONSIN - Continues to increase gradually, up to 30 per sweep in many alfalfa fields. About normal. (Wis. Ins. Sur.).

ALFALFA CATERPILLAR (Colias eurytheme) - ARIZONA - Larval counts of 50 per 100 sweeps of alfalfa at Yuma, Yuma County. (Ariz. Coop. Sur.). COLORADO - Larvae ranged 40-60 per 100 sweeps in field of alfalfa at Longmont, Boulder County. (Johnson). WYOMING - First larvae of season appearing on Goshen County alfalfa. (Parshall).

VARIEGATED CUTWORM (Peridroma saucia) - OKLAHOMA - Still heavy on Mayes County alfalfa and moderate in Bryan County. (Okla. Coop. Sur.). MISSOURI - Mostly last instars ranged 2-12 per square foot and averaged 4 in northwest area alfalfa. (Munson).

BEEF ARMYWORM (Spodoptera exigua) - ARIZONA - Larvae averaged 25 per 100 sweeps of alfalfa at Yuma, Yuma County. (Ariz. Coop. Sur.).

BEEF WEBWORM (Loxostege sticticalis) - WYOMING - Adults heavy in alfalfa in south-east area. (Parshall).

LYGUS BUGS (Lygus spp.) - ARIZONA - Nymphal and adult counts per 100 sweeps of alfalfa by county as follows: Pinal 220, Maricopa 250, and Yuma 300-800. (Ariz. Coop. Sur.). NEW MEXICO - Adults and nymphs ranged 20-50 per 25 sweeps of alfalfa in Chaves County. (Mathews, May 29). Currently ranged 3-68 per 25 sweeps in alfalfa in Chaves, Eddy, Dona Ana, and Bernalillo Counties. (N.M. Coop. Rpt.). WYOMING - Adults and nymphs averaged 5 per 10 sweeps of alfalfa in Platte, Goshen, Laramie, Niobrara, and Converse Counties. (Parshall).

RAPID PLANT BUG (Adelphocoris rapidus) - WISCONSIN - First adults of season appearing in alfalfa in southwestern counties. Nymphs averaged 8 per sweep in parts of Waushara County. (Wis. Ins. Sur.). INDIANA - Adults averaged 5 per 10 sweeps of central area alfalfa. (Meyer).

ALFALFA PLANT BUG (Adelphocoris lineolatus) - WISCONSIN - Nymphs 15 per 10 sweeps, and most prevalent plant bug species in alfalfa in southwestern counties. Few adults. (Wis. Ins. Sur.). INDIANA - Adults averaged 6 per 10 sweeps of central area alfalfa. Immatures in equal or greater numbers. (Meyer).

MEADOW PLANT BUG (Leptopterna dolabrata) - MISSOURI - One adult collected by L. Burgess from alfalfa and grass in Platte County. This is a new county record. (Munson).

SOYBEANS

BEAN LEAF BEETLE (Cerotoma trifurcata) - MISSISSIPPI - Damage light to heavy in Sharkey County. (Sartor). MINNESOTA - Overwintered adults moving to newly emerged soybeans in central and southwest districts. (Minn. Pest Rpt.).

COTTON

BOLL WEEVIL (Anthonomus grandis) - TEXAS - In McLennan and Falls Counties, weevils in 3 of 18 treated fields averaged 15 (maximum 125) per acre. Found in 7 of 13 untreated fields; averaged 20 (maximum 250) per acre. Collected 9 weevils on wing traps near hibernation sites; total to date 123. (Cowan et al.). MISSISSIPPI - None found on 11 wing traps near hibernation sites in delta counties. On this date last year, 12 traps caught total of 206 weevils. No weevils in 8 fields inspected. (Pfrimmer et al.). ALABAMA - Adults still light on presquare cotton in central area. None yet in north area. Punctured 24 percent of squares along field border in Henry County. (McQueen). TENNESSEE - Found 2 weevils feeding in terminal buds in McNairy County. (Locke).

BOLLWORMS (Heliothis spp.) - ALABAMA - Flights much lighter than during last 3 weeks and egg laying lower. No economic damage to cotton yet. Most larvae on corn, tomatoes, dahlia, and other hosts. (McQueen). TENNESSEE - Few eggs in terminals of older cotton. One larva found. (Locke). MISSISSIPPI - Eggs found in 1 field in delta counties. (Pfrimmer et al.). One percent of cotton infested by H. zea in Holmes County. (Sartor). TEXAS - Eggs and/or larvae collected on native hosts; 58 larvae collected previously identified as H. zea; total to date on all hosts 211 H. zea and 26 H. virescens. First moth emerged from hibernation cages June 3 identified H. virescens female. (Cowan et al.). Up to 50 percent of Heliothis spp. eggs parasitized in many cotton fields in Rio Grande Valley. (Deer). ARIZONA - H. zea larvae averaged 1 per 20 terminals at Yuma, Yuma County. (Ariz. Coop. Sur.).

COTTON FLEAHOPPER (Pseudatomoscelis seriatus) - TEXAS - In McLennan and Falls Counties, averaged 4.3 (maximum 16) per 100 terminals in 18 treated fields. Averaged 7.3 (maximum 22) per 100 terminals in 13 untreated fields. Mostly adults on cotton, nymphs killed by heavy rain. (Cowan et al.). Heavy in Rio Grande Valley week ending May 29. Currently heavy in south-central and Rio Grande Valley areas. (Cole, Deer). OKLAHOMA - Ranged 0-5 per row foot on 4-leaf cotton in Jackson and Harmon Counties. (Okla. Coop. Sur.).

CABBAGE LOOPER (Trichoplusia ni) - TEXAS - Up to 86 percent of eggs parasitized in many cotton fields in Rio Grande Valley. (Deer).

SALT-MARSH CATERPILLAR (Estigmene acrea) - TEXAS - Moderate to heavy on young cotton in Midland and Glasscock Counties. (Neeb).

THRIPS (Frankliniella spp.) - NEW MEXICO - Serious in some cotton in Roswell and Artesia area in Chaves and Eddy Counties. Ranged 2-6 per plant on seedling cotton. (Mathews, May 29). OKLAHOMA - Averaged 40 per row foot on 4-leaf cotton in Harmon County. Ranged 15-18 per row foot in Jackson County. (Okla. Coop. Sur.). MISSISSIPPI - Light in 10 fields in Washington County; heavy in Holmes County. (Sartor).

SUGARBEETS

BET WEBWORM (Loxostege sticticalis) - WYOMING - Adults heavy in sugarbeets in southeast area. (Parshall).

SPINACH LEAF MINER (Pegomya hyoscyami) - COLORADO - Light in Weld, Larimer, and Boulder Counties. Infested 10-40 percent of plants. Damage light. (Johnson).

SUGAR-BEET ROOT MAGGOT (Tetanops myopaeformis) - NORTH DAKOTA - Pupation 50-93 (averaged 71) percent in Walsh and Pembina Counties. No adults. Predation by seed-corn beetle adults evident. (Kaatz).

WESTERN BLACK FLEA BEETLE (Phyllotreta pusilla) - NORTH DAKOTA - Shotholing evident in several fields in Walsh and Pembina Counties. Shotholes, 1-6 per plant, on up to 100 percent of plants. Early beets in 2 to 4-leaf stage of development. (Kaatz).

CARMINE SPIDER MITE (Tetranychus cinnabarinus) - ARIZONA - Abundant on sugarbeet seed field foliage on west side of Salt River Valley, Maricopa County. (Ariz. Coop. Sur.).

POTATOES, TOMATOES, PEPPERS

TOMATO FRUITWORM (Heliothis zea) - ARIZONA - Treatments applied to canning tomatoes every 4-7 days at Yuma, Yuma County. (Ariz. Coop. Sur.).

BET ARMYWORM (Spodoptera exigua) - FLORIDA - Damage light in 20 acres of bell peppers treated at Sanford, Seminole County, May 28. (Greene). Troublesome in Ft. Myers area, Lee County, on bell peppers; one 40-acre field treated showed little population reduction June 2. (Poe).

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - IDAHO - First adults of season May 28 near Caldwell, Canyon County. (Walz, Homan). UTAH - Adults heaviest in years in Weber and northern Davis Counties. Commercial tomato plantings sprayed twice, will be sprayed again after eggs hatch (averaged 3 egg masses per plant). Adults unusually numerous at Logan, Cache County, on volunteer potatoes. (Knowlton, Duncan, June 4). COLORADO - Adults and eggs still light in Weld County potato area. Egg masses 0-3 per 10 plants. No larvae to date. (Johnson). NEW JERSEY - Hatch begun. (Ins.-Dis. Newsltr.).

POTATO APHID (Macrosiphum euphorbiae) - NEW JERSEY - Building up in all areas. No problems anticipated. (Ins.-Dis. Newsltr.).

GENERAL VEGETABLES

SWEETPOTATO FLEA BEETLE (Chaetocnema confinis) - MARYLAND - Generally light, ranged less than 3 per row yard. Damage heavy on 3 acres of sweetpotatoes at Salisbury, Wicomico County; needed replanting. (U. Md., Ent. Dept.). VIRGINIA - Adults very heavy on sweetpotato transplants in Painter area on Eastern Shore; some plants killed before treatment possible. (Hofmaster).

TAWNY GARDEN SLUG (Limax flavus) - NEVADA - Specimens collected at home in Reno, Washoe County, July 8, 1969, by R.W. Lauderdale. Determined by H.H. Crowell. This is a new State record. (Bechtel).

DETECTION

New North American Record - A DARKLING BEETLE (Tribolium audax Halstead) described from Utah. Also recorded from 19 other States and 6 Provinces in Canada. (p. 396).

New State Record - TAWNY GARDEN SLUG (Limax flavus) - NEVADA - Washoe County (p. 387).

New County Records - ALFALFA WEEVIL (Hypera postica) MINNESOTA - Winona; MISSOURI - Clay, Clinton, Daviess, De Kalb, Harrison (p. 384). BANKS GRASS MITE (Oligonychus pratensis) NEVADA - Esmeralda (p. 383). BROWN RECLUSE SPIDER (Loxosceles reclusa) NEBRASKA - Nance (p. 392). BROWN WHEAT MITE (Petrobia latens) NEVADA - Esmeralda (p. 383). CEREAL LEAF BEETLE (Oulema melanopus) ILLINOIS - Christian, Macon, Montgomery; KENTUCKY - Barren, Breckinridge, Laurel, Russell; VIRGINIA - Bath, Frederick (p. 392). EASTERN TENT CATERPILLAR (Malacosoma americanum) IOWA - Winnebago (p. 390). MEADOW PLANT BUG (Leptopterna dolabrata) MISSOURI - Platte (p. 385).

CORRECTIONS

CEIR 20(21):344 and CEIR 20(22):355 - ... a NOCTUID MOTH (Melipotis indomita) ... should read a NOCTUID MOTH (Melipotis indomita) ...

CEIR 20(22):360 - CEREAL LEAF BEETLE (Oulema melanopus) - Line 4 - " ... Determined by V.H. Owens; confirmed by R.E. White. (PPD)." Should read: ... Determined by R.E. White. (PPD).

Weather of the week continued from page 380.

Roswell, New Mexico, set a record low for June with 40° on Tuesday, and a record low (45°) for the date on Wednesday. Many localities from Texas to the lower Great Lakes set low temperature records between Wednesday and Friday. The cool air moved slowly eastward, giving the east coast a pleasant weekend. Very warm air covered the Western States early in the week, with 90° readings in many areas, including a few coastal stations in Washington and Oregon on Monday. Temperatures in the upper 90's to low 100's persisted in interior Washington and Oregon until the weekend, while 100 plus readings were common in interior California and southwest Arizona. On Monday, Bakersfield, California, recorded their highest temperature (110°) so early in the season. The warm air gradually moved eastward, and by the weekend temperatures in the upper 80's and 90's were common from Texas to the Canadian border. On Sunday, Minneapolis (92°) and St. Cloud (91°), Minnesota, set new high temperature records for the date. (Summary supplied by Environmental Data Service, ESSA.)

DECIDUOUS FRUITS AND NUTS

ORIENTAL FRUIT MOTH (Grapholitha molesta) - WASHINGTON - First-brood adults peaked week ending May 5 in Lower Yakima Valley. (Johnson). UTAH - Flight heavy May 25-27. Averaged 35-40 per trap at Pleasant Grove and Linden, Utah County. (Davis, Barlow). COLORADO - Damage very light on small green peaches up to June 2 in Palisade and Vineland Districts, Mesa County. (Sisson). ALABAMA - Probably second-generation larvae cut back new twigs on many peach trees in Lee and other central counties. (McQueen). CONNECTICUT - Some injury to peach terminals at New Haven, New Haven County, and Storrs, Tolland County. (Savos, June 2).

CODLING MOTH (Laspeyresia pomonella) - WASHINGTON - Infested pear fruits May 29 at Pomona, Yakima County. First-brood larvae at Grandview, Yakima County, May 27; entries in 22 percent of fruit in 20 acres of unsprayed apples. (Gregorich, Johnson). UTAH - Flight heavy May 26 at Bountiful, Davis County; May 27 at Pleasant Grove, Utah County; June 3 at Logan, Cache County. (Davis). MICHIGAN - Adults abundant last week of May. Egg laying should be started. Hatch expected in 8-14 days. (Thompson, June 1).

TORTRICID MOTHS - CONNECTICUT - Archips argyrospilus (fruit-tree leaf roller) larvae reached maturity and beginning to leave apple trees. Foliar injury severe on many unsprayed and sprayed trees. (Savos, June 2). MICHIGAN - Argyrotaenia velutinana (red-banded leaf roller) rolled leaves. Hard to reach with chemicals. (Thompson, June 1). IDAHO - First instars of A. argyrospilus active June 1 on fruit trees at Moscow, Latah County. (Gittins).

GREEN FRUITWORM (Lithophane antennata) - CONNECTICUT - Feeding on young apple fruit in sprayed and unsprayed orchards at Storrs, Tolland County. (Savos, June 2). WASHINGTON - Infested small green apples 25 days past full bloom at Naches, Yakima County. (Gregorich).

EASTERN TENT CATERPILLAR (Malacosoma americanum) - WISCONSIN - Numerous on untreated apple trees at several southern locations. Defoliation heavy on choke-cherry, black cherry, mulberry, and some ornamental crab apple trees. Mostly fifth instars in Dane County. (Wis. Ins. Sur.). OHIO - Adults emerged at Reynoldsburg, Franklin County. (Roach).

PLUM CURCULIO (Conotrachelus nenuphar) - NEW JERSEY - Find of 42 adults in 12 minutes June 2 in Gloucester County. (Ins.-Dis. Newsltr.). CONNECTICUT - Very active past 7 days. Egg laying and feeding scars on apple statewide. Will probably be major pest for next 7-14 days. (Savos, June 2).

GREEN PEACH APHID (Myzus persicae) - NEW MEXICO - Curled peach foliage at Albuquerque, Bernalillo County, and Belen and Los Lunas, Valencia County. Frost-destroyed crop not treated. (Heninger, May 29). COLORADO - Foliar damage severe, as high as 50 percent, in unsprayed or poorly sprayed peach orchards in Mesa County. (Sisson).

PERIODICAL CICADAS (Magicicada spp.) - OHIO - Of 474 adults collected May 27 and 30 from orchard in Fairfield County, 357 were M. septendecim, 50 M. cassini, and 67 M. septendecula. Emergence nearly ended but no oviposition apparent. (Holdsworth). INDIANA - M. septendecim and M. cassini emerged May 13 and M. septendecula May 15 in Monroe County. Emergence still heavy in south area. (Young).

PEAR PSYLLA (Psylla pyricola) - MICHIGAN - First generation development almost completed. Scattered hard shell "nymphs" few and adults heavy. Some eggs on unsprayed pear trees at Fennville, Allegan County. (Thompson).

GRAPE MEALYBUG (Pseudococcus maritimus) - OREGON - Light in untreated check plot of Anjou pear trees at Medford, Jackson County. (Gentner, May 22).

TEPHRITID FLIES (Rhagoletis spp.) - NEW YORK - R. fausta (black cherry fruit fly) emerged moderately but steadily in cages May 26 at Geneva, Ontario County. (N.Y. Wkly. Rpt.). OREGON - First R. indifferens (western cherry fruit fly) adults of season emerged in field cages June 2 at Salem, Marion County. (Rasmussen).

EUROPEAN APPLE SAWFLY (Hoplocampa testudinea) - CONNECTICUT - Apple injury easy to find on check trees at Storrs, Tolland County; New Haven, New Haven County; and East Lyme, New London County. (Savos, June 2).

EUROPEAN RED MITE (Panonychus ulmi) - MICHIGAN - Second-generation eggs hatched May 29 and still hatching. Immaturess numerous and adults heavy where prebloom control failed. Many orchards will need summer miticides ahead of schedule. (Thompson). NEW YORK - Heavy in orchards where oil not used this spring at Monroe, Orange County, and Orleans, Ontario County. (N.Y. Wkly. Rpt., June 1).

PEAR LEAF BLISTER MITE (Eriophyes pyri) - WASHINGTON - Damaged pears in Spokane County. (Kruiswyk, Foepfel).

HICKORY SHUCKWORM (Laspeyresia caryana) - TEXAS - Heavy in phylloxera galls in Gonzales County. Some larger galls contain 2-4 larvae. (Cole).

BLACK-MARGINED APHID (Monellia costalis) - NEW MEXICO - Heavy on Dona Ana County pecan trees. Honeydew heavy. (N.M. Coop. Rpt.).

PECAN PHYLLOXERA (Phylloxera devastatrix) - TEXAS - Heavy in Lee County. (Cole).

SMALL FRUITS

WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) - ARIZONA - Moderate on grapes at Tucson, Pima County. (Ariz. Coop. Sur.).

GRAPE BERRY MOTH (Paralobesia viteana) - MICHIGAN - Few moths active in problem vineyards. Peak emergence expected this week. (Janes, June 1).

STRAWBERRY ROOT WEEVIL (Brachyrhinus ovatus) - OHIO - Adults beginning to emerge on infested strawberry plants in Franklin County. Destroyed 50-75 percent of crop in certain spots of one-acre plot. Berries forming. Up to 10 adults and pupae per plant. (Roach).

FOREST AND SHADE TREES

SOUTHERN PINE BEETLE (Dendroctonus frontalis) - DELAWARE - Overwintered successfully in loblolly pine in central Sussex County; injury serious. (Bray, Boys).

OLETHREUTID MOTHS - MISSOURI - Rhyacionia buoliana (European pine shoot moth) moderate to heavy on Scotch pines in Jackson County. Infested up to 20 percent of tips on scattered trees. Pupae collected from Austrian and red pine tips. Adult emergence well underway. (Kearby). MINNESOTA - Taniva albolineana (spruce needle miner) active on spruce. (Minn. Pest Rpt.).

TORTRICID MOTHS (Choristoneura spp.) - MINNESOTA - C. fumiferana (spruce budworm) mostly second instar, some third, in north. Mined buds and needles. Defoliation appearing. C. conflictana (large aspen tortrix) defoliating and rolling leaves in northeast. C. pinus (jack-pine budworm) feeding on staminate flowers in east-central area. (Minn. Pest Rpt.). WISCONSIN - C. pinus light to medium May 27 in Marinette County. Development slow. (Wis. Ins. Sur.).

A CONIFER SAWFLY (Neodiprion pratti pratti) - INDIANA - Infested about 5,000 acres of shortleaf and Virginia pine plantations in Hoosier National Forest. Defoliation severe in 200+ acres and light to moderate in remainder. (Doerner, White). OHIO - Larvae continuously reported during May on shortleaf pine throughout south half of State. (Ehlers).

GEOMETRID MOTHS - MARYLAND - Erannis tiliaria (linden looper) heavily defoliated oaks, basswoods, elms, and maples over extensive areas of Frederick and Montgomery Counties. (U. Md., Ent. Dept.). MINNESOTA - Alsophila pomataria (fall cankerworm) and Paleacrita vernata (spring cankerworm) defoliated many trees in Lake Calhoun and Lake Harriet area at Minneapolis. Some larvae fully grown and dropping from trees. (Minn. Pest Rpt.).

TENT CATERPILLAR MOTHS (Malacosoma spp.) - COLORADO - M. californicum fragile (western tent caterpillar) and M. disstria (forest tent caterpillar) nests one-fourth fewer than in previous years in foothills of Larimer and Jefferson Counties. (Thatcher). IOWA - M. americanum (eastern tent caterpillar) larvae in Winnebago County June 3 for a new county record. (Iowa Ins. Sur.). VERMONT - M. americanum tents very large now. (Nielsen, June 1).

FALL WEBWORM (Hyphantria cunea) - OREGON - First adults of season May 20 in basement of home at Salem, Marion County. Adults numerous in blacklight traps in Clackamas County. (Goeden). TEXAS - Moderate on Kinney County shade trees. (Neeb). OHIO - First instars on elm in Scioto Trail State Forest. (Ehlers).

SADDLED PROMINENT (Heterocampa guttivitta) - PENNSYLVANIA - First adult of season in Schuylkill County light trap May 28. (Quinter).

PERIODICAL CICADAS (Magicicada spp.) - VIRGINIA - M. septendecim adults emerged in wooded areas of Shenandoah and Warren Counties. (Nelson, May 28). MARYLAND - M. septendecula and M. septendecim damage heavy from Prince Georges County westward into Allegany County. Heaviest damage, 10-20 percent, due to egg laying on many maples and locust in southwest Baltimore City. (U. Md., Ent. Dept.). PENNSYLVANIA - Magicicada sp. heavily damaged forest trees May 26 in Cumberland and Dauphin Counties. (Sleesman, Simons). MICHIGAN - M. septendecim emergence heavy at Ann Arbor, Washtenaw County. Expect only lower southern peninsula to be affected. (Wallner, May 29).

ELM LEAF BEETLE (Pyrrhalta luteola) - NEVADA - First instars at Fallen, Churchill County. (Arnett). NEW MEXICO - Eggs on 95-100 percent of Siberian elms; first and second instars on 30-50 percent of new leaves at Albuquerque, Bernalillo County. (Heninger). TEXAS - Larvae damaged foliage of Chinese elms in Pecos, Midland, Ward, Glasscock, Upton, and Reagan Counties. (Neeb). OKLAHOMA - Larvae skeletonized up to 65 percent of leaf surface on isolated American elms in Major County. Heavily damaged Siberian elms in Mayes and Payne Counties. (Okla. Coop. Sur.).

LOCUST LEAF MINER (Xenochalepus dorsalis) - ALABAMA - First-generation larvae very light, some pupae, on black locust trees in Lee and other central counties. First generation appears much lighter than last 4-5 years and may be result of past cold winter. (McQueen).

BRONZE BIRCH BORER (Agrilus anxius) - MICHIGAN - May become more of problem statewide. Pupae present, no adults. (Wallner, May 29).

A JUNE BEETLE (Phyllophaga fusca) - WISCONSIN - This and Phyllophaga spp. defoliated trees locally in southern counties. (Wis. Ins. Sur.).

MAN AND ANIMALS

SCREW-WORM (Cochliomyia hominivorax) - Total of 7 cases reported in U.S. May 31 to June 6 as follows: TEXAS - Medina 4; ARIZONA - Cochise 3. Total of 51 cases reported in portion of Barrier Zone in Republic of Mexico as follows: Sonora 41, Chihuahua 3, Nuevo Leon 2, Tamaulipas 5. Total of 8 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 30,888,000; New Mexico 840,000; Arizona 5,810,000; California 610,000; Mexico 129,120,000. (Anim. Health Div.).

HORN FLY (*Haematobia irritans*) - WYOMING - Adults 0-10 (averaged 4) per head on 3 cattle herds in Converse and Platte Counties. (Parshall). TEXAS - Building up in many areas week ending May 29. Currently moderate in Trans-Pecos area, expect increase with afternoon showers. (Neeb). OKLAHOMA - Averaged 250 per head on cows and steers in Payne County; up to 2,000 per head on bulls. (Okla. Coop. Sur.). MISSISSIPPI - Averaged 140 per head on 525 cattle in Monroe and Oktibbeha Counties. (Sartor). MISSOURI - Ranged 0-25 (averaged 7.1) per head on treated cattle in Boone County. Ranged 19-325 (averaged 107.1) per head on untreated cattle. (Thomas). WISCONSIN - Light in nearly all counties, but no appreciable annoyance to cattle. (Wis. Ins. Sur.). NEW JERSEY - Building up in all dairy areas. (Ins.-Dis. Newsltr.). VERMONT - Building up. (Nielsen, June 1).

FACE FLY (*Musca autumnalis*) - MISSISSIPPI - Averaged 4 per face on 100 Monroe County cattle. (Sartor). MISSOURI - Ranged 0-7 (averaged 1.3) per face on treated cattle in Boone County; 0-14 (averaged 2) per face on untreated cattle (Thomas). WISCONSIN - Slightly annoying cattle in Dane, Columbia, and Richland Counties. (Wis. Ins. Sur.). MARYLAND - Still moderate to heavy, 15-50 per face, on cattle in Montgomery, Frederick, and Baltimore Counties. (U. Md., Ent. Dept.). NEW JERSEY - Building up in all dairy areas. (Ins.-Dis. Newsltr.). VERMONT - Numbers decreased over previous week. (Nielsen, June 1).

HOUSE FLY (*Musca domestica*) - OKLAHOMA - Continued to increase in Payne County. Ranged 15-20 per Scudder grid in untreated barns. (Okla. Coop. Sur.). NEW JERSEY - Commencing to accumulate in poultry houses and egg rooms. Building up in all dairy areas. (Ins.-Dis. Newsltr.).

STABLE FLY (*Stomoxys calcitrans*) - VERMONT - Heavy where allowed to develop in warm barns during winter. Numbers otherwise still low. (Nielsen, June 1). WISCONSIN - Slight nuisance to cattle in Sauk, Walworth, Rusk, and Dane Counties. Very light elsewhere. (Wis. Ins. Sur.). OKLAHOMA - Averaged 6 per head on cattle checked in Payne County. (Okla. Coop. Sur.).

MOSQUITOES - UTAH - *Aedes dorsalis* extremely numerous south of Brigham City, Box Elder County. (Hanson). Mosquitoes annoying in agricultural fields west of Richmond, Cache County. (Thornley, Knowlton). NEW MEXICO - *A. vexans* heavy in fields and pastures near Belen, Valencia County. Annoyed livestock and humans. (Heninger, May 29). MINNESOTA - *A. vexans* in 88 percent of larval collections made at Minneapolis and St. Paul week ending May 30. All larval instars of *A. vexans* present earlier this week following rains which totaled over 5 inches. *Aedes* larvae present continuously since April 1. *A. vexans* 4,941 of 5,558 females in light traps week ending May 29. Most light trap catches light and annoyance minimal up to June 4. Light trap at Lino Lakes caught 4,190 *A. vexans* females. Larvae very heavy. Annoyance could range from heavy to severe beginning about June 10. (Minn. Pest Rpt.). WISCONSIN - Biting light in most counties; no significant problems. Slightly annoyed dairy cattle in Rusk, Crawford, and Columbia Counties. No significant increase in biting likely in next 2 weeks. (Wis. Ins. Sur.). ALABAMA - Probably *Culex pipiens quinquefasciatus* still heavy in central and south areas; extremely annoying in late afternoon and evening. Unusually heavy rains last 7 days will probably result in unusual explosion of larvae and adults statewide. (McQueen). NEW JERSEY - Increase expected. Horse owners advised to vaccinate horses for encephalitis. (Ins.-Dis. Newsltr.). VERMONT - Arrived in numbers. (Nielsen, June 1).

BLACK FLIES - IDAHO - Larvae and adults collected in the South Hills and in east Twin Falls County where last year's outbreak reduced weight gain in lambs. (Jessen et al., May 26). MARYLAND - *Simulium* spp. still troublesome to campers and in resort areas in Montgomery, Frederick, and Washington Counties. Range of 6-30 per person still common in mountainous areas. (U. Md., Ent. Dept.). VERMONT - Black flies still annoying cattle. (Nielsen, June 1).

CATTLE GRUBS (Hypoderma spp.) - VERMONT - H. bovis (northern cattle grub) leaving backs of cattle. (Nielsen, June 1). WYOMING - H. bovis emergence continues from 3 calves from Bosler, Albany County. Emergence completed May 19 from 3 calves from Gillette, Campbell County. (Grow). TEXAS - H. lineatum (common cattle grub) adult activity decreased or ended in most counties in Trans-Pecos area. (Neeb).

A TORYMID (Monodontomerus obscurus) - IDAHO - This parasite of Megachile rotundata (alfalfa leafcutter bee) first emerged for year on June 1 at Parma, Canyon County. (Waters).

HARD-BACKED TICKS (Dermacentor spp.) - WISCONSIN - D. variabilis (American dog tick) heavy in parts of Waupaca, Juneau, Chippewa, Rusk, and Marinette Counties. In one section of Waupaca County 44 ticks removed from dog weekend of May 23-24 and 29 ticks removed from another dog weekend of May 30-31. (Wis. Ins. Sur.). MINNESOTA - D. variabilis still numerous. (Minn. Pest Rpt.). IDAHO - D. andersoni (Rocky Mountain wood tick) at high level. Considered 10-year high for Bruneau, Owyhee County, by sheepman. (Sutherland, May 22). Numerous calls in Blaine County May 26. (Eakins).

BROWN RECLUSE SPIDER (Loxosceles reclusa) - NEBRASKA - Collected from home at Fullerton, Nance County, for a new county record. (Zollinger, June 1).

BENEFICIAL INSECTS

LADY BEETLES - NEVADA - Mostly Hippodamia convergens (convergent lady beetle) adults up to 2-3 and larvae 2-5 per sweep in alfalfa where pea aphid populations heaviest. These beetles, damsel bugs, Geocoris spp. and Aphidius spp. holding pea aphid in check in Churchill, Douglas, Lyon, and Pershing Counties. (Adams et al., May 29). WYOMING - Lady beetle adults averaged 1.5 per 10 sweeps of alfalfa in Platte, Goshen, Laramie, Converse, and Niobrara Counties. (Parshall). OKLAHOMA - H. convergens ranged 0.5-1.5 per plant on aphid-infested sorghum in several southwest counties. Light on alfalfa and cotton in this area. (Okla. Coop. Sur.).

A KLAMATH-WEED BEETLE (Chrysolina quadrigemina) - WASHINGTON - Adults on Klamath-weed May 20 at Friday Harbor, San Juan County. Very little weed growth due to control by beetle. (Baker).

ALFALFA LEAFCUTTER BEE (Megachile rotundata) - WASHINGTON - First naturally overwintered adults emerged June 1 at Prosser, Benton County. (Klostermeyer).

BACONIDS (Leioproton spp.) - ARIZONA - Released 100-200 parasitized lygus bug nymphs June 4 in alfalfa at Eloy, Pinal County. (Ariz. Coop. Sur.).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

CEREAL LEAF BEETLE (Oulema melanopus) - Following infestations light on oats on farms. All are new county records and determined by R.E. White. VIRGINIA - Larvae collected at Clear Brook, Frederick County, by E. Thompson June 1. Larvae at Williamsville, Bath County, by Saucier and Lyle June 2. KENTUCKY - Adults on barley at Cloverport, Breckinridge County, by R. Troendle May 20. Larvae on oats at Russell Springs, Russell County, by J.H. Milner May 21. Larvae at Glasgow, Barren County, by J.L. Wheeler May 21. Larvae at Keavy, Laurel County, by W.A. Smith May 22. ILLINOIS - Adults in Milan Township, Macon County, by C.H. Damery May 26. Adults in Assumption Township, Christian County, by R.D. Lovejoy May 27. Larvae in East Fork Township, Montgomery County, by D.B. Reincke May 27. (PPD). INDIANA - Eggs 22-60 per linear foot of oats at New Carlisle, St. Joseph County. Larvae mostly first instar. First pupa of year present. (Shade). In central districts larvae and/or eggs 0.4 per linear foot of oats with extended leaf height of 9-20 inches, latter figure more frequent. Oats often beginning to head. (Meyer). OHIO - Adults per 100 sweeps (and eggs per square foot) of oats by county: Preble 112 (10) May 20, Darke 45 (8) May 20, Montgomery 41 (12) May 20, Clark 93 (7) May 21, and Logan 213 (48) May 27. Larvae ranged from 0.5 early

instars per square foot up to 1,300 late instars per 100 sweeps. Larvae 5 per plant; defoliation up to 20 percent in heavily damaged oatfield in Richland County. Heaviest on oats but still serious on wheat in several counties. (Forrester, Newsome). MICHIGAN - Hatch well underway in south area. Hatch beginning or just reaching peak in central area. (Ruppel, June 1). PENNSYLVANIA - Adults 1-27 per 100 sweeps of oats in Butler County; heaviest damage, 33 percent of stems. Adults 1-5 per 100 sweeps of oats in Mercer County; eggs and larvae noted. (Adams, May 21). Heaviest infestation on Beaver County oats had 150 adults per 100 sweeps and averaged 1-2 larvae per stem. Several fields in area show white cast on tops of plants. (Adams, June 3).

COMSTOCK MEALYBUG (*Pseudococcus comstocki*) - CALIFORNIA - Specimens collected from mimosa tree over 100 feet from infested mulberry trees at Porterville, Tulare County. Second season on this host. Before this collection no evidence of persistence on any host other than fruitless mulberry. (Cal. Coop. Rpt.).

EUROPEAN CRANE FLY (*Tipula paludosa*) - WASHINGTON - Additional infestations in lawns at Blaine, Whatcom County. Larvae 50-150 per square foot. Lawn damage severe. One pupa and 18 pupal cases positively identified; empty pupal cases suggest adult emergence unusually early. All 20 infested properties totaling 10.2 acres treated. (PPD, Wash. Dept. of Agr.).

EUROPEAN PINE SHOOT MOTH (*Rhyacionia buoliana*) - OREGON - Annual surveys of pines in nursery and residential plantings in Willamette Valley about 85 percent complete. Single specimen infested in nursery in Clackamas County. (Goeden, Larson).

GRASSBUGS - NEBRASKA - *Labops hesperius* common on crested wheatgrass throughout panhandle; ranged 6-3,000 per 100 sweeps. Native grasses appear unaffected. Severe damage in Sioux and Dawes Counties, several stands nearly killed. (Bell, June 1-3). WYOMING - *L. hesperius* moderate to heavy on 400 acres of crested wheatgrass at Chugwater, Platte County. Leaves white. No movement into adjoining areas as of June 3. (Burkhardt). IDAHO - Last instars of *Labops* sp. damaged 0.5 acre of grass at Fairfield, Camas County. (Hazen, Sutherland, May 28).

GRASSHOPPERS - WASHINGTON - *Melanoplus sanguinipes*, *Oedaleonotus enigma*, and *M. bivittatus* first instar to adults 6-7 per square yard near Wishram, Klickitat County. (Nonini). NEVADA - *M. sanguinipes* first and second instars light and spotted on alfalfa in Diamond Valley, Eureka County. (Harms). First to third instars, mostly *O. enigma*, 3-5 per square yard on range southeast of Orovada, Humboldt County. (Lundahl, Peters). UTAH - First to third instars 1-2 per 10 sweeps on fence rows and range at Providence and Cove, and 1 in 50 sweeps at Richmond, Cache County. (Knowlton, June 4). WYOMING - *Aulocara elliotti* and *Agenoteletix deorum* hatching east of Lucerne, Hot Springs County, and west of Douglas, Converse County. Ranged 5-40 per square yard west of Douglas. (Patch, Hardy). Early species still hatching at Glendo and Guernsey, Platte County; heaviest at Guernsey June 4--*A. elliotti* 10 and *Amphitornus coloradus* 9 per 100 square feet. Late species still in egg stage. (Pfadt). OKLAHOMA - Major hatch underway on range in 14 western counties by May 15. First to third instars 2-15 per square yard. Hatch late in 10 central and eastern counties. First instars 0-2 per square yard. Very little interest in control programs in any area. *A. deorum*, *A. elliotti*, *Phlibostroma quadrimaculatum*, and *A. coloradus* dominant. (Okla. Coop. Sur.). NEBRASKA - *Melanoplus* spp., up to fourth instar, heavy at several locations in Dundy, Chase, Perkins, Keith, Lincoln, and Garden Counties. Some heavy localized damage possible. (Hohnholt, Bell, June 1-3). SOUTH DAKOTA - Light hatch underway week ending May 23 in south area. *A. deorum*, *A. elliotti*, and *M. sanguinipes* in southwest Custer County and in east Fall River County. Mostly *M. bivittatus* and a few *M. sanguinipes* in south Tripp and Gregory Counties. *M. bivittatus* and *M. differentialis* in Charles Mix, Hutchinson, Douglas, Aurora, Davison, Hanson, McCook, Miner, and Sanborn Counties. (Zimmerman). NORTH DAKOTA - Light hatch in cropland in south Cass and north Richland Counties. Up to 4 first and second instars per square yard in weedy

field margins. Melanoplus bivittatus and M. packardii dominant. M. bivittatus eggs 55 percent segmented and 40 percent eyespot. Carabid and meIoid larvae and eggs at all locations. Up to 25 percent of pods partly destroyed. (Brandvik). MINNESOTA - Light hatch in Wright, Meeker, Hennepin, Anoka, and Sherburne Counties. General hatch of M. bivittatus in sandy soils of central district expected in 7 days. M. femurrubrum eggs coagulated to eyespot. In southwest district M. differentialis eggs in late eyespot and M. femurrubrum eggs coagulated. All eggs coagulated in northern counties of west-central district. (Minn. Pest Rpt.). IOWA - Second instars 10 per square yard in Mahaska County pasture. (Iowa Ins. Sur.).

GYPSEY MOTH (Porthetria dispar) - CONNECTICUT - Larvae migrating. Overwintered eggs indicate infestations will be much more severe than they have been in several years. (Savos, June 2).

JAPANESE BEETLE (Popillia japonica) - VIRGINIA - Larvae 18 per square foot of lawn in some areas of Blacksburg, Montgomery County. (Kosztarab).

PINK BOLLWORM (Pectinophora gossypiella) - Sterile moth releases May 28 to June 4. CALIFORNIA - Coachella Valley 5,118,000, total to date 41,904,250; Kern County, 1,400,000, total to date 8,771,700. ARIZONA - Redington, Pima County, 67,500, total to date 337,500. First collection of 4 native moths and 2 sterile moths this season at Redington. First rosetted bloom recorded in Coachella Valley. (PPD). NEW MEXICO - Two moths in hexalure traps in Eddy County. (Mathews).

HAWAII INSECT REPORT

General Vegetables - All stages of LEAF MINER FLIES (Liriomyza spp.) generally heavy on snap beans and watermelon at Waianae and Waimanalo, Oahu. Mining severe in 0.25 acre of snap beans at Waianae; adults heavy, as many as 16 (average 12) per leaf, in adjacent small planting of foot-long watermelon vines. At Kaunakakai, Molokai, all stages heavy in small plantings of tomato, eggplant, and snap beans despite chemical sprays. GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) adults heavy in 2,500-square foot planting of snap beans at Kaunakakai; all stages light in 0.5 acre of eggplant at Waianae. (Fujimoto et al.).

Ornamentals - Adults of an ARMORED SCALE (Phenacaspis cockerelli) light, 3-10 per leaf, on roadside oleander at Kahului, Maui. (Miyahira).

Miscellaneous Insects - Nymphs and adults of a RHOPALID BUG (Jadera haematoloma) heavy on a balloonvine (Cardiospermum halicacabum) at Hickam Air Force Base, Oahu. Nymphs and adults of a GRASSHOPPER (Oedaleus abruptus) heavy in dry, grassy areas throughout Hickam Air Force Base; heaviest in 0.25 mile radius of original focal point. (Olson).

LIGHT TRAP COLLECTIONS

State	Locality	Date	Trapper	Traps	No. of traps	No. of specimens	Cynipid		Ichneumonid		Bethylid		Chalcid		Total
							Cynipid	Ichneumonid	Bethylid	Chalcid	Cynipid	Ichneumonid	Bethylid	Chalcid	
FLORIDA	Gainessville 5/29-6/4	BL			16	36	1		1						6
MINNESOTA	Fergus Falls 5/26-6/3		9												225
	Rochester 5/26-6/3														112
	Shakopee 5/26-6/3														51
	Worthington 5/26-6/3														28
MISSISSIPPI	Stonerville 5/29-6/4	2BL	13		5	4	4	25							424
MISSOURI (Counties)	Greene 5/28-6/3		16												40
	Jefferson 5/28-6/3		1												8
	Platte 5/29-6/4		1												7
NEBRASKA	Lancoln 5/30-6/5		33		23	1	1								50
NEW JERSEY	Cedarville 5/27-6/2	BL	8												23
	Seabrook 5/27-6/2	BL	5												22
	Vineyard 5/27-6/2	BL	5												7
NORTH DAKOTA	Bellevue 5/29, 6/1	BL	7												27
	Parso 6/1, 4	BL	2												20
OHIO	Reynoldsburg 5/29-6/4	BL	4		8										131
	Wooster 5/29-6/4	BL	11		78										232
TEXAS	Waco 5/29-6/4		11	0.5	64-82	18	37								770
WISCONSIN	Madison 5/28-6/3	BL	4	1											4
	Mazomanie 5/25-31	BL	1												2
WYOMING	Torrington 6/4	BL	2	7											83

A New Species of Tribolium from North America

The Results of Past Confusion

D.G.H. Halstead of the Pest Infestation Laboratory at Slough, England, has published (1969, J. Stored Prod. Res. 4:295-304, 18 figs.) an interesting study on an American stored product pest. His conclusions may be summarized as follows: The species of Tribolium from North America previously identified as T. madens is distinct from T. madens (Charpentier) from the Old World and is described as T. audax n. sp. The type locality is Flowell, Utah. He recorded other specimens from Alabama, Arizona, British Columbia, Colorado, Manitoba, Massachusetts, Michigan, Minnesota, Montana, Nebraska, New Mexico, Oregon, Quebec, Texas, Utah, Washington, and Wyoming. (From literature records and from the files of the United States Department of Agriculture, I can now add the following to the above distribution: Alberta, Iowa, Louisiana, Minnesota, North Dakota, Ontario, Pennsylvania, Saskatchewan, and Virginia.) The true T. madens does not occur in North America. All previous mention of T. madens by American authors actually apply to T. audax Halstead. The Larvae, pupae, and adults of T. audax and T. madens are described and differentiated by Halstead.

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U.S. Dept. Agr.
Coop. Econ. Ins. Rpt.
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Cooperative
**ECONOMIC INSECT
REPORT**



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PLANT PROTECTION DIVISION

AGRICULTURAL RESEARCH SERVICE

UNITED STATES DEPARTMENT OF AGRICULTURE

AGRICULTURAL RESEARCH SERVICE

PLANT PROTECTION DIVISION

ECONOMIC INSECT SURVEY AND DETECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

All reports and inquiries pertaining to this release, including the mailing list, should be sent to:

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Plant Protection Division
Agricultural Research Service
United States Department of Agriculture
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Hyattsville, Maryland 20782

COOPERATIVE ECONOMIC INSECT REPORT**HIGHLIGHTS**Current Conditions

SPOTTED ALFALFA APHID becoming heavy on alfalfa in southern New Mexico. (p. 400).

BLACK CUTWORM damaged much corn in Iowa and major pest of corn in Illinois. Other CUTWORMS damaged corn in Nebraska. (p. 400).

ALFALFA WEEVIL required no controls by most growers in Maryland for third consecutive year. (p. 402).

COLORADO POTATO BEETLE outbreak worst ever on potatoes in Cache County and still serious in other areas of Utah. (p. 405).

A LEAF BLOTCH MINER a threat to blueberries in New Jersey. (p. 407).

SPRUCE BUDWORM expected to cause heavy defoliation in northeast Minnesota. (p. 408).

HORN FLY economic on livestock in west-central North Dakota. (p. 409).

DEER FLIES, HORSE FLIES, and STABLE FLY annoying to man and livestock in several States. (p. 410).

EUROPEAN CRANE FLY very heavy in lawns in limited area of Washington. GRASS BUGS damaging crested wheatgrass in Utah. JAPANESE BEETLE adults appearing in several States; expect populations to approach destructive numbers in next 14 days in South Carolina. (p. 412).

Detection

An ADELGID reported for first time from Hawaii is a new Western Hemisphere record. (p. 413).

A SARCOPHAGID FLY reported for the first time from Arizona. This species previously reported from Columbia, Costa Rica, and Peru. Economic importance not known. This is a new North American record. (p. 414).

New State records include a DARKLING BEETLE from Idaho (p. 410); a DERMANYSSID MITE from Hawaii (p. 413); a HARVESTER ANT from Idaho (p. 401); HOLLYHOCK WEEVIL from Delaware (p. 408); a LACE BUG from Pennsylvania (p. 408); and a LEAFHOPPER from California (p. 407).

For new county records see page 414.

Special Reports

Distribution of Vegetable Weevil. Map. (p. 416).

Reports in this issue are for week ending June 12 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance.....399

Insects Affecting

Corn, Sorghum, Sugarcane.....400	Cucurbits.....405
Small Grains.....401	General Vegetables.....405
Turf, Pastures, Rangeland.....401	Deciduous Fruits and Nuts.....406
Forage Legumes.....401	Citrus.....407
Soybeans.....403	Other Trop. & Subtrop. Fruits...407
Cotton.....403	Small Fruits.....407
Sugarbeets.....404	Ornamentals.....408
Miscellaneous Field Crops.....405	Forest and Shade Trees.....408
Potatoes, Tomatoes, Peppers.....405	Man and Animals.....409
Beans and Peas.....405	Stored Products.....410
Cole Crops.....405	

Beneficial Insects.....411

Federal and State Plant Protection Programs.....411

Hawaii Insect Report.....413

Detection.....414

Light Trap Collections.....415

Distribution of Vegetable Weevil. Map.....416

WEATHER OF THE WEEK ENDING JUNE 15

HIGHLIGHTS: Cool weather predominated in the West. Numerous severe storms occurred in the central Great Plains.

TEMPERATURE: Mild temperatures prevailed over most of the West early in the week followed by marked cooling which produced below-normal weekly means. Sub-freezing temperatures occurred in northeastern Nevada Thursday morning. The Great Basin and central Rocky Mountains averaged 6° to 8° below normal. Temperatures averaged 6° to 8° warmer than normal over parts of the northern Great Plains and near or slightly above normal over the southern Great Plains. The Northeast was sunny and warm until Thursday. Weekly temperatures averaged above normal in spite of the cool weekend. Mild days and cool nights produced below-normal average temperatures in the Southeast.

PRECIPITATION: Most parts of the Nation were sunny and dry. Widely scattered showers fell in the Central and East. Heavy snow fell above about 7,000 feet in the northern and central Rockies in the latter part of the week. Frazer, Colorado, received 7 inches of snow Thursday forenoon. Violent weather became widespread over mid-American in the latter half of the week. Scattered tornadoes, large hail, high winds, and drenching rains brought destruction to some localities. Hailstones approached the size of baseballs south of Huron, South Dakota, on Sunday. Rains exceeding 8 inches flooded small streams in central Kansas. Tornadoes occurred in several Central States. Strong winds raised clouds of dust in most agricultural areas of Arizona. Rains in the East became more general over the weekend. Totals ranged widely from light sprinkles to an inch or two but most localities received less than 1 inch. (Summary supplied by Environmental Data Service, ESSA.)

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

- ARMYWORM (*Pseudaletia unipuncta*)** - KANSAS - Late instars moving from bromegrass fields where vegetation destroyed in Riley County. Parasitism 25-30 percent. Some fields still have 4-5 unparasitized small larvae per square foot. (Simpson).
NEBRASKA - Larvae ranged 4-8 per square foot at 3 eastern locations. (Roselle).
IOWA - Light, 1 per square foot, in bromegrass pastures in Guthrie County. Light trap collections June 1-8: Castana, Monona County, 62; Le Mars, Plymouth County, 12; and Kanawha, Hancock County, 155. (Iowa Ins. Sur.).
MINNESOTA - Larvae light in Dakota, Goodhue, Hennepin, Carver, McLeod, and Wright Counties. Highest count 2 per square foot in reed canary grass in Carver County. Light in oats, grassy ditches, and alfalfa. Most in second instar, few third to fifth. Light trap collections heavy at Crookston, Polk County. (Minn. Pest Rpt.).
WISCONSIN - Larvae 1-2 per 10 sweeps in nearly all alfalfa in southwest and few feeding on corn. (Wis. Ins. Sur.).
MICHIGAN - Larvae reported in St. Joseph County. (Ruppel, June 8).
ILLINOIS - Threat declining; larvae near full growth and diseases and parasites effective. Some migration into corn. (Sur. Bull.).
INDIANA - First-generation larvae still in widely scattered but limited areas; some needed treatments. Larvae clipped heads from barley at Vincennes, Knox County. Damaged replanted corn on land previously in sod in northwest district. (Matthew).
VIRGINIA - Medium on corn in Rockingham County June 3. (Craun).
NEW JERSEY - Larval outbreaks in several wheatfields in Somerset County. (Ins.-Dis. Newsltr.).
- ARMY CUTWORM (*Chorizagrotis auxiliaris*)** - IDAHO - Larvae destroyed 180 acres of sweetclover at Preston, Franklin County, June 5. (Tovey et al.).
NEVADA - Some spotted damage to alfalfa in Orovada area, Humboldt County. Larvae ranged 3-8 per crown in damaged areas. (Lundahl, Peters).
NORTH DAKOTA - Larvae, up to 1 per square foot, damaged 5 acres of sugarbeets near Dwight in Richland County. Larvae second instar to full grown. (McBride).
- ASTER LEAFHOPPER (*Macrostelus fascifrons*)** - MINNESOTA - Increasing and variable between fields. Counts in small grain and alfalfa ranged as follows: Southwest 20-200, west-central 0-600, central 40-1,000, southeast 20-800. Flax almost too short to sweep but 70 per 100 sweeps in one field in Lac qui Parle County. (Minn. Pest Rpt.).
WISCONSIN - Ranged 7-20 per 100 sweeps of oats. (Wis. Ins. Sur.).
- CORN EARWORM (*Heliothis zea*)** - GEORGIA - Larvae heavy in corn whorls in Burke County. (Miller, June 6).
ALABAMA - Moth flights and egg laying almost continuous in garden sweet corn in south and central areas. (Bagby et al.).
ARKANSAS - Moths on corn whorls in southeast area. (Wall).
DELAWARE - First adults of season in blacklight traps in Kent and Sussex Counties June 3. (Burbutis et al.).
- CORN LEAF APHID (*Rhopalosiphum maidis*)** - NEW MEXICO - Appearing in whorls of young grain sorghum in Luna, Hidalgo, and Grant Counties. Buildup heavier in some areas than in others. (N.M. Coop. Rpt.).
OKLAHOMA - Ranged 100-500 per sorghum plant in Jackson, Tillman, Bryan, Craig, Pawnee, and Kingfisher Counties. (Okla. Coop. Sur.).
- GREENBUG (*Schizaphis graminum*)** - NEW MEXICO - Very light on grain sorghum in Hidalgo, Luna, and Grant Counties. (Campbell).
OKLAHOMA - Up to 150 per plant on grain sorghum at Tipton, Tillman County, and 10-15 per plant in other areas of Tillman and Jackson Counties. Ranged 10-50 per plant in scattered fields in Payne County. Moderate in Craig County. (Okla. Coop. Sur.).
COLORADO - Appearing on sorghum in Yuma (southern area), Kit Carson, and Cheyenne Counties. Counts and damage very light. (Johnson).
KANSAS - Averaged 1 per 100 sorghum plants in Riley, Ellsworth, Marion, and McPherson Counties. Ranged 1-3 per new sorghum plant in Greeley, Gray, and Ellis Counties. (Simpson).
WISCONSIN - Surveys negative. (Wis. Ins. Sur.).
- POTATO LEAFHOPPER (*Empoasca fabae*)** - ILLINOIS - Nymphs and adults numerous in some alfalfa fields. (Sur. Bull.).

POTATO PSYLLID (Paratrioza cockerelli) - COLORADO - Adults ranged 4-12 per 100 sweeps in Bijou Hill area, Morgan County. Ranged 0-10 per 100 sweeps of potatoes in untreated fields in Gilcrest, Weld County. (Johnson, Urano).

SPOTTED ALFALFA APHID (Therioaphis maculata) - NEW MEXICO - Becoming heavy on alfalfa in Chaves, Eddy, and Dona Ana Counties. Some controls applied. (N.M. Coop. Rpt.). Remains light in Sandoval and Bernalillo Counties. (Heninger). KANSAS - Noneconomic on alfalfa in Sedgwick, Harvey, Butler, Cowley, Chautauqua, Labette, Montgomery, Neosho, and Wilson Counties. (Redding).

TOBACCO BUDWORM (Heliothis virescens) - FLORIDA - Damaged 2-7 percent of pods on 320 acres of beans at Live Oak, Suwannee County. (Massimino, Strayer).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - MISSOURI - Egg masses ranged 10-20 per 100 corn plants in Saline and Lafayette Counties. (Thomas). Leaf feeding averaged 80 percent on early planted corn in southwest area; larvae mostly second instar. (Munson). Leaf feeding averaged 65 percent in southeast area. (Craig). IOWA - Pupation 100 percent at Ankeny, 86 percent emerged. Overwintered larvae in cages 51 percent parasitized by Macrocentrus grandii (a braconid); highest parasitism rate recorded at this station. Egg masses 8 per 100 plants at Ankeny; 20 per 100 plants on early sweet corn at Storm Lake June 10. (Iowa Ins. Sur.). ILLINOIS - Emergence 92-100 percent in southern three-fourths of State. Egg laying on all plants checked south of U.S. Highway 40 in south area. Found in every field surveyed in rest of State. (Ill. Ins. Rpt.). INDIANA - Eggs on corn in Wells County. (Meyer). MINNESOTA - Percent pupation as follows: Southwest 43, west-central 5, central 50. (Minn. Pest Rpt.). WISCONSIN - Surveys of field corn negative for egg masses; cornstalk dissections at site in southern Lafayette County indicated 60 percent emergence and 40 percent in pupal stage. In same field, 20 percent of pupae parasitized by Sympiesis viridula (a eulophid wasp). (Wis. Ins. Sur.). NEW HAMPSHIRE - Eggs on corn at Dover, Strafford County. (Fisher). MASSACHUSETTS - Eggs numerous on corn seedlings in Plymouth County. (Jensen). PENNSYLVANIA - First adult of season in light trap in Dauphin County May 26. (Simons, Quinter). NEW JERSEY - Injury noted to tassels of sweet corn in southern counties. Most growers applying controls. (Ins.-Dis. Newsltr.). DELAWARE - First and second instars in early planted field corn, and third and fourth instars very numerous in early sweet corn in Sussex County. Adult flights remain heavy in all areas. (Burbutis et al.). MARYLAND - Moths less than 2 per night in Queen Annes and Worcester County light traps. First and second instars in southern areas and on Eastern Shore. Infestations ranged 10-45 percent in early corn on Eastern Shore and 1-5 percent in southern areas. Infested stalks averaged less than 2 percent in Frederick, Howard, Carroll, and Baltimore Counties. (U. Md., Ent. Dept.). GEORGIA - Heavy on corn tassels in Houston County. (Whelchel, June 6).

BLACK CUTWORM (Agrotis ipsilon) - IOWA - Damaged corn in 40 counties. About half of reports indicate larvae feeding below ground level. Instars third to last. (Iowa Ins. Sur.). ILLINOIS - Still major insect on corn. Larvae nearing full growth and damage should decline. (Sur. Bull.). NEW HAMPSHIRE - One moth of this species, 9 A. volubilis and 14 Amathes c-nigrum (spotted cutworm) collected in blacklight trap at Lee, Strafford County. (Morse).

NOCTUID MOTHS - NEBRASKA - Feltia subgothica (dingy cutworm), Agrotis ipsilon (black cutworm), and Euxoa messoria (dark-sided cutworm) larvae still damaging corn in eastern third of State. Second and third planting in some counties damaged where soil insecticides not used. Corn up to 14 inches high killed. (Roselle). PENNSYLVANIA - Collected 410 Amathes c-nigrum moths in ultraviolet light trap near Auburn, Schuylkill County, June 5. (Quinter).

STOMBLER MOTH (Heliothis stombleri) - CALIFORNIA - First adult (female) of season collected in light trap at Five Points, Fresno County, May 31. Male trapped north of Tehachapi Mountains week ending May 12. (Cal. Coop. Rpt.).

CORN ROOTWORMS (*Diabrotica* spp.) - OHIO - First instars of *D. longicornis* (northern corn rootworm) hatching in Wyandot County. Larval populations expected to range 20-40 per plant. (Musick). ILLINOIS - Hatch continuing. Peak larval numbers expected in early to mid-July. (Sur. Bull.).

SMALL GRAINS

BROWN WHEAT MITE (*Petrobia latens*) - NEVADA - Damage heavy to 640 acres of wheat at Lovelock, Pershing County. Treatments planned. (Ferraro, Martinelli).

EUROPEAN CORN BORER (*Ostrinia nubilalis*) - VIRGINIA - Damaged wheat, bored into stalks, in Richmond, Caroline, Charles City, King and Queen, and Charlotte Counties. (Allen, Freund).

WHEAT STEM SAWFLY (*Cephus cinctus*) - WISCONSIN - Collected from Manitowoc County June 9, 1962. Determined by D.R. Smith. This is a new county record. (Wis. Ins. Sur.).

WHEAT STEM MAGGOT (*Meromyza americana*) - NEBRASKA - Infested 5-10 percent of stems in some central area fields. (Weihsing).

ENGLISH GRAIN APHID (*Macrosiphum avenae*) - WISCONSIN - Increased to 50 per 100 sweeps in oats in Trempealeau, La Crosse, Vernon, Crawford, and Columbia Counties. Up to 15 per sweep in some fields. Some red leaf apparent. (Wis. Ins. Sur.).

TURF, PASTURES, RANGELAND

A HARVESTER ANT (*Pogonomyza salinus*) - IDAHO - Collected in Curlew Valley, Oneida County, September 1, 1969, by G.F. Knowlton. Identified by G.C. Wheeler. This is a new State record. (Gittins).

A DELPHACID PLANTHOPPER (*Delphacodes propinqua*) - ARIZONA - Averaged 35 per 100 sweeps of Bermuda grass seed fields in Gila Valley, Yuma County. (Ariz. Coop. Sur.).

A GROUND PEARL (*Margarodes meridionalis*) - ARIZONA - Crawlers active in Tifgreen lawns in many areas of Salt River Valley, Maricopa County. Treatments recommended. (Ariz. Coop. Sur.).

FORAGE LEGUMES

ALFALFA WEEVIL (*Hypera postica*) - WASHINGTON - Larvae 2-3 per sweep in alfalfa seed fields near Walla Walla, Walla Walla County. (Johansen, Eves). IDAHO - Adults 15 and larvae 4 per 10 sweeps of alfalfa; tip damage light. Coccinellid adults 12 per 10 sweeps at Fort Hall, Bingham County. (Kunkel, Sutherland). Alfalfa weevil adults 12 and larvae 1 per 10 sweeps of alfalfa. Coccinellid adults averaged 3 per 10 sweeps in one field, and 8 in another at Rigby, Jefferson County. (Gooch, Sutherland). *H. postica* larvae ranged 10-20 per sweep 10 days after treatment in alfalfa seed field near Fruitland, Payette County. Some seed fields ranged 30-50 per sweep prior to treatments near Homedale, Owyhee County. (Waters). UTAH - Larvae 20+ per sweep on untreated alfalfa in Delta area of Millard County. Damage apparent in untreated fields. Damage light where controls applied. Larvae ranged 35-40 per sweep at Ogden, Weber County. (Davis, Knowlton, June 12). WYOMING - Adults ranged 0-4 per 10 sweeps of alfalfa in Carbon, Sweetwater, Uinta, Lincoln, and Teton Counties. Larvae in 2 fields in Carbon County. Larvae ranged 9-180 per 10 sweeps of alfalfa in Park, Big Horn, and Washakie Counties. Little damage to date. Appears first cutting will not be heavily damaged in Big Horn Basin area. (Parshall). COLORADO - Larvae ranged 30-900 per 100 sweeps; damage light to moderate in Morgan, Logan, Kit Carson, and Sedgwick Counties. First cutting underway in most areas and controls recommended on stubble. Still heavy, 500-900 per 100 sweeps, in Weld, Boulder, and Larimer Counties. (Johnson, Urano). NEW MEXICO - Larvae 850 per 25 sweeps in 2 of 3 alfalfa fields in Corrales, Sandoval County. Fields severely defoliated. (Heninger). ARKANSAS - Still light in north area. Larvae ranged 30-35 in 100

sweeps in Washington County. (Dumas, Boyer). OKLAHOMA - Counts per 100 sweeps of alfalfa averaged 8 larvae near Loco, Stephens County, and 2 adults near Waurika, Jefferson County. These are new county records. (Okla. Coop. Sur.). SOUTH DAKOTA - Development slow at Spearfish, Lawrence County. Adults up to 50 per 100 sweeps in untreated alfalfa and larvae 50-2,000. Most first and second instars. (Rezek, Walstrom). NORTH DAKOTA - Larvae ranged up to 46 (averaged 16), adults up to 72 (averaged 10) per 100 sweeps of irrigated alfalfa in Yellowstone River Valley in McKenzie County. Larvae in first and second instars. Alfalfa will be cut before populations reach economic levels. (Brandvik). WISCONSIN - Damage erratic and all fields surveyed showed feeding damage but not enough to affect crop. About 30 percent of plants fed upon but leaf surface area not totally consumed. Surveys negative in Trempealeau, La Crosse, and Vernon Counties; averaged 2 per 100 sweeps in Crawford County field. About 2,600 parasites reared in Rock County; principally *Microctonus aethiops*, *M. colesi*, and *Bathyplectes curculionis*. (Wis. Ins. Sur.). ILLINOIS - Noneconomic, ranged 20-90 per 100 sweeps in northwest, east, west, and west-southwest sections. (Sur. Bull.). INDIANA - Larvae ranged 0-30 per sweep of alfalfa in north district. Some damage on most terminals of first crop. Cutting in progress or recently completed in half of fields noted. (Meyer). VIRGINIA - Larvae practically gone in Frederick and Orange Counties, still light to moderate on alfalfa in Page County. (Allen). MARYLAND - Adults averaged less than 1 per 10 sweeps throughout State. Larval injury remains light to moderate in Frederick, Howard, Prince Georges, Dorchester, and Baltimore Counties. Few growers applied sprays to stubble as preventive measure. Most growers needed no controls for third consecutive year. (U. Md., Ent. Dept.). MASSACHUSETTS - Damaged 95 percent of tips in 3 fields in Berkshire County surveyed June 10. Larvae 1,408 and adults 10 per 100 sweeps in one field. (Miller). VERMONT - Light in Rutland, Windsor, and Chittenden Counties. Adult numbers appear to be declining slightly. Larvae, mostly second or third instar, averaged 5 per sweep at Shoreham, Addison County. Damage light, about 10-20 percent of tips. Treatment of forage or stubble may not be necessary. (Nielsen, June 9).

PEA APHID (*Acyrtosiphon pisum*) - IDAHO - Light in alfalfa north of Moscow, Latah County, to Canadian border. Lady beetles, big-eyed bugs, and nabids general throughout region. (Portman). Pea aphid ranged 100-300 per sweep in alfalfa seed field near Homedale, Owyhee County. (Waters). WASHINGTON - This species and *Macrosiphum creelii* up to 600 per sweep in alfalfa seed fields in Yakima Valley. (Johansen, Eves). NEVADA - Ranged 8-12 per sweep in alfalfa seed fields in Reese River Valley, Lander County. (Lundahl, Peters). UTAH - Moderate to damaging on Millard County alfalfa, but recently declined. (Davis, Hall). NEW MEXICO - Remains heavy on alfalfa in many areas. (N.M. Coop. Rpt.). OKLAHOMA - Heavy on Mayes County alfalfa, moderate in Murray County. Averaged 450 per 10 sweeps in Jefferson County. Ranged 5-150 per 10 sweeps in McClain, Garvin, Stephens, and Tillman Counties. (Okla. Coop. Sur.). COLORADO - Light, ranged 1,000-2,000 per 100 sweeps of alfalfa in Morgan, Logan, Sedgwick, and Kit Carson Counties. (Johnson). WYOMING - Ranged 0-800 per 10 sweeps of alfalfa in Carbon, Sweetwater, Uinta, Lincoln, Teton, Park, Washakie, and Big Horn Counties. Heaviest in Washakie County. (Parshall). ARKANSAS - Ranged 500-1,000 in 100 sweeps on north area alfalfa. No parasitism. (Boyer). VIRGINIA - Very light on alfalfa in Frederick, Page, Orange, Montgomery, and Shenandoah Counties. (Allen). MASSACHUSETTS - Adults and nymphs 146 per 100 sweeps in Berkshire County field. (Miller).

WEBWORMS (*Loxostege* spp.) - KANSAS - *L. commixtalis* (alfalfa webworm) caused light damage to alfalfa in Neosho, Labette, Chautauqua, and Montgomery Counties. Averages per 100 sweeps by county: Neosho 60, Labette 150, Montgomery 175, and Chautauqua 30. (Simpson). OKLAHOMA - *Loxostege* spp. larvae 1-4 per 10 sweeps in most alfalfa in several south-central and southwest counties. (Okla. Coop. Sur.). WYOMING - *L. sticticalis* (beet webworm) adults active in alfalfa in Washakie, Park, and Big Horn Counties. (Parshall).

ALFALFA CATERPILLAR (*Colias eurytheme*) - UTAH - Larvae 1-2 per 10 sweeps on alfalfa in Cache and Salt Lake Counties. (Knowlton). WYOMING - Larvae averaged 1 per 10 sweeps of alfalfa in Big Horn County field. (Parshall). COLORADO - Larvae ranged 30-40 per 100 sweeps of alfalfa at Fort Morgan, Morgan County. (Johnson). OKLAHOMA - Up to 5 per 10 sweeps of Stephens County alfalfa. Occasional larvae in most central and south-central fields. (Okla. Coop. Sur.).

RED-BACKED CUTWORM (*Euxoa ochrogaster*) - IDAHO - Several hundred acres of alfalfa treated at Hansen, Twin Falls County, to stop damage. (Sutherland).

LYGUS BUGS (*Lygus* spp.) - WASHINGTON - *L. hesperus* and *L. elisus* up to 20 nymphs and 2 adults per sweep in alfalfa seed field near Zillah, Yakima County. (Johansen, Eves). NEVADA - Nymphs and adults ranged 10-15 per sweep in Reese River Valley, Lander County, alfalfa seed fields. (Lundahl, Peters). UTAH - Light, 1 in 5 sweeps of alfalfa at Delta, Millard County. (Davis). NEW MEXICO - Ranged light to heavy on alfalfa; 50+ per 25 sweeps in some areas. (Mathews). COLORADO - Adults ranged 200-250 per 100 sweeps of alfalfa in one field in Kit Carson County. Ranged 50-100 per 100 sweeps in northeast area. (Johnson). WYOMING - Adults 0-4 per 10 sweeps of alfalfa in Carbon, Sweetwater, Uinta, Lincoln, and Teton Counties; adults and nymphs 3-25 in Washakie, Big Horn, and Park Counties. (Parshall).

TARNISHED PLANT BUG (*Lygus lineolaris*) - MASSACHUSETTS - Adults 32 and larvae 150 per 100 sweeps in Berkshire County field. (Miller). OKLAHOMA - Mostly adults ranged 4-12 per 10 sweeps of alfalfa in McClain, Garvin, Stephens, Jefferson, and Tillman Counties. (Okla. Coop. Sur.).

ALFALFA PLANT BUG (*Adelphocoris lineolatus*) - WISCONSIN - Nymphs dominant, 30 per sweep, in most southern area alfalfa and one field in Green County. Maturation slow. (Wis. Ins. Sur.). INDIANA - Averaged 2 adults or nymphs, mostly latter, per sweep. Most abundant of plant bugs on alfalfa. (Meyer).

MEADOW SPITTLEBUG (*Philaenus spumarius*) - MARYLAND - Adults ranged 10-30 per sweep in unsprayed red clover and alfalfa in Frederick, Baltimore, Howard, and Prince Georges Counties. (U. Md., Ent. Dept.). WISCONSIN - Adults appearing in alfalfa. (Wis. Ins. Sur.). IDAHO - Second and third instar nymphs general in alfalfa, grassfields, and rangelands. Controls applied in most alfalfa and grassfields of Kootenai County and needed in some Boundary and Bonner County fields. (Portman).

SOYBEANS

BEAN LEAF BEETLE (*Cerotoma trifurcata*) - MARYLAND - Adults ranged 1-2 per row yard in 50 acres of soybeans near Naylor, Prince Georges County. (U. Md., Ent. Dept.). MINNESOTA - Damage to marginal rows of soybeans noticeable throughout southwest district. Movement into fields noted in some areas. (Minn. Pest Rpt.).

MEXICAN BEAN BEETLE (*Epilachna varivestis*) - SOUTH CAROLINA - Building up on young plants. Leaf loss averaged 15 percent in some fields, primarily in coastal counties. (Thomas, June 10).

COTTON

BOLL WEEVIL (*Anthonomus grandis*) - TEXAS - In McLennan and Falls Counties, weevils in 2 of 54 treated fields averaged 2 (maximum 125) per acre. Averaged 15 (maximum 500) per acre in 4 of 30 untreated fields. Collected 4 weevils in wing traps near hibernation sites, total to date 127. (Cowan et al.). OKLAHOMA - Wing trap catches indicate weevils heavy in some areas in several southwest counties during past 14 days. (Okla. Coop. Sur.). LOUISIANA - In Madison Parish, collected 54 weevils from 222 wing traps; total to date 1,658. (Cleveland et al.). ARKANSAS - Collected 2 weevils on 45 pheromone-baited wing traps in Lafayette and Miller Counties. Collected 5 on 5 traps at Morrilton and 1 on 5 traps at Plummerville, Conway County. (Lamb et al.). TENNESSEE - Found 2 adults in terminal buds in McNairy

County and 1 in Fayette County. Emergence from hibernation should have peaked. (Locke). MISSISSIPPI - Two boll weevils found in 2 of 37 fields in delta counties (Sharkey and Washington). Weevil punctures 7 percent in 1 field of squaring cotton. No weevils in wing traps in Washington County; totaled 212 on this date in 1969. (Pfrimmer et al.). Infestation averaged 1 percent in 15 Attala County fields. (Sartor). ALABAMA - Weevil emergence from winter hibernation generally light statewide. None reported north of Jefferson County where 65 percent of total acres planted. Weevils increased in extreme south area although not as heavy as during past 3-5 years. (McQueen). GEORGIA - Collected 7 weevils in 21 wing traps in Randolph County (Womack), 3 in 4 traps in Spalding County week ending June 6 (Beckham). For Boll Weevil on High Plains see page 411.

BOLLWORMS (*Heliothis* spp.) - TEXAS - In McLennan and Falls Counties, eggs and/or larvae collected on native hosts; 23 larvae previously collected from native hosts identified *H. zea*; 1 identified *H. virescens*. Total on all hosts, 234 *H. zea* and 27 *H. virescens*. (Cowan et al.). LOUISIANA - Collected 20 *H. zea* and 9 *H. virescens* in blacklight trap in Madison Parish week ending June 4. Currently 38 *H. zea* and 3 *H. virescens* in light trap. Eggs in 8 of 11 plots ranged 26-52 per acre. (Cleveland et al.). ARKANSAS - Eggs as high as 17 per 100 terminals in Jefferson County. (Wall). TENNESSEE - *H. zea* eggs few in older cotton. Some small larvae feeding in terminal buds. Unusual for time of year. (Locke). MISSISSIPPI - *H. zea* and *H. virescens* larvae averaged 4.3 per 100 row feet in 27 fields in Washington County. Oviposition in Sharkey and Rankin Counties. (Sartor). In delta counties larvae in 3 of 37 fields and eggs in 23. (Pfrimmer et al.). ALABAMA - Eggs ranged 3-20 and small larvae 1-6 per 100 terminals in south and central areas. Beneficial insects reduced numbers below economic levels. Moth flights and egg laying by *H. zea* occurring in south area. (McQueen). GEORGIA - Eggs ranged 0-20 (average 9) per 100 terminals in 14 fields in south area week ending June 6. (Womack). SOUTH CAROLINA - Damage in Marlboro County. (Flowers, Nettles, June 10).

SALT-MARSH CATERPILLAR (*Estigmene acrea*) - TEXAS - Heavy in isolated areas on range grass in margins of cotton fields in Garza and Borden Counties. Seedling cotton heavily damaged along some field margins. (Rummel, Clymer).

THRIPS - NEW MEXICO - Curling leaves on cotton in Dona Ana, Chaves, and Eddy Counties. Some fields next to alfalfa show more damage. (N.M. Coop. Rpt.). TEXAS - Moderate to heavy in Briscoe, Crosby, Floyd, and Hale Counties. Light in Swisher, Lubbock, Bailey, Deaf Smith, and Terry Counties. Populations spotted with only light injury in most of heavier infested fields. (Rummel, Clymer). OKLAHOMA - Ranged 0-5 per small plant in Jackson and Jefferson Counties. Light in Bryan and Garvin Counties. (Okla. Coop. Sur.). TENNESSEE - Injury light to heavy in late cotton in west area. (Locke). MISSISSIPPI - Light to moderate in Lee, Chickasaw, and Yazoo Counties. Damage heavy in some fields in Tishomingo and Sharkey Counties. (Sartor). ALABAMA - Not serious statewide. Several damaging infestations in Colbert and Madison Counties on 4 to 8-leaf cotton. (Holloway et al.).

SUGARBEETS

SUGAR-BEET ROOT MAGGOT (*Tetanops myopaeformis*) - NORTH DAKOTA - Adults on 1 out of 20 plants in irrigated fields in McKenzie and Williams Counties. Not known to be economic in this area. (Brandvik). In Walsh and Pembina Counties about 95 percent pupated. First flies of season June 5. (Kaatz).

SPINACH LEAF MINER (*Pegomya hyoscyami*) - WYOMING - Eggs and few larvae in Park, Washakie, and Big Horn Counties. (Parshall).

BET WEBWORM (*Loxostege sticticalis*) - WYOMING - Adults active in sugarbeet fields of Washakie, Park, and Big Horn Counties. (Parshall).

WESTERN BLACK FLEA BEETLE (*Phyllotreta pusilla*) - NORTH DAKOTA - Shotholing evident on sugarbeets in McKenzie County. Up to 100 percent of plants had 1-8 shotholes per leaf. (Brandvik).

MISCELLANEOUS FIELD CROPS

A FLEA BEETLE (Longitarsus waterhousei) - WASHINGTON - Larval damage about 25 percent in 25 acres of peppermint June 4 in Clark County. (Shanks).

A SCARAB (Euphoria sepulchralis) - FLORIDA - Adults heavy on sunflower blooms at Dover, Hillsborough County. (Simmons, June 4).

POTATOES, TOMATOES, PEPPERS

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - WASHINGTON - Egg masses 5-6 per volunteer potato plant in corn and grain June 5 at Quincy, Grant County. (Landis). IDAHO - Fields at Preston, Franklin County, generally infested. (Thornley). Egg clusters ranged 2-5 and adults 2-16 per 10 row feet (Carpenter); adults at Fort Hall, Bingham County, June 5 (Garner). UTAH - Worst outbreak ever on potatoes in Cache County to State line. Still serious in Weber, Davis, and parts of Box Elder Counties. (Knowlton et al., June 12). NEW JERSEY - Larvae caused light to moderate injury in many central and southern counties. (Ins.-Dis. Newsltr.). ALABAMA - Larvae light in field of tomatoes in Blount County. Controls planned. (Smith).

POTATO FLEA BEETLE (Epitrix cucumeris) - TENNESSEE - Moderate damage to potatoes and tomatoes continues across State. (Gordon). WISCONSIN - Feeding damage to potato and tomato plants extensive but declining. (Wis. Ins. Sur.).

BEANS AND PEAS

PEA APHID (Acyrtosiphon pisum) - WISCONSIN - Increasing, up to 20 per sweep in early peas in Columbia County. (Wis. Ins. Sur.).

COLE CROPS

GARDEN FLEAHOPPER (Halticus bracteatus) - FLORIDA - Adults severe on 90 percent of 300 turnip plants at Brandon, Hillsborough County. (Simmons).

CUCURBITS

SEED-CORN MAGGOT (Hylemya platura) - IDAHO - Caused 80 percent loss on cantaloup plants in Arena Valley near Parma, Canyon County. Loss of seedling watermelons in nearby field less than 5 percent. (Waters).

MELON APHID (Aphis gossypii) - CALIFORNIA - Adults 20 per leaf on cucumbers at Chula Vista, San Diego County. (Cal. Coop. Rpt.).

STRAWBERRY SPIDER MITE (Tetranychus turkestanii) - ARIZONA - As many as 250 per leaf on some cantaloup at Yuma, Yuma County. Infestations not generalized. (Ariz. Coop. Sur.).

GENERAL VEGETABLES

GOLDEN TORTOISE BEETLE (Metritonia bicolor) - MARYLAND - Damage ranged 30-80 percent to newly set sweetpotato plants in several fields in Hebron and Salisbury areas of Wicomico County. Controls required in 10 acres near Hebron. (U. Md., Ent. Dept.).

SPOTTED ASPARAGUS BEETLE (Crioceris duodecimpunctata) - UTAH - This species numerous on asparagus and C. asparagi (asparagus beetle) light at Ogden and Roy, Weber County. (Knowlton, Davis).

A SCARAB (Euphoria sepulchralis) - FLORIDA - Adults heavy on okra pods at Dover, Hillsborough County. (Simmons, June 4).

SPINACH LEAF MINER (Pegomya hyoscyami) - MASSACHUSETTS - Larvae mining Swiss chard in Essex County. (Jensen).

DECIDUOUS FRUITS AND NUTS

ORIENTAL FRUIT MOTH (Grapholitha molesta) - WASHINGTON - First moths of first summer generation captured June 5 in several Yakima County locations. (Johnson). UTAH - Passed peak of flight. Population centered in Pleasant Grove area, with small numbers taken as far away as Orem, Utah County. (Davis, Barlow). TENNESSEE - Second-generation larvae damaged peach twigs in Knox County. (Williams, June 5). OHIO - Infested peach twigs in Sandusky County. (Roach).

CODLING MOTH (Laspeyresia pomonella) - WASHINGTON - Adults peaked in sex lure traps (40 males in one trap) May 25 at Tieton, Yakima County. (Johnson, Hastings). UTAH - Passed peak of first flight; scattered flight still occurring in Utah and Cache Counties. (Davis, Barlow). WISCONSIN - Flight well underway. (Wis. Ins. Sur.). MICHIGAN - First moths emerged May 28 at Belding, Ionia County. First fruit entry May 31 in southwest area. (Thompson). NEW JERSEY - Catch of 8 moths June 2-9 in baited jar in Gloucester County. (Ins.-Dis. Newsltr.).

LESSER PEACH TREE BORER (Synanthedon pictipes) - MICHIGAN - Moths in flight in abandoned peach and plum orchard June 4 near Kalamazoo, Kalamazoo County. (Thompson).

PLUM CURCULIO (Conotrachelus nenuphar) - NEW JERSEY - Find of 15 adults in 12 minutes on June 9 in Glassboro County. (Ins.-Dis. Newsltr.). OHIO - Damaged plums in Hamilton County. (Roach). WISCONSIN - First adults in blacklight traps. Scars on small apples present for some time. (Wis. Ins. Sur.).

BLACK CHERRY FRUIT FLY (Rhagoletis fausta) - MICHIGAN - Adults emerged June 5 at abandoned orchard in Jackson County. Adults recovered from emergence cages maintained in northeast Grand Rapids, Kent County. (Lovitt).

A PERIODICAL CICADA (Magicicada sp.) - WEST VIRGINIA - Adults emerged in Mineral County May 24. Adults heavy. Flagging showing on apples in Hardy, Hampshire, Morgan, Berkeley, and Jefferson Counties June 3. (W. Va. Ins. Sur.).

PEAR PSYLLA (Psylla pyricola) - UTAH - Adults numerous in infested Weber County orchards. Most of first generation fully grown. No eggs. Found at Roy, Weber County, and at south Willard, Box Elder County, a spread of at least 10 miles from previously known infested orchards. Box Elder County is a new county record. (Davis, Knowlton).

EUROPEAN APPLE SAWFLY (Hoplocampa testudinea) - MASSACHUSETTS - Adult injury on about 2 percent of small apples in treated orchard in Plymouth County. (Jensen).

SAN JOSE SCALE (Quadraspidiotus perniciosus) - WASHINGTON - First crawlers June 9 at Buena, Yakima County, one day earlier than last year. (Johnson).

GREEN PEACH APHID (Myzus persicae) - UTAH - Damage unusually severe in Utah County peach orchards this spring. Foliage still badly yellowed and curled. (Davis, June 12). NEW MEXICO - Heavy on peach trees in Dona Ana County. (Campbell). MICHIGAN - Problem increasing in many peach orchards. (Thompson, June 8).

APPLE APHID (Aphis pomi) - UTAH - Unusually numerous in all Utah County orchards examined. Very numerous on some apple trees at Brigham City, Box Elder County. (Davis, Knowlton).

PECAN NUT CASEBEARER (Acrobasis caryae) - OKLAHOMA - Cool damp weather delayed hatch in some areas. Eggs still present as late as June 9. Moderate in Garvin and Murray Counties. (Okla. Coop. Sur.).

BLACK-MARGINED APHID (Monellia costalis) - NEW MEXICO - Generally heavy on pecan trees in Luna, Dona Ana, and Otero Counties. Some growers treating. (N.M. Coop. Rpt.).

CITRUS

Citrus Insect Situation in Florida - End of May - CITRUS RUST MITE (*Phyllocoptruta oleivora*) infested 54 (norm 44) percent of groves; economic in 33 (norm 27) percent. Decreased to moderate level on leaves but still above normal. Increase expected at mid-June. Fruit infestation above normal and increasing rapidly. Highest districts west, central, south, and east. CITRUS RED MITE (*Panonychus citri*) in 60 (norm 57) percent of groves; economic in 27 (norm 32) percent. Increased. At moderate level and near normal for May. Additional increase expected in June followed by decrease in July. Highest districts west and east. TEXAS CITRUS MITE (*Eutetranychus banksi*) in 37 (norm 59) percent of groves; economic in 17 (norm 38) percent. Remained much below normal and in low range despite increase. Not expected to reach high level this summer although few heavy infestations will occur. Highest district south. SIX-SPOTTED MITE (*Eotetranychus sexmaculatus*) in 14 (norm 14) percent of groves; economic in 5 (norm 2) percent. Near annual peak and about normal in magnitude. Will decrease in July. GLOVER SCALE (*Lepidosaphes gloverii*) in 90 (norm 84) percent of groves; economic in 17 (norm 28) percent. Entered high range and close to average level for May. Further increase expected. Highest districts south and east. PURPLE SCALE (*L. beckii*) in 80 (norm 81) percent of groves; economic in 6 (norm 12) percent. Will remain at moderate level and near normal abundance. Highest district north. YELLOW SCALE (*Aonidiella citrina*) in 61 (norm 66) percent; economic in 8 (norm 11) percent. Slightly below normal and at moderate level. Little change predicted. Highest district north. CHAFF SCALE (*Parlatoria pergandii*) in 45 (norm 69) percent of groves; economic in 2 (norm 15) percent. BLACK SCALE (*Saissetia oleae*) in 18 (norm 48) percent of groves; economic in 5 (norm 26) percent. These 2 scales will remain subnormal and low in all districts. An ARMORED SCALE (*Unaspis citri*) infested 25 percent of groves; moderate to heavy in 12 percent. Increased; higher than in any prior month. WHITEFLIES in 75 percent (norm 61) percent of groves; economic in 47 (norm 19) percent. Highest for any month in 19 years of record. Further increase expected. MEALYBUGS in 40 (norm 54) percent of groves; economic in 4 (norm 12) percent. Will increase rapidly through June. (W.A. Simanton, (Citrus Expt. Sta., Lake Alfred)).

ORANGE-DOG (*Papilio cressphontes*) - ARIZONA - Adults flying in and around trees in Salt River Valley, Maricopa County. Larvae appearing on foliage at Yuma, Yuma County. (Ariz. Coop. Sur.).

OTHER TROP. & SUBTROP. FRUITS

A LEAFHOPPER (*Idona minuenda*) - CALIFORNIA - Collected on Brazil peppertree (*Schinus terebinthifolia*), at Pomona, Los Angeles County. Collected by A. Phelps and E. Paddock January 12, 1970. Determined by J.P. Kramer. This is a new State record. Brazil peppertree is not a recorded host. Collected very near commercial avodado plantings. (Cal. Coop. Rpt.).

SMALL FRUITS

SUGAR-BEET WIREWORM (*Limonius californicus*) - IDAHO - Heavy in 15 acres of grapes in new vineyard in Canyon County. Many plants dying. (Homan).

WESTERN TUSSOCK MOTH (*Hemerocampa vetusta*) - NEVADA - Larvae, migrating from defoliated bitterbrush and desert peach (*Prunus andersoni*), heavily damaged strawberries in Washoe Valley, Washoe County. (Nev. Coop. Rpt.).

A PSYCHID MOTH (*Apterona crenulella*) - NEVADA - Larvae heavily damaged strawberry plants at Carson City, Ormsby County. (Marshall).

A LEAF BLOTCH MINER (*Gracillaria vacciniella*) - NEW JERSEY - Unusually abundant in few blueberry areas. Never damaged cultivated blueberries in State but threat this year. (Ins.-Dis. Newsltr.).

ORNAMENTALS

A LACE BUG (Stephanitis takeyai) - PENNSYLVANIA - Heavy on Pieris japonica near Harrisburg, Dauphin County. Collected by Slesman June 4, 1970. Determined by E.E. Simons. This is a new State record. (Gesell).

HOLLYHOCK WEEVIL (Apion longirostre) - DELAWARE - Adults very common on hollyhock buds at Newark, New Castle County. Collected and determined by P.P. Burbutis June 11, 1970. This is a new State record. (Burbutis et al.).

BAGWORM (Thyridopteryx ephemeraeformis) - TENNESSEE - Damage continues to increase across State. (Gordon).

FOREST AND SHADE TREES

SPRUCE BUDWORM (Choristoneura fumiferana) - MINNESOTA - Heavy. Will cause heavy defoliation throughout most of northeast area. Third and fourth instars defoliated 15-20 percent of new growth by June 10. (Minn. Pest Rpt.).

OLETHREUTID MOTHS (Rhyacionia spp.) - KANSAS - R. frustrana (Nantucket pine tip moth) infested 50 percent of branches on mugho pine in Sedgwick County nursery. (Redding). MISSOURI - R. frustrana adult emergence underway in Barton and Lawrence Counties. (Kearby). OHIO - R. buoliana (European pine shoot moth) pupation in progress in Union County. (Roach).

PINE BARK APHID (Pineus strobi) - WEST VIRGINIA - Severely damaged 5 percent of Scotch pine Christmas tree plantation in Greenbrier County. (W. Va. Ins. Sur.).

A CONIFER SAWFLY (Neodiprion pratti pratti) - WEST VIRGINIA - Larvae collected on Virginia pine for new county records as follows: Wood and Jackson May 20; Putnam and Mason May 21; Pocahontas and Randolph May 26; Braxton, Upshur, Clay, and Roane May 27. (W. Va. Ins. Sur.).

GEOMETRID MOTHS - MARYLAND - Erannis tiliaria (linden looper) stripped 80-90 percent of foliage from 5-square-mile area on east slope of Catoclin Mountains. Completely controlled by naturally occurring disease with symptoms of nuclear polyhedrosis virus. (U. Md., Ent. Dept.). SOUTH DAKOTA - Palaemonia vernata (spring cankerworm) injury on shelterbelts and other trees in Bennett, Faulk, and Deuel Counties. (Kantack). NEBRASKA - P. vernata defoliated elms in Scotts-bluff County. (Hagen).

OAK LEAF TIER (Croesia semipurpurana) - WEST VIRGINIA - Larvae of this species and Pseudexentera cressoniana (an Olethreutid moth) pupating in southern Pocahontas County. Larvae still in higher elevations June 10. These insects and severe frost seriously damaged oaks over a wide range in county. (W. Va. Ins. Sur.).

FOREST TENT CATERPILLAR (Malacosoma disstria) - MINNESOTA - Larvae 1-1.5 inches long. Defoliation apparent from Ray to Loman in International Falls area of Koochiching County. Larvae migrating across U.S. Highway 53 at Ericksburg and State Highway 11 at Loman. Some migration even though food supplies not exhausted. Defoliation as high as 70 percent on aspen in some areas. (Minn. Pest Rpt.).

SADDLED PROMINENT (Heterocampa guttivitta) - NEW HAMPSHIRE - Trapped 1,734 moths in blacklight trap May 23 to June 1 at Ossipee, Carroll County, area of potential defoliation. (Mason). Trapped 5,547 moths at Ossipee June 1-4. (Blickle).

FALL WEBWORM (Hyphantria cunea) - TENNESSEE - Light numbers becoming widespread. Damage light in many areas. (Gordon). NEW HAMPSHIRE - Collected 4 moths in blacklight trap at Lee, Strafford County. (Morse).

ELM LEAF BEETLE (Pyrrhalta luteola) - IDAHO - First larval feeding of season June 2 in Gooding County. (Koester). First eggs April 29 and first larvae June 5 at Parma, Canyon County. (Scott). COLORADO - Larval feeding heavy on Mesa County elm. Controls recommended. (Sisson). KANSAS - First-generation larvae migrating down trunks; about 10 percent pupation in Riley County. (Simpson). NEBRASKA - Damage heavy along streams in Boyd County. (Gustafson).

CHRYSOMELID BEETLES - TENNESSEE - Adults and immatures of Chrysomela scripta complex (cottonwood leaf beetles) continue extensive damage to native willows and elder bushes across State. (Cagle, Gordon). KANSAS - Calligrapha scalaris (elm calligrapha) destroyed 50 percent of leaves on some American elms in Sedgwick and Harvey Counties. Larvae nearly full grown. (Redding).

PERIODICAL CICADAS (Magicicada spp.) - WEST VIRGINIA - Magicicada sp. adults emerged in Mineral County May 24. Adults heavy. Flagging on oaks in Hardy, Hampshire, Morgan, Berkeley, and Jefferson Counties June 3. (W. Va. Ins. Sur.). VIRGINIA - M. septendecim heavy and widespread throughout Shenandoah, Warren, and Frederick Counties. Should cause "fired" branches and twigs later in season. (Allen). TENNESSEE - M. septendecim egg laying damage heavy in Sullivan, Washington, and Greene Counties. (Williams, June 5).

AN APHID (Myzocallis boernerii) - CALIFORNIA - Infested oaks in courthouse yard at San Bernardino, San Bernardino County. Collected by P. Prescott in 1970. This is a new county record. (Cal. Coop. Rpt.).

MAN AND ANIMALS

SCREW-WORM (Cochliomyia hominivorax) - Total of 4 cases reported in U.S. June 7-13 as follows: TEXAS - El Paso, Crane; ARIZONA - Santa Cruz, Yuma. Total of 43 cases reported in portion of Barrier Zone in Republic of Mexico as follows: Baja California 1, Sonora 31, Chihuahua 10, Nuevo Leon 1. Total of 19 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 34,998,000; New Mexico 1,120,000; Arizona 8,380,000; California 460,000; Mexico 115,050,000. (Anim. Health Div.).

HORN FLY (Haematobia irritans) - IDAHO - Annoying, averaged 100 per head at Gooding, Gooding County. (Koester). OKLAHOMA - Averaged 400 per head of cattle in Payne County. Moderate in Craig, Cleveland, and Garvin Counties. (Okla. Coop. Sur.). MISSISSIPPI - Counts per head by county: Attala 35 on 250 head, Rankin 200 on 150, Hinds 100 on 408, and Tishomingo 50 on 125 head. (Sartor). MISSOURI - Adults on 2 untreated herds ranged 3-80 (averaged 16.5) and 50-450 (averaged 233.6) in Boone County. (Thomas). NORTH DAKOTA - Built up to economic levels in west-central counties. Ranged 300-1,000 (averaged 500) per yearling heifer in Dunn County. (Brandvik). WISCONSIN - Lightly annoyed cattle in Columbia and St. Croix Counties. (Wis. Ins. Sur.). SOUTH CAROLINA - Appearing over State. (Kissam, June 10). MARYLAND - Adults 60-200 per head on 20 steers near Westminster, Carroll County. (U. Md., Ent. Dept.). VERMONT - Ranged 50-75 per head at Hinesburg, Chittenden County. (Nielsen, June 9).

FACE FLY (Musca autumnalis) - MISSOURI - Adults on 2 untreated herds ranged 0-50 (averaged 9.6) and 8-50 (averaged 15.9) in Boone County. (Thomas). WISCONSIN - Lightly annoying cattle in Columbia and St. Croix Counties. (Wis. Ins. Sur.). SOUTH CAROLINA - Beginning to build up in Iconee County. (Kissam, June 10). VIRGINIA - Adults averaged 5 per cow on about 30 cattle in Albemarle County. (Allen). MARYLAND - Ranged 5-30 per head on cattle in Frederick, Montgomery, and Baltimore Counties. (U. Md., Ent. Dept.).

HOUSE FLY (Musca domestica) - GEORGIA - Larvae breeding in turkey, horse, swine, beef, and poultry operations over State. (Nolan, June 5). SOUTH CAROLINA - Seemed to be worst this spring than observer could remember. Especially bad around poultry, cattle, and hog feedlot operations. (Kissam, June 10).

STABLE FLY (Stomoxys calcitrans) - GEORGIA - Adults averaged 8 per horse in De Kalb County. (Snoddy, Nolan, June 6). WISCONSIN - Slightly to moderately annoyed dairy cattle in Chippewa, Calumet, and Columbia Counties. No significant biting elsewhere. Some spraying in Chippewa and Clark Counties. (Wis. Ins. Sur.).

MOSQUITOES - NEVADA - Aedes melanimon adults heavy in Reese River Valley, Lander County. (Lundahl, Peters). UTAH - Annoying from Wellsville to Lewiston in Cache County, and in several Box Elder County farm areas. (Knowlton et al.). MINNESOTA - A. vexans 87.5 percent of 4,146 females collected in light traps at Minneapolis and St. Paul week ending June 5; A. cinereus 5 percent. A. vexans in 78 percent of larval collections; A. cinereus in 5 percent. Of 113 mosquitoes in evening bite collections (15-minute periods), A. cinereus 49, A. vexans 33, and A. stimulans 13. Of 310 collected in 5-minute daytime biting collections, A. vexans 116, A. cinereus 68, A. stimulans 53, and A. sticticus 30. Heavy brood emerged on schedule June 5-8. Light trap collections increased sharply June 8-12. Will peak about June 14. Should begin to decline week of June 15. Biting heavily in Carver, western Hennepin, McLeod, and Wright Counties. (Minn. Pest Rpt.). WISCONSIN - Hot weather accelerated development and biting, particularly in wooded lowlands. Some biting in upland areas and some at midday. Most intense biting at about 9:00 p.m. In Black River bottoms of Trempealeau and La Crosse Counties, evening biting severe enough to discourage very dedicated fishermen. Heavy in Walworth, Winnebago, Richland, and Racine Counties. (Wis. Ins. Sur.).

DEER FLIES - OKLAHOMA - Chrysops spp. 0.5-1 per head of cattle in Payne and Noble Counties. (Okla. Coop. Sur.). MINNESOTA - First reports of Chrysops sp. from west of Minneapolis and St. Paul. (Minn. Pest Rpt.). WISCONSIN - Numerous. Biting humans in southern counties. (Wis. Ins. Sur.). INDIANA - Mostly C. callidus or C. niger in north-central and northeast districts. (Meyer). OHIO - Becoming numerous and annoying throughout State. Heavy in wooded areas in Muskingum and Geauga Counties. (Roach). VIRGINIA - Chrysops sp. adults very annoying along Pamunkey River near West Point, King William County. (Davis). Annoying man and wildlife in woods surrounding Blacksburg, Montgomery County. (Allen). DELAWARE - Second Neochrysops globosus specimen (female) found in State. Swept from field of daisies along Christiana River near Newark, New Castle County, by D.S. Lesiewicz June 26, 1969. Determined by E.P. Catts. (Burbutis et al.). VERMONT - Chrysops cuclux, C. indus, and other species annoying livestock. (Nielsen, June 9).

HORSE FLIES - VERMONT - Hybomitra lasiophthalma abundant and annoying cattle, 20-25 per head and 3-4 per teat, and horses at Hinesburg, Chittenden County. (Nielsen, June 9). MISSISSIPPI - Tabanus spp. 8 per head on 250 animals in Attala County and 10 per head on 50 animals in Tishomingo County. (Sartor). OKLAHOMA - Tabanus spp. 1-4 per head on cattle in Payne and Noble Counties. (Okla. Coop. Sur.).

AMERICAN DOG TICK (Dermacentor variabilis) - WISCONSIN - Heavy in Clark, Dunn, Vilas, and Chippewa Counties. Problem as far south as Calumet, Fond du Lac, and Columbia Counties. (Wis. Ins. Sur.). NEBRASKA - Numerous in recreation areas of Box Butte and Lancaster Counties. (Andersen, Roselle).

STORED PRODUCTS

A DARKLING BEETLE (Tribolium brevicornis) - IDAHO - Collected from Megachile rotundata (alfalfa leafcutter bee) nest at Caldwell, Canyon County, by H. Homan May 8, 1970. Determined by T.J. Spilman. This is a new State record. Also collected from Nez Perce County May 18, Idaho County May 21, and Boundary County June 4. These are new county records. (Portman et al.).

BENEFICIAL INSECTS

LADY BEETLES - ARKANSAS - Hippodamia convergens (convergent lady beetle) increased greatly on northwest area alfalfa. Adults 200-300 in 100 sweeps in Washington County; no larvae. Adults probably moved recently to alfalfa from maturing small grain and other spring vegetation. (Boyer). OKLAHOMA - H. convergens adults 2-15 per 10 sweeps of alfalfa in McClain, Garvin, Stephens, Jefferson, and Tillman Counties. Larvae common in more southern counties. (Okla. Coop. Sur.). WYOMING - Unspecified adults 0-5 per 10 sweeps of alfalfa in Carbon, Sweetwater, Uinta, Lincoln, Teton, Park, Washakie, and Big Horn Counties. Heaviest in Washakie County. (Parshall).

CHINESE MANTID (Tenodera aridifolia sinensis) - SOUTH CAROLINA - Egg cases from York County. This is a new county record. (Nettles, June 10).

A FLOWER BUG (Orius insidiosus) - OKLAHOMA - Adults 5-20 per 10 sweeps of alfalfa in several central, south-central, and southwest counties. (Okla. Coop. Sur.).

DAMSEL BUGS (Nabis spp.) - WYOMING - Adults averaged 3 per 10 sweeps of alfalfa in Park, Big Horn, and Washakie Counties. (Parshall). MASSACHUSETTS - Most plentiful beneficial insects, 5 in 100 sweeps of alfalfa, in Berkshire County field. (Jensen).

ALKALI BEE (Nomia melanderi) - IDAHO - Males first emerged June 6 near Homedale, Owyhee County. (Waters). WASHINGTON - Pupating May 30 at north Sunnyside, Yakima Valley. Emergence of males and first few females starting to renest during hot weather June 2-6 in Franklin and Walla Walla County nesting sites; 5,000 cubic-foot soil cores of larvae moved into new or renovated nest sites during April and May. (Menke et al.).

ALFALFA LEAFCUTTER BEE (Megachile rotundata) - IDAHO - First emerged June 2 at Marsing, Owyhee County. (Wilson). First emerged under natural conditions June 5 in Canyon County. Cool spring could delay general emergence 5-10 days later than in prior years. (Waters).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Overwintered adults increased on wing traps below Caprock, few caught above Caprock in Floyd County, and one in seedling cotton in Kent County. Four overwintered adults on wing traps in Andrews County for first confirmed evidence of established infestations in this area. Very light during October of 1968 and in 1969 in Andrews County. These infestations potential threat to cotton in South Plains and in New Mexico. (Rummel, Clymer). For Boll Weevil in other areas see page 403.

CEREAL LEAF BEETLE (Oulema melanopus) - Larvae light on oats on farms for following new county records. All determined by R.E. White. VIRGINIA - Collected at Deerfield, Augusta County, by M.A. Saucier June 10. ILLINOIS - In Banner Township, Effingham County, by R.H. Vaughan June 1. In Sargent Township, Douglas County, by Bradford June 4. In Wilson Township, De Witt County, on June 9. (PPD). INDIANA - Larvae 2-3 per oat stem at New Carlisle, St. Joseph County. (Shade). This level of infestation approached only in southeastern corner of northeast district with up to 80 per sweep. Larvae reached 40 per linear foot in one field and averaged 14 per linear foot in another. Northeast district averaged 16 per sweep compared with 7 per sweep in north-central district excluding above heavily infested areas. No fields infested enough to warrant treatment (Meyer) except in New Carlisle area (Shade). OHIO - Egg deposition completed. Most in third to fourth instar in central area. Some pupation. (Treece). WEST VIRGINIA - Adults 1 per 100 sweeps of oats in Hardy County June 1. One larva in visual survey on Johnson grass in Hampshire County June 4. (W. Va. Ins. Sur.).

EUROPEAN CRANE FLY (Tipula paludosa) - WASHINGTON - Very heavy, as high as 60 larvae per square foot, in lawn at Blaine airfield, Birch Bay, Whatcom County. (Landis).

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) - WASHINGTON - First adults June 1 at Puyallup, Pierce County. (Barstow).

GIANT AFRICAN SNAIL (Achatina fulica) - FLORIDA - Counts on 22 properties May 4 to June 8 in generally infested area of Miami, Dade County, revealed: Live 171, dead 477, and estivating 17. (PPD).

GRASS BUGS - UTAH - Labops hesperius averaged 500 per square foot at Blubber Creek, Garfield County, on crested wheatgrass. Active elsewhere at higher altitudes on range grasses. Sprays applied to 1,400 acres of crested wheatgrass at Alton, Kane County, and 160 acres in Heward Canyon, Garfield County. (Judd, Knowlton). Irbisia sp., 10 per square foot, damaged crested wheatgrass northeast of Cove Fort, Millard County. (Judd). WYOMING - L. hesperius infested about 500 acres of crested wheatgrass near Cheyenne, Laramie County. (Spackman).

GRASSHOPPERS - NEW MEXICO - Ranged 12-45 per 25 sweeps of Sandoval County alfalfa. (Heninger). WASHINGTON - Melanoplus sanguinipes and Aulocara eliotti first to fourth instars up to 30-40 per square yard in Okanogan County. Mostly Camnula pellucida and M. sanguinipes heavy on 16,000-20,000 acres west of Tonasket, Okanogan County; treatment needed. (Nonini, Jackson). WYOMING - Early species of range grasshoppers continuing to hatch and some late species starting to hatch at Glendo, Platte County. All totaled 34 per 100 square feet. Ageneotettix deorum (12.5) and Amphitornus coloradus (7) dominant. (Pfadt). NEBRASKA - Brachystola magna 2-3 per square yard on 400 acres of rangeland in Greeley County. (Nielsen). MINNESOTA - General hatch of M. bivittatus started in east-central, southeast, and central districts; up to 10 per square yard in alfalfa. M. femurrubrum eggs in eyespot to early segmentation stage in these districts. Light hatch of M. bivittatus in east Otter Tail County; most eggs segmented. (Minn. Pest Rpt.).

GYPSE MOTH (Porthetria dispar) - RHODE ISLAND - Larval damage observed June 1 in Providence, Kent, and Washington Counties. (Relli, Field).

JAPANESE BEETLE (Popillia japonica) - ALABAMA - Feeding and mating on elderberry, wild grape, roses, sycamore and wisteria at Anniston, Calhoun County. (Green et al.). TENNESSEE - First adults of year in Hamby Valley, Monroe County. (PPD). SOUTH CAROLINA - First of season and earliest ever noted in State in Oconee County May 31. (Baxter, Nettles). First report in Pickens County June 1 on roses. Appeared in apple orchard in same county weekend of June 7. Predict population will approach destructive numbers next 2 weeks. (Kissam). WEST VIRGINIA - First adults of season June 7 in Kanawha County. (W. Va. Ins. Sur.). MARYLAND - First of season in Prince Georges County. (U. Md., Ent. Dept.). NEW HAMPSHIRE - Larvae 20 per square foot in golf course at Hillsboro County. No pupae June 4. (Conklin).

PINK BOLLWORM (Pectinophora gossypiella) - Sterile moth releases June 5-11. CALIFORNIA - Coachella Valley 4,074,500, total to date 45,978,750; Kern County 1,200,000, total to date 9,971,700. ARIZONA - Redington, Pima County, 89,800; total to date 427,300. In Coachella Valley, 134 rosetted blooms found in 8 fields; 124 were in 3 cotton fields totaling 160 acres. (PPD). NEW MEXICO - Two adults in hexalure traps in south Dona Ana County. (N.M. Coop. Rpt.).

WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) - CALIFORNIA - Survey in Sacramento, Placer, El Dorado, and Yolo Counties negative. Last live collection of this pest in these areas in 1968. (Cal. Coop. Rpt.).

WHITE-FRINGED BEETLES (Graphognathus spp.) - GEORGIA - Light in peanuts week ending June 6 in Decatur County (Wheeler) and in Macon County (Lanier). ALABAMA - First adults of season collected on wild daisy in Jefferson County June 2. Adults collected June 4 in Houston and Mobile Counties. Peak emergence expected July 1-15. (Green, Gardenhire).

HAWAII INSECT REPORT

New Western Hemisphere Record - An ADELGID (Pineus pini (Macquart)) heavy on 50 Pinus pinaster trees at Waikii, Hawaii. Collected by S. Kobayashi in April 1970. Determined by M. Inouye. First occurrence of family Adelgidae in State. (Davis). Eradication attempts continue through chemical applications. (Kawamura).

New State Record - Specimens of a DERMANYSSID MITE (Ophionyssus natricis) collected May 17, 1970, by C.K. Yasuda from boa constrictor found in hotel room at Waikiki, Oahu. Determined by F.J. Radovsky. This blood-sucking mite is a serious pest in reptile collections and a vector of a bacterial agent (Aeromonas hydrophila), which causes a frequently fatal hemorrhagic septicemia in snakes. (Radovsky). Seldom found on wild reptiles, mite has been taken from lizards, and once from a rat and from man. (PPD).

Fruits and Nuts - COCONUT SCALE (Aspidiotus destructor) generally trace to light on coconut trees and in papaya fields in windward Oahu, and on coconut trees at Keehi Lagoon Park, Oahu. Remains moderate on fronds of 25 coconut trees at Koko Head, Oahu; larvae of a LADY BEETLE (Telsimia nitida) moderate on some infested pinnae. COCONUT LEAF ROLLER (Hedylepta blackburni) larvae light on 3 of 12 coconut trees examined at Keehi Lagoon Park; negligible on most coconut trees in windward Oahu. (Au, Kawamura).

Forest and Shade Trees - KOA BUG (Coleotichus blackburniae) egg cluster, completely parasitized by a SCELIONID WASP (Trissolcus basalis), collected from Acacia koa at Manoa, Oahu, by C. Oda. (Mau).

Beneficial Insects - A PUNCTURE-VINE STEM WEEVIL (Microlarinus lypriformis) affected 82 percent of 100 Tribulus terrestris internodes on Maui. Negative in 30 internodes of same weed species examined at Puunene. Damaged 95 percent of 100 T. cistoides internodes examined at Kahului; negative in similar sampling of same host at Waikapu and Kihei. (Miyahira).

Miscellaneous Pests - Total of 646 GIANT AFRICAN SNAIL (Achatina fulica) specimens (mostly juveniles) destroyed at Poipu, Kauai, and 14 at Wahiawa during May. Poison bait applications continue in both areas. Many dead snails in treated areas at Kona, Hawaii, where light infestations discovered last month. (Sugawa, Yoshioka). CLUSTER FLY (Pollenia rudis) adults heavy in pastures at Kahua Ranch, Hawaii; residents reported no activity (to coincide with Kahua Ranch activity) at Volcano. (Yoshioka).

DETECTION

New Western Hemisphere Record - An ADELGID (Pineus pini (Macquart)) HAWAII - Hawaii Island (p. 413).

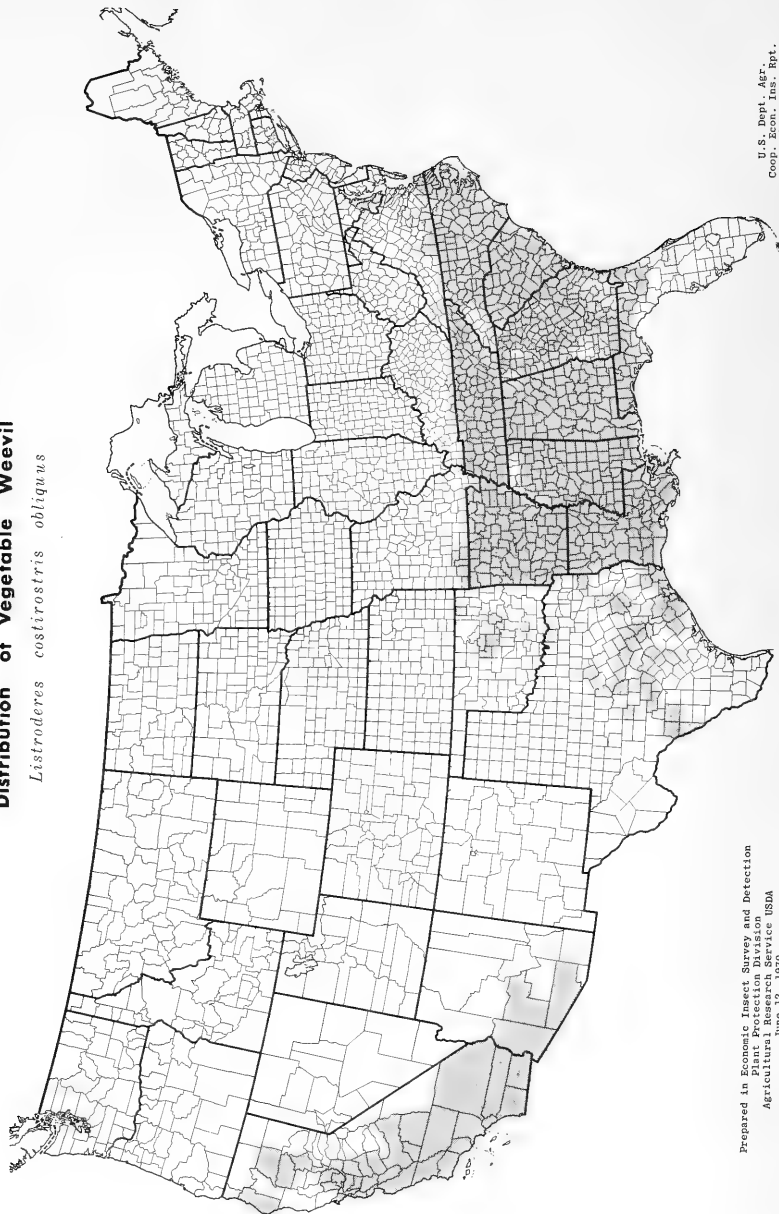
New North American Record - A SARCOPHAGID FLY (Oxysarcodexia australis (Aldrich)) - ARIZONA - Two flies taken in McPhail fruit fly traps in citrus groves at Yuma, Yuma County. Collected by L.K. Winks February 25, 1970. Determined by R.J. Gagne. Previously known from Peru, Columbia, and Costa Rica. (Ariz. Coop. Sur.). Economic significance is not known. (PPD).

New State Records - A DARKLING BEETLE (Tribolium brevicornis) IDAHO - Canyon County (p. 410). A DERMANYSSID MITE (Ophionyssus natricis) HAWAII - Oahu Island (p. 413). A HARVESTER ANT (Pogonomyrex salinus) IDAHO - Oneida County (p. 401). HOLLYHOCK WEEVIL (Apion longirostre) DELAWARE - New Castle County (p. 408). A LACE BUG (Stephanitis takeyai) PENNSYLVANIA - Dauphin County (p. 408). A LEAFHOPPER (Idona minuenda) CALIFORNIA - Los Angeles County (p. 407).

New County Records - ALFALFA WEEVIL (Hypera postica) OKLAHOMA - Jefferson, Stephens (p. 402). An APHID (Myzocallis boernerii) CALIFORNIA - San Bernardino (p. 409). CEREAL LEAF BEETLE (Oulema melanopus) ILLINOIS - De Witt, Douglas, Effingham; VIRGINIA - Augusta (p. 411). CHINESE MANTID (Tenodera aridifolia sinensis) SOUTH CAROLINA - York (p. 411). A CONIFER SAWFLY (Neodiprion pratti pratti) WEST VIRGINIA - Braxton, Clay, Jackson, Mason, Pocahontas, Putnam, Randolph, Roane, Upshur, Wood (p. 408). A DARKLING BEETLE (Tribolium brevicornis) IDAHO - Boundary, Idaho, Nez Perce (p. 410). PEAR PSYLLA (Psylla pyricola) UTAH - Box Elder (p. 406). WHEAT STEM SAWFLY (Cephus cinctus) WISCONSIN - Manitowoc (p. 401).

Distribution of Vegetable Weevil

Listroderes costirostris obliquus



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Cooperative
**ECONOMIC INSECT
REPORT**

Issued by

**PLANT PROTECTION DIVISION
AGRICULTURAL RESEARCH SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE**



AGRICULTURAL RESEARCH SERVICE

PLANT PROTECTION DIVISION

ECONOMIC INSECT SURVEY AND DETECTION

The Cooperative Economic Insect Report is issued weekly as a service to American Agriculture. Its contents are compiled from information supplied by cooperating State, Federal, and industrial entomologists and other agricultural workers. In releasing this material the Division serves as a clearing house and does not assume responsibility for accuracy of the material.

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**Economic Insect Survey and Detection
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United States Department of Agriculture
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Hyattsville, Maryland 20782**

COOPERATIVE ECONOMIC INSECT REPORT**HIGHLIGHTS**Current Conditions

EUROPEAN CORN BORER moths heavy in blacklight traps in Michigan. (p. 420).
CORN ROOTWORMS hatching in Minnesota and Indiana. (p. 421).

ALFALFA WEEVIL larval damage increased on alfalfa in Vermont and in areas of Utah. (p. 422). PEA APHID heavy on alfalfa in New Mexico, increased in Colorado; and heavy on peas in Wisconsin. (pp. 422, 425).

BOLL WEEVIL appearing in damaging numbers in Alabama; infestations increased in south Georgia. (p. 423).

RED-BANDED LEAF ROLLER damaging crab apple and apple in Colorado. (p. 426).

LARGE ASPEN TORTRIX defoliation heavy on aspen in Minnesota. SATIN MOTH larvae defoliated willow and poplar in Idaho. (p. 429).

GYPSY MOTH larval defoliation expected to be heavy in north and central New Jersey; defoliation expected on about 100,000 acres in New York, and several thousand acres in Pennsylvania. (p. 433).

Detection

For new county records see page 434.

Special Reports

Distribution of Lesser Grain Borer. Map. (p. 436).

Cereal Leaf Beetle Quarantine Map. Centerfold.

Reports in this issue are for week ending June 19 unless otherwise indicated.

CONTENTS

Special Insects of Regional Significance.....419

Insects Affecting

Corn, Sorghum, Sugarcane.....	420	Beans and Peas.....	425
Small Grains.....	421	Cole Crops.....	425
Turf, Pastures, Rangeland.....	421	General Vegetables.....	425
Forage Legumes.....	422	Deciduous Fruits and Nuts.....	426
Soybeans.....	423	Citrus.....	427
Peanuts.....	423	Other Trop. & Subtrop. Fruits.....	428
Cotton.....	423	Small Fruits.....	428
Tobacco.....	424	Ornamentals.....	428
Sugar Beets.....	424	Forest and Shade Trees.....	428
Potatoes, Tomatoes, Peppers.....	425	Man and Animals.....	430

Beneficial Insects.....432

Federal and State Plant Protection Programs.....432

Hawaii Insect Report.....434

Detection.....434

Corrections.....434

Light Trap Collections.....435

Distribution of Lesser Grain Borer. Map.....436

Cereal Leaf Beetle Quarantine Map. Centerfold.

WEATHER BUREAU'S 30-DAY OUTLOOK

MID-JUNE TO MID-JULY 1970

The Weather Bureau's 30-day outlook for mid-June to mid-July is for temperatures to average above seasonal normals in the northeastern quarter of the Nation. Below normal temperatures are indicated for the south Atlantic and east Gulf Coast States as well as the intermountain region and the western half of the Great Plains. Elsewhere near normal temperatures are in prospect. Precipitation is expected to exceed normal over the northern half of both the intermountain region and the Great Plains as well as over the south Atlantic Coast States. Subnormal precipitation is indicated for the Ohio and Tennessee Valleys, the middle and north Atlantic Coast States and the southern Plateau. In unspecified areas near normal precipitation is in prospect.

Weather forecast given here is based on the official 30-day "Resume and Outlook" published twice a month by the Weather Bureau. You can subscribe through the Superintendent of Documents, Washington, D.C. 20250. Price \$5.00 a year.

WEATHER OF THE WEEK ENDING JUNE 22

HIGHLIGHTS: Considerable severe weather occurred in mid-America early in the week. In general, warming trends occurred over the West and South and a cooling trend occurred over the North Central and Northeast.

PRECIPITATION: Light showers, mostly of little importance, fell from the far Northwest to the northern Rocky Mountains early in the week. Much heavier showers fell in the central part of the Nation early in the week in connection with a storm centered in that area and along a cold front that separated warm moist gulf air from an advancing dry continental air mass. Numerous tornadoes occurred from Kansas to Michigan and Ohio. A dozen or more touched down in Kansas. Thunderstorms, many accompanied by damaging winds or large hail, occurred in the warm moist air. Gusts reached 92 m.p.h. at Norfolk, Nebraska, Monday afternoon. Hailstones up to 2 inches in diameter fell in the Red Oak, Iowa, vicinity Wednesday. Late Thursday evening, hail accumulated to 10 inches in depth about 10 miles south of Oberlin, Weather of the week continued on page 435.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

ARMY CUTWORM (Chorizagrotis auxiliaris) - NORTH DAKOTA - Treated 75 acres of sugar beets west of Hoople, Walsh County. (Kaatz).

ARMYWORM (Pseudaletia unipuncta) - KANSAS - Larvae 1 per square foot in bromegrass harvested week of June 6-12 in Brown County. (Goertz). VIRGINIA - Overwintered generation pupated in Montgomery County, some moths flying. Possible damage to whorls of corn from this generation; infestation in whorls generally spotty. (Allen). MICHIGAN - Larvae damaged corn in Newaygo County field. Counts higher locally than for past 6 years, no further damage. (Ruppel, June 15). WISCONSIN - Larvae 1 per 10 sweeps in most alfalfa in northeast. Completely devoured few cornfields adjacent to alfalfa being cut in La Crosse County. Few moths laying eggs in rank peafields. (Wis. Ins. Sur.). ILLINOIS - Expect moth increase within next 3-4 weeks. Few moths present. (Sur. Bull.). IOWA - Damaged corn in isolated areas; less than 1 per square foot in bromegrass pastures in Guthrie County June 9. Currently none in oatfields checked in Pottawattamie, Shelby, Adair, and Boone Counties. Counts per 100 sweeps: 8 near Stanhope, Hamilton County; 3 in margin of oatfield near Des Moines, Polk County; 1 larva per 10 sweeps near Redfield, Dallas County. (Iowa Ins. Inf.). MINNESOTA - Noneconomic in southwest, south-central, central, west-central, and lower Red River Valley areas. Larvae light in small grains and alfalfa, most common in roadside grasses. Blacklight trap moth collections still high in Crookston and Fergus Falls. Moths throughout central district in small grain and grass. Some pupation in central district, most larvae in third and fourth instars. (Minn. Pest Rpt.). SOUTH DAKOTA - Ranged 8-14 per square foot in 2 ryefields (150 acres) northwest of Huron, Beadle County. Larvae 4-8 per square foot in additional ryefields and one winter wheatfield in Beadle County. Spotty, averaging 4-5 per square foot in some areas of ryefield near Mitchell, Davison County. Heavy in ryefields, moving into corn; controls applied in Turner County. Heavy, 14-20 per square foot, in ryefield near Doland, Spink County; light to scattered in wheat. Larvae over 4-6 per square foot throughout field and 15-20 per square foot in lodged areas on 140 acres of rye in Brookings County. Mostly early instars. (Kantack et al.).

ASTER LEAFHOPPER (Macrostoteles fascifrons) - MICHIGAN - Bioassays indicate about 3 percent infected with aster yellows virus; more than in 1968 and 1969 but less than 1967. (Janes, Bath). WISCONSIN - Ranged 1-30 per 100 sweeps of small grain. Populations generally higher in western counties; heavy in some eastern counties. (Wis. Ins. Sur.). MINNESOTA - Ranged 0-500 per 100 sweeps in west-central and 40-700 in central district on small grain and alfalfa. Second-generation nymphs heavy in southwest district, ranged 1,000-1,200 per 100 sweeps. (Minn. Pest Rpt.). NORTH DAKOTA - Widespread and light in Dickey, Sargent, and Richland Counties. Adults up to 14 per 100 sweeps of flax, wheat, barley, and rye. (Brandvik).

BET LEAFHOPPER (Circulifer tenellus) - TEXAS - Medium locally at Matador, Motley County. Apparently transmitting curly top to pea and tomato plants. (Pallmeyer).

CORN EARWORM (Heliothis zea) - FLORIDA - Damaged 99-100 percent of ears in unsprayed plots of sweet corn at Belle Glade, Palm Beach County. (Janes, June 8). GEORGIA - Scattered and light on peanuts in south areas. (Morgan). TENNESSEE - Larvae feeding in whorls of early planted corn in west area. Damage light. (Gordon et al.). TEXAS - Light to moderate on Kinney County grain sorghum. Light on El Paso County corn. (Neeb). KANSAS - Feeding light in whorls of less than 5 percent of corn plants checked in Neosho County. (Brooks). INDIANA - Middle instars in whorls of inbred corn in Decatur County on June 15. Only occasional 40-inch corn damaged. (Meyer).

CORN LEAF APHID (Rhopalosiphum maidis) - NEW MEXICO - Light to medium on young grain sorghum in Dona Ana County. Some controls applied on grain sorghum in Cotton City area of Hidalgo County. (N.M. Coop. Rpt.). TEXAS - Generally light on grain sorghum in most central and Blacklands counties. Heavy on isolated young grain sorghum in Pecos County. Light in isolated fields of Hudspeth and

Culberson Counties. Corn leaf aphid light to heavy in Rolling Plains. Increasing in panhandle. Some very heavy populations near Lubbock, Lubbock County. (Green et al.). OKLAHOMA - Ranged 200-400 per plant on Jackson County grain sorghum. Light to moderate in Ottawa County. Light on volunteer plants in panhandle. (Okla. Coop. Sur.). KANSAS - Light on sorghum in Jackson, Atchison, Brown, Nemaha, Riley, Dickinson, Marion, and Morris Counties. (Simpson).

GREENBUG (*Schizaphis graminum*) - ARIZONA - This species and *Rhopalosiphum maidis* (corn leaf aphid) heavy in spots on corn and sorghum at Kansas Settlement, Bonita, and Stewart district areas of Cochise County. Lady beetles and lacewing adults and larvae moderate. Some areas importing lady beetles. (Ariz. Coop. Sur.). NEW MEXICO - Greenbug very light on grain sorghum in Dona Ana County. (N.M. Coop. Rpt.). TEXAS - Light on grain sorghum in several central counties. Few isolated colonies in Burleson, Williamson, and Milam Counties. Very light in El Paso, Hudspeth, Reeves, and Pecos Counties. Light, noneconomic, in Blacklands and panhandle areas. Heavier, but noneconomic, on grain sorghum in Knox, Wichita, and Wilbarger Counties. Ranged 200-300 on underside of lower leaf in Knox County. (Green et al.). OKLAHOMA - Ranged 15-100 per grain sorghum plant in Jackson County. Ranged 15-50 per leaf on occasional leaves in Payne County. Light on volunteer plants in some fields in panhandle areas. Ranged 10-50 per plant in Ottawa County. (Okla. Coop. Sur.). KANSAS - Noneconomic on sorghum in Neosho, Nemaha, Brown, Jackson, Atchison, Riley, Gray, Morris, Dickinson, Geary, and Clay Counties. (Simpson). COLORADO - Ranged 0-8 per plant on all sorghum and small grain in Arkansas Valley; noneconomic as of June 13. (Burchett).

PICKLEWORM (*Diaphania nitidalis*) - FLORIDA - Larvae severe on 90 percent of 200 squash plants at Brandon, Hillsborough County. (Simmons, June 5).

POTATO LEAFHOPPER (*Empoasca fabae*) - MARYLAND - Building up in alfalfa in central counties. Heaviest, 1-4 per sweep. (U. Md., Ent. Dept.).

POTATO PSYLLID (*Paratrioza cockerelli*) - WYOMING - Adults 14 and nymphs 10 per 50 sweeps on *Lycium* at Torrington, Goshen County. (Lawson, Parshall). COLORADO - Adults per 100 sweeps of potatoes ranged 8-12 in Weld County; 0-3 in Arkansas Valley (8-10 in some fields in Pueblo County); and 0-2 in Morgan County, controls applied. (Burchett, Johnson). Adults per 100 sweeps of tomatoes ranged 0-2 in Arkansas Valley, averaged 6 in few fields in Otero County. (Burchett). TEXAS - Adults moderate on potatoes in Culberson County; heavy in Gaines County. Nymphs 10-50 per plant. (Neeb et al.).

SPOTTED ALFALFA APHID (*Therioaphis maculata*) - ARIZONA - One per sweep in one alfalfa field in Yuma County. (Ariz. Coop. Sur.). NEW MEXICO - Heavy on alfalfa in areas of Chaves, Eddy, and Dona Ana Counties. (Mathews).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (*Ostrinia nubilalis*) - GEORGIA - Damage light to severe to corn in Houston County (Wheichel et al.); infestations scattered in south areas (Womack). ALABAMA - First-generation larvae light on older corn. Expect second-generation infestations to increase in northern areas. (McQueen). TENNESSEE - Larvae light to moderate on early planted corn in west area. Some fields heavily infested; expect little damage in early planted corn. Later generations may cause damage to late corn in this area. (Gordon et al.). MARYLAND - Heaviest infestations on early corn ranged 30-70 percent in Talbot, Dorchester, Wicomico, and Worcester Counties. First to third instars in all counties on Eastern Shore. First and second instars on corn in Prince Georges, Frederick, Carroll, and Montgomery Counties. (U. Md., Ent. Dept.). INDIANA - Larvae average 2 per stalk in corn 30+ inches in height in southern district; 55 percent of plants showed leaf damage. Because of lateness of corn there has been oviposition on corn unsuitably young. Adults, still frequent along northern roadsides, mostly disappeared in southern districts. (Meyer). MICHIGAN - Blacklight collections at many sites 100+ per night during week ending June 15; high count of 138 at Lenawee

County site June 8. Eggs hatched about June 10. (Newman). WISCONSIN - Spring-brood flight peaked; eggs 4 per 100 plants in more advanced areas of western Dane County. No leaf feeding detected. (Wis. Ins. Sur.). MINNESOTA - European corn borer moths emerging and ovipositing in southern half of State. Pupation of overwintering larvae 70 percent. Moth emergence trace to 60 percent. (Minn. Pest Rpt.). ILLINOIS - Egg laying slow in northern two-thirds of State. Egg laying heaviest on western side and almost nonexistent on eastern side. Egg laying decreased significantly north and east of Henderson and Warren Counties. (Ill. Ins. Rpt.). IOWA - Larvae 22 per 100 plants in corn with Sudan grass and 2 per 100 plants in cultivated corn at Ankeny. Leaf feeding on 40 percent of plants in tall plantings on June 18. Larvae 60 per 100 plants with 80 percent first instar and 20 percent second instar. Maximum of 11 per plant on all corn in Missouri River bottoms from Sioux City south. Aerial controls underway. (Iowa Ins. Sur.). MISSOURI - Infestations on 0-83 percent of plants checked in southeast area. Larvae ranged 0.5-4 per corn plant. Very high percent entered stalks. Field in southwest area showed 55 percent of plants infested with 2.6 (mostly third instar) larvae per plant. Boring into stalks. (Huggans). Counts in central area showed 6-56 percent of plants with leaf feeding. (Thomas). No egg masses observed in southern and central areas. (Munson). KANSAS - Infested 10-65 percent of corn in Jefferson County. No unhatched eggs found. (Wilde). Noneconomic on corn in Pottawatomie, Jackson, Nemaha, Atchison, and Brown Counties. (Simpson).

STALK BORER (*Papaipema nebris*) - MISSOURI - Infestations in marginal rows of corn in central area. One field 45 percent infested in marginal 8 rows. (Thomas). KANSAS - Light in border rows of all fields examined in Neosho County. (Brooks).

SOUTHWESTERN CORN BORER (*Diatraea grandiosella*) - TENNESSEE - Light in early planted corn, little damage expected. Damage expected on late-planted corn. (Gordon et al.). ALABAMA - First-generation larvae in first to third instars in several fields of corn in Morgan County. Ranged 1-4 in 10 percent of stalks in 3-acre field in pretassel stage. (Rutledge et al.).

CORN ROOTWORMS (*Diabrotica* spp.) - MISSOURI - Last instars feeding on late corn in central area. (Thomas). MINNESOTA - Eggs hatched in southwest, south-central, and central districts. Counts low. (Minn. Pest Rpt.). INDIANA - First egg hatch of *D. longicornis* (northern corn rootworm) in Tippecanoe County on June 12. Second instars on June 16. (Gould).

SUGARCANE BEETLE (*Euethola rugiceps*) - ALABAMA - Adults damaged 20-25 percent of crowns of young corn in 50-acre planting in Lee County. (Teague, Cooksey).

BANKS GRASS MITE (*Oligonychus pratensis*) - COLORADO - Appearing on corn in Arkansas Valley. Noneconomic as of June 13. (Burchett).

SMALL GRAINS

HESSIAN FLY (*Mayetiola destructor*) - VIRGINIA - Damage medium on early seeded wheat in Lancaster County. Damage up to 10 percent on several farms. (McSwain).

ENGLISH GRAIN APHID (*Macrosiphum avenae*) - WISCONSIN - Increase noticeable. Averaged about 150 per 100 sweeps in Manitowoc, Calumet, and Sheboygan Counties. Averaged about 80 per 100 sweeps in Clark, Wood, and Marathon Counties. (Wis. Ins. Sur.).

TURF, PASTURES, RANGELAND

BANKS GRASS MITE (*Oligonychus pratensis*) - NEVADA - Heavy on 1,000 acres of crested wheatgrass near Lida, Esmeralda County. Reduced to subeconomic levels by rain and 4 inches of snow week of June 8. (Burris). Nymphs again increasing with hot, dry weather. Economic infestations could result again if this pattern continues. (Adams, Bechtel).

A SAWFLY (Dolerus collaris) - WASHINGTON - Mostly last instars averaged 10 per sweep in bluegrass seed fields not treated earlier near Rockford, Spokane County. (Johansen, Retan).

A GROUND PEARL (Margarodes meridionalis) - TEXAS - Moderate to heavy in isolated hybrid Bermuda grass lawns in El Paso County. (Wilson).

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - VERMONT - Damage increased, 50 percent tip damage in some alfalfa; occasionally severe. Larvae ranged 10-12 per sweep at Shoreham and Ferrisburg, Addison County. (Nielsen). OHIO - Damage finished for 1970. New adults and eggs less than 10 per square foot. An ichneumon wasp, probably Bathyplectes curculionis, found in Ross, Fayette, Butler, Shelby, Tuscarawas, Wayne, and Erie Counties. Parasitism ranged 50 percent in Butler County to 1 percent in Erie County. (Flessel). TENNESSEE - H. postica adults and larvae caused light damage in west area. Increase in damage expected unless controls applied. (Gordon). INDIANA - Except some fields in southeast district, larvae very light in southern district, and damage trace. NORTH DAKOTA - Adults and larvae, 2 per 100 sweeps, in unused alfalfa field north of Mandan, Morton County. This is a new county record. (Brandvik).

WASHINGTON - Up to 100 H. postica larvae and 5 winter adults per sweep in 370 acres of alfalfa near Pullman, Whitman County, June 12. Larval damage severe. (Johansen). IDAHO - Percent of tips infested: 20 at Hansen, Cassia County, June 10; 25 at Kimberly, Twin Falls County, June 15 with first and second instars. (Sutherland). NEVADA - Larvae 4-6 per sweep in alfalfa seed fields in Kings River Valley, Humboldt County. (Lundahl, Peters). No larvae or adults on alfalfa in Fish Lake Valley, Esmeralda County. (Adams, Bechtel). UTAH - Damage increased in many localities. Damage conspicuous in various localities, alfalfa appearing gray. Larvae averaged 50 per 25 sweeps in treated fields, 50 per sweep in untreated fields in Cache County. Harvest underway after storm front passed. (Davis et al.). Damaging at Monticello, San Juan County (Knowlton), and in parts of Box Elder County (Roberts). WYOMING - Larvae ranged 0-30 per 10 sweeps with light damage on alfalfa in Goshen, Platte, Converse, and Niobrara Counties. (Lawson, Parshall). COLORADO - Larvae ranged 0-500 per 100 sweeps in eastern area. Ranged 500-900 per 100 sweeps and damage moderate to heavy in some first-cutting fields where controls not applied. Adults ranged 0-50 per 100 sweeps. (Burchett, Johnson).

PEA APHID (Acyrtosiphon pisum) - NEVADA - Ranged 10-15 per sweep in alfalfa seed fields in Kings River Valley, Humboldt County. (Lundahl, Peters). Ranged 15-60 per sweep in Fish Lake Valley, Esmeralda County, alfalfa. (Adams, Bechtel). UTAH - Light to moderate in Cache County alfalfa. (Knowlton). ARIZONA - Counts of 200 per 100 sweeps of alfalfa in Cochise County. Ranged 30-120 per 100 sweeps in Yuma County. (Ariz. Coop. Sur.). NEW MEXICO - Heavy on alfalfa in various areas of Dona Ana County. Some fields show damage from this species and spotted alfalfa aphid. (Campbell). TEXAS - Pea aphid light to moderate on alfalfa in El Paso and Hudspeth Counties. Light on alfalfa at Barstow, Martin County. (Neeb, Green). COLORADO - Increased in eastern area; ranged 150-9,000 per 100 sweeps in Arkansas Valley, 250-5,000 per 100 sweeps in northeastern area. (Burchett, Johnson). WYOMING - Ranged 20-800 per 10 sweeps of alfalfa in Goshen, Platte, Converse, and Niobrara Counties. Heaviest counts in Platte County. (Lawson, Parshall). WISCONSIN - Ranged 2-60 per sweep of alfalfa in northeast. Winged forms about 50 percent of population. Some buildup noted in regrowth alfalfa. Parasitism and predation on increase and coupled with thunder showers could keep populations in check. (Wis. Ins. Sur.). TENNESSEE - Moderate in all fields surveyed in west area, little or no damage. (Gordon).

LYGUS BUGS (Lygus spp.) - NEVADA - Adults and nymphs averaged 6-8 per sweep in alfalfa seed fields in Kings River Valley, Humboldt County. (Lundahl, Peters). Mostly nymphs 6-16 per sweep on alfalfa in Fish Lake Valley, Esmeralda County. (Adams, Bechtel). ARIZONA - Counts of 350 per 100 sweeps of alfalfa in Cochise

County. Ranged 150-450 per 100 sweeps at Yuma, Yuma County. (Ariz. Coop. Sur.).
NEW MEXICO - Light to heavy on alfalfa in Dona Ana County. (N.M. Coop. Rpt.).
TEXAS - Range per 25 sweeps by county: Hudspeth 10-85, El Paso 4-35, and Ward 10-20. (Neeb, Green). WYOMING - Adults and nymphs ranged 5-30 (averaged 9) per 10 sweeps of alfalfa in Goshen, Platte, Converse, and Laramie Counties. (Lawson, Parshall). MICHIGAN - Counts per 100 sweeps of alfalfa by county as follows: Livingston 63, Wayne 70, Washtenaw 54, and Lenawee 71. Small increase. (Newman, June 15).

MEADOW SPITTLEBUG (Philaenus spumarius) - MARYLAND - Adults ranged 7-30 per sweep in most alfalfa in Frederick, Washington, and Carroll Counties. (U. Md., Ent. Dept.). IOWA - Adults averaged 1 per 10 sweeps of alfalfa in Polk County June 18, about average for appearance and level of infestation. (Iowa Ins. Sur.).

ALFALFA PLANT BUG (Adelphocoris lineolatus) - WISCONSIN - Nymphs total about 80 percent of population in northeast; adults and nymphs ranged up to 60+ per 10 sweeps in most alfalfa. (Wis. Ins. Sur.).

ALFALFA CATERPILLAR (Colias eurytheme) - COLORADO - Larvae increased, ranged 0-40 per 100 sweeps in eastern area. (Burchett, Johnson).

RED-BACKED CUTWORM (Euxoa ochrogaster) - IDAHO - Damaged alfalfa seed fields south-east of Hansen, Cassia County. Larvae up to 24 per square foot June 10 in about 1,000 acres. Damage spotty in fields. (Sutherland).

SOYBEANS

BLACK CUTWORM (Agrotis ipsilon) - SOUTH DAKOTA - Larvae severe in field near Egan, Moody County. (Kantack).

LESSER CORNSTALK BORER (Elasmopalpus lignosellus) - GEORGIA - Heavy on young soybeans in Decatur County (Wheeler) and Tift County (Todd).

PEANUTS

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - GEORGIA - Adults increasing in peanut fields in south areas. (Morgan).

COTTON

BOLL WEEVIL (Anthonomus grandis) - TEXAS - In McLennan and Falls Counties, weevils in 5 of 37 treated fields averaged 8 (maximum 125) per acre. Found in 2 of 19 untreated fields; averaged 8 (maximum 250) per acre. Punctured squares ranged 2.3-5.7 (averaged 3.9) percent in 3 treated fields; ranged 2-5 (averaged 3.7) percent in 6 untreated fields. (Cowan et al.). OKLAHOMA - Adults in wing traps at Mountain View and Snyder, Kiowa County, and at Blair, Jackson County. Heaviest at Snyder with 16 weevils in one trap. (Okla. Coop. Sur.). ARKANSAS - Occasional live weevil in fields. (Boyer et al.). Two taken June 10 on 45 pheromone-baited wing traps in Lafayette and Miller Counties. (Lamb et al.). MISSISSIPPI - Weevils averaged 0.8 per 100 row feet in 1 of 25 fields in delta counties. Negative on wing traps. Punctured squares averaged 0.5 (maximum 1.5) percent in 4 of 8 fields. (Pfrimmer et al.). Average infestations by county: Hinds 1 percent in 3 fields, Rankin 37 per acre in 18 fields, Attala 2 percent in 12 fields, Sharkey 2 percent in 7 fields, and Washington 1 per 200 row feet in 14 fields. (Sartor). TENNESSEE - Two adults noted feeding in terminal buds in Fayette County. (Gordon et al.). ALABAMA - Weevil emergence from winter hibernation still generally light, but higher than past several weeks. Damaging numbers appearing in some fields in south and central areas. Controls underway in some areas. (Pike et al.). GEORGIA - Infestations increased in south area; up to 60 percent punctured squares where no control applied (Womack); 2 adults from 4 wing traps, 165 weevils per acre in one field where few squares present on June 18 in Spalding County (Beckham). For Boll Weevil in Texas High Plains see page 432.

BOLLWORMS (*Heliothis* spp.) - TEXAS - In McLennan and Falls Counties, eggs averaged 1.7, larvae 0.1 per 100 terminals in 40 treated fields and eggs averaged 0.3, larvae 0.1 per 100 terminals in 26 untreated fields. Injured squares averaged 0.8 percent in 3 treated fields and 1.3 percent in 6 untreated fields. Eggs and/or larvae collected from native hosts; 54 previously collected larvae identified *H. zea*. Total to date on all hosts 291 *H. zea* and 27 *H. virescens*. (Cowan et al.). ARKANSAS - Highest egg and larval counts in Pulaski County. Average counts per 100 terminals: Eggs 1.5, larvae 1.0. Most egg and larval counts zero per 100 terminals in Lee, Woodruff, and Mississippi Counties. Highest count in these areas 2 eggs and 1 larva per 100 terminals. (Boyer et al.). MISSISSIPPI - Larvae averaged 0.5 per 100 row feet in 11 of 25 fields in delta counties. Eggs averaged 3.8 per 100 row feet in 22 of 25 fields. Much concern in area at this time. (Pfrimmer et al.). *H. virescens* and *H. zea* ovipositing in Sharkey, Washington, and Madison Counties. (Sartor). ALABAMA - Eggs and small larvae still on cotton throughout State, moth flights heavy. Larvae ranged 2-30 per 100 terminals in cotton from extreme south areas to extreme north areas. Controlled by predators and parasites. (McQueen). GEORGIA - Eggs ranged 0-19 and larvae up to 2 per 100 terminals in south areas (Womack); heavy in Tift and Burke Counties (Canerday).

TARNISHED PLANT BUG (*Lygus lineolaris*) - ALABAMA - Adults and nymphs on pinhead squares in Colbert, Madison, and Limestone Counties becoming heavy and alarming to growers; small squares beginning to drop. Controls considered but waiting in fear of causing decrease in beneficial insects. (McQueen). MISSISSIPPI - Heavy in Madison County. Moderate in Washington County. Light in Coahoma, Sharkey, and Rankin Counties. (Sartor). ARKANSAS - *L. lineolaris* predominant plant bug. Heaviest count of all species in Lee County, 22 (averaged 6.7) per 100 terminals. (Boyer et al.).

COTTON FLEAHOPPER (*Pseudatomoscelis seriatus*) - TEXAS - Increased in McLennan and Falls Counties. Ranged 0-55 (averaged 16.1) per 100 terminals in 40 treated fields, 5-62 (averaged 27.8) in 26 untreated fields. (Cowan et al.). ARKANSAS - Light in Pulaski County. (Boyer et al.).

TWO-SPOTTED SPIDER MITE (*Tetranychus urticae*) - ALABAMA - This species and other spider mites damaging cotton along border of fields on several farms in Limestone, Madison, Talladega, and Morgan Counties. Some controls applied. (McQueen).

THRIPS - ALABAMA - *Frankliniella fusca* (tobacco thrips) and other thrips unusual and damaging in all late-planted cotton throughout north areas where preplant systems not used. Controls applied in many fields. (McQueen). NEW MEXICO - Unspecified species medium to heavy on cotton in Eddy, Chaves, and Dona Ana Counties. Leaves on most plants show damage. (N.M. Coop. Rpt.).

TOBACCO

TOBACCO FLEA BEETLE (*Epitrix hirtipennis*) - MARYLAND - Adults ranged light to moderate; newly set fields show heaviest damage. Most fields growing out of earlier injury. Ranged 1-6 per plant in Anne Arundel and Prince Georges Counties. (U. Md., Ent. Dept.).

TOBACCO THRIPS (*Frankliniella fusca*) - VIRGINIA - Moderate on tobacco in some fields in Pittsylvania County. (Domnick, June 12).

SUGAR BEETS

BEEB WEBWORM (*Loxostege sticticalis*) - WYOMING - Larvae appeared June 9 on sugar beets at Powell, Park County. (Burkhardt). Few larvae in sugar beet fields of Goshen County. Adults peaked June 7-8 at Torrington, Goshen County. (Parshall). COLORADO - Larvae ranged 0-30 per 100 sweeps in Otero, Bent, and Prowers Counties. Adults numerous in northeastern area, larvae appearing in few fields. Some controls applied. (Burchett, Johnson).

SPINACH LEAF MINER (Pegomya hyoscyami) - WYOMING - Larvae and eggs in sugar beet fields of Niobrara and Goshen Counties. Infested up to 0-60 (averaged 14) percent of leaves. (Lawson, Parshall). COLORADO - Larvae remain light in Boulder, Larimer, Weld, and Morgan Counties. (Johnson).

SUGAR-BEET ROOT MAGGOT (Tetanops myopaeformis) - WYOMING - Adults peaked about June 5 in Big Horn and Park Counties. Larvae hatching June 15 in these counties. (Burkhardt). NORTH DAKOTA - Emergence 90-95 percent in Walsh and Pembina Counties. About half of flies moved into new fields. Eggs on 40 percent of plants in most fields. Egg masses ranged up to 2 per plant. (Kaatz).

A FLEA BEETLE (Systema taeniata) - COLORADO - Adults appearing at Berthoud, Larimer County, and Longmont, Boulder County. Ranged light to moderate, damage in spots in some fields. (Johnson).

POTATOES, TOMATOES, PEPPERS

COLORADO POTATO BEETLE (Leptinotarsa decemlineata) - IDAHO - Adults active June 11 near Jerome, Jerome County. (Priest). WYOMING - Larvae heavy on nightshade at Torrington, Goshen County. (Lawson, Parshall). COLORADO - Remains light in Weld and Morgan Counties. Larvae appearing in some fields. Ranged 0-6 per plant in Weld County field, damage light. (Johnson).

GREEN PEACH APHID (Myzus persicae) - DELAWARE - On peppers in most of Sussex County and potatoes in Kent County. (Burbutis, Kelsey).

BEANS AND PEAS

MEXICAN BEAN BEETLE (Epilachna varivestis) - COLORADO - Adults light in beans in Larimer, Weld, Boulder, and Morgan Counties. (Johnson).

PEA APHID (Acyrtosiphon pisum) - WISCONSIN - Variable in peas; generally more numerous than in many previous years. Counts as high as 250 per sweep on peas already podded, and peas only 1 inch high infested with up to 5 per linear foot. Many winged forms indicative of migrants from alfalfa. (Wis. Ins. Sur.).

THRIPS - MARYLAND - Controls required in young emerging beans in about 80 acres in Frederick and Baltimore Counties. (U. Md., Ent. Dept.).

COLE CROPS

CABBAGE LOOPER (Trichoplusia ni) - VIRGINIA - Damaging numbers appeared earlier than usual on Eastern Shore. (Hofmaster, June 10).

GENERAL VEGETABLES

ONION MAGGOT (Hylemya antiqua) - CALIFORNIA - Larvae and pupae in 40 acres of onions at Salinas, Monterey County. Expect heavy loss. (Cal. Coop. Rpt.). COLORADO - Larval damage trace at Greeley and Fort Lupton in Weld County. (Urano). OHIO - Infested developing bulbs of untreated onions in Huron County. Destroyed about half of crop. (Sleesman).

ONION THRIPS (Thrips tabaci) - COLORADO - Ranged 0-8 per plant on seeded onions in Arkansas Valley and increasing. Ranged 0-20 per plant on transplant onions in eastern area. (Burchett, Johnson).

SWEETPOTATO FLEA BEETLE (Chaetocnema confinis) - MARYLAND - Adults ranged 2-3 per plant in several fields (150 acres) in Wicomico and Worcester Counties. Populations heavier than at this time in 1969. Second generation should be moderate to heavy with possible tuber injury in July. (U. Md., Ent. Dept.).

DECIDUOUS FRUITS AND NUTS

CODLING MOTH (Laspheyresia pomonella) - NEW YORK - First emerged May 22 in cages at Geneva, Ontario County. Emergence increased steadily until June 8. First eggs June 2 but probably 2-3 days old. Entries June 10 but appeared 2 days old. (N.Y. Wkly. Rpt.). NEW JERSEY - Caught 5 moths June 9-16 in baited jar in Gloucester County. (Ins.-Dis. Newsltr.). OHIO - Damage on unsprayed apple trees in Fairfield County orchard heavier than expected. Many entries and attempted entries on young fruit. (Roach, Holdsworth). MICHIGAN - Adults plentiful in abandoned orchards. Many eggs ready to hatch. If present temperature and humidity trends persist, first brood will be heavier with accelerated development and higher survival than in average or cool season. (Thompson, June 15).

ORIENTAL FRUIT MOTH (Grapholitha molesta) - COLORADO - Second-brood adults peaked June 3 with 2-3 per trap at Palisade and Vineland. Early season chemical and biological controls on peach apparently effective. (Sisson, Anderson). OHIO - Infested terminals of several twigs on most peach trees in Fairfield County orchard. (Roach, Holdsworth). NEW JERSEY - Collected 16 adults June 9-16 in baited jar in Gloucester County. (Ins.-Dis. Newsltr.).

RED-BANDED LEAF ROLLER (Argyrotaenia velutinana) - COLORADO - Damaged crab apple and apple at Denver, Denver County; Longmont, Boulder County; Loveland and Fort Collins, Larimer County. Heaviest in several years with first-generation moths appearing. Controls recommended. (Thatcher, Johnson).

PLUM CURCULIO (Conotrachelus nenuphar) - FLORIDA - Larvae infested high percentage of plums at locality in Pasco County. (Lowery). GEORGIA - First-generation adults emerged from unsprayed peaches and plums in Peach County; up to 16 from single tree. (Payne, June 13). OHIO - Oviposition scars more numerous than expected in Fairfield County orchard. (Roach, Holdsworth). WISCONSIN - Adults on unsprayed trees in southern counties. Scars 2-4 per fruit on 80 percent of apples at northern Dane County site. (Wis. Ins. Sur.).

PEAR PSYLLA (Psylla pyricola) - NEW YORK - Resistance continuing problem in east area. Controls difficult in Hudson Valley. (N.Y. Wkly. Rpt., June 15).

SAN JOSE SCALE (Quadraspidiotus perniciosus) - IDAHO - Heavy on peach June 12 at Gooding, Gooding County. (Koester).

APHIDS - NEW YORK - Building up in some orchards to point where special materials applied for control in Hudson Valley. (N.Y. Wkly. Rpt., June 15). OHIO - Early summer generations of Eriosoma lanigerum (woolly apple aphid) established in old pruning scars on several trees in Fairfield County orchard. (Roach, Holdsworth). UTAH - Myzus cerasi (black cherry aphid) still causing sticky foliage on sweet cherry in some Box Elder County home orchards (Knowlton), and at Bountiful, Davis County (Roberts).

PERIODICAL CICADA (Magicicada septendecim) - VIRGINIA - One nymph collected in Lancaster County. Determined by W.A. Allen. (McSwain, June 15).

TARNISHED PLANT BUG (Lygus lineolaris) - NEW YORK - Injury on apple and pears heavier than usual in Hudson Valley area. (N.Y. Wkly. Rpt., June 15).

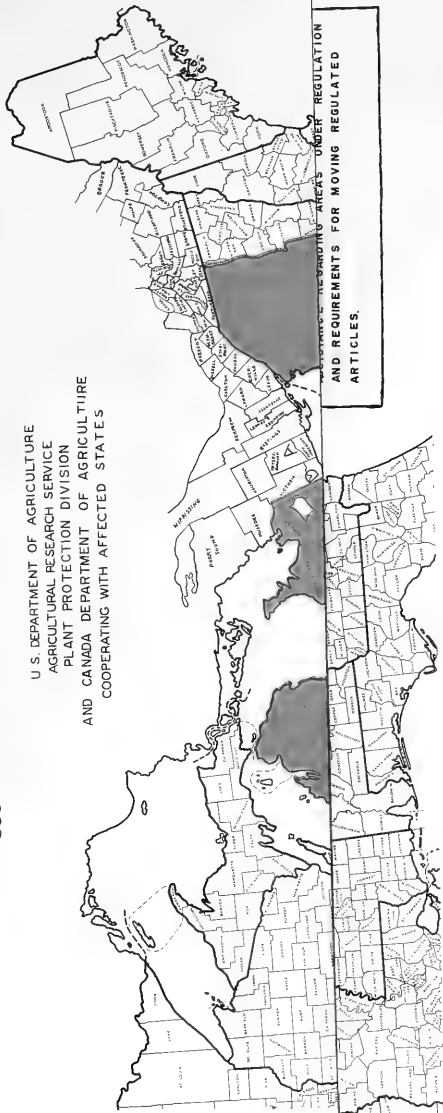
BROWN STINK BUG (Euschistus servus) - GEORGIA - Heavy on apples in Peach County. (Payne, Yonce, June 13).

TEPHRITID FLIES (Rhagoletis spp.) - MICHIGAN - R. cingulata (cherry fruit fly) adults numerous June 8 in orchard near Stevensville, Berrien County. (Thompson). NEW YORK - First emergence of R. pomonella (apple maggot) for season June 10 at Highland (3 females), Ulster County, and June 15 at Geneva (1 female), Ontario County. (N.Y. Wkly. Rpt.).

CEREAL LEAF BEETLE

COOPERATIVE FEDERAL, STATE, AND CANADIAN QUARANTINES

U.S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PROTECTION DIVISION
AND CANADA DEPARTMENT OF AGRICULTURE
COOPERATING WITH AFFECTED STATES



COUNTIES ENTIRELY COLORED ARE COMPLETELY REGULATED,
COUNTIES PARTIALLY COLORED ARE PARTIALLY REGULATED.

STATE, FEDERAL, AND CANADIAN REGULATIONS.

OVERALL ERADICATIVE TREATMENTS MADE, NO
QUARANTINE REGULATIONS NECESSARY.

RESTRICTIONS ARE IMPOSED ON MOVEMENT
OF REGULATED ARTICLES FROM RED INTO
OR THROUGH WHITE OR BLUE.

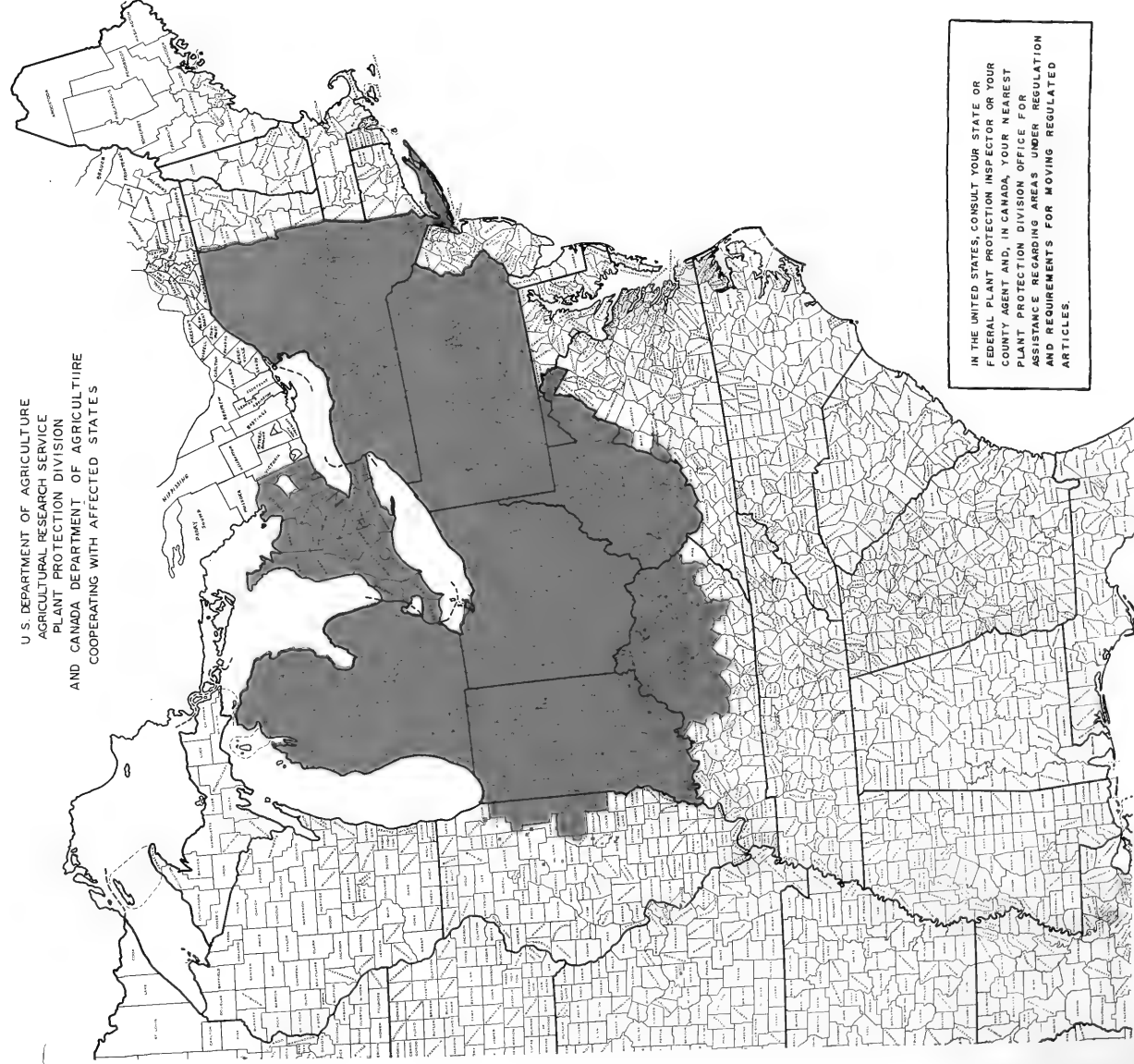
SEE REVERSE SIDE FOR REQUIREMENTS CONCERNING CERTIFICATION OF REGULATED ARTICLES.

REVISED MAY 11, 1970

CEREAL LEAF BEETLE

COOPERATIVE FEDERAL, STATE, AND CANADIAN QUARANTINES

U. S. DEPARTMENT OF AGRICULTURE
AGRICULTURAL RESEARCH SERVICE
PLANT PROTECTION DIVISION
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COOPERATING WITH AFFECTED STATES



IN THE UNITED STATES, CONSULT YOUR STATE OR FEDERAL PLANT PROTECTION INSPECTOR OR YOUR COUNTY AGENT AND, IN CANADA, YOUR NEAREST PLANT PROTECTION DIVISION OFFICE FOR ASSISTANCE REGARDING AREAS UNDER REGULATION AND REQUIREMENTS FOR MOVING REGULATED ARTICLES.

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SEE REVERSE SIDE FOR REQUIREMENTS CONCERNING CERTIFICATION OF REGULATED ARTICLES.

REVISED MAY 11, 1970

Sod	Year-round
Used Harvesting Machinery	Year-round
Fodder and Plant Litter	Year-round
Soybeans (1), (3)	September 1-March 15

- (1) Small grains (except oats and barley), grass and forage seed, and soybeans cleaned to meet State or Canadian seed sales requirements are exempt from certification.
- (2) Pelletized hay is exempt from certification and treatment requirements.
- (3) Soybeans if transported in covered vehicles and moved to designated plants are exempt from certification.

EUROPEAN RED MITE (Panonychus ulmi) - GEORGIA - Heavy on peach foliage and fruit in Peach and Houston Counties. (Yonce, June 12). NEW YORK - Appeared under control in orchards visited in Hudson Valley. (N.Y. Wkly. Rpt., June 15).

APPLE RUST MITE (Aculus schlechtendali) - NEW YORK - Increasing rapidly in east area. First summer generation producing eggs and migrating to new leaf tissue in Champlain Valley. (N.Y. Wkly. Rpt., June 15).

PECAN NUT CASEBEARER (Acrobasis caryae) - TEXAS - Very light first-generation damage on young pecan nutlets in Ward County. Larvae light to medium near Cameron, Milam County. (Neeb et al.). OKLAHOMA - Very heavy larval damage to small nuts in Cotton County. Damage ranged 10-15 percent in Garvin County. (Okla. Coop. Sur.). NEW MEXICO - Light to medium on pecan trees at Carlsbad, Eddy County. (Mathews).

FALL WEBWORM (Hyphantria cunea) - TEXAS - Light to medium on pecan trees in Guadalupe, Caldwell, Comal, Gonzales, and Hays Counties. Observed in Brazos and Gillespie Counties. (Massey et al.).

APHIDS - TEXAS - Monellia sp. heavy on Jefferson County pecans. (Weaver). Monellia costalis (black-margined aphid) light to heavy on pecan trees in El Paso and Ward Counties. (Green et al.). Myzocallis caryaefoliae (black pecan aphid) light to moderate on pecan trees in El Paso, Ward, and Pecos Counties. (Van Cleave et al.). NEW MEXICO - M. costalis heavy on pecan trees in Dona Ana and Otero Counties where no controls applied. Honeydew heavy. (Riddle, Campbell).

CITRUS

Citrus Insect Situation in Florida - Mid-June - CITRUS RUST MITE (Phyllocoptruta oleivora) infested 55 (norm 45) percent of groves; economic in 35 (norm 26) percent. Population above normal and now at moderate level. Again took an upward trend which is expected to continue through July. Highest districts west, central, south, and east. CITRUS RED MITE (Panonychus citri) in 69 (norm 63) percent of groves; economic in 41 (norm 38) percent. Increased sharply and now above normal and in high range. Further increase expected, followed by decrease at mid-July. Highest districts north, central, and east. TEXAS CITRUS MITE (Eutetranychus banksi) in 46 (norm 69) percent of groves; economic in 26 (norm 47) percent. Still much below normal and in moderate range. Rapid increase expected through June. Some heavy infestations predicted in all districts. Highest district east. GLOVER SCALE (Lepidosaphes gloverii) in 89 (norm 86) percent of groves; economic in 18 (norm 31) percent. Near normal. Will continue in high range through June, then decrease. Highest districts south and east. PURPLE SCALE (L. beckii) in 70 (norm 80) percent of groves; economic in 4 (norm 11) percent. YELLOW SCALE (Aonidiella citrina) in 63 (norm 68) percent of groves; economic in 8 (norm 11) percent. CHAFF SCALE (Parlatoria pergandii) in 45 (norm 70) percent of groves; economic in 1 (norm 15) percent. These 3 scales expected to continue near current low to moderate level. Few heavy infestations will occur in scattered areas. BLACK SCALE (Saissetia oleae) in 42 (norm 69) percent of groves; economic in 25 (norm 49) percent. Still below normal and low in most districts but will increase rapidly through July. Highest district east. An ARMORED SCALE (Unaspis citri) in 25 percent of groves; moderate or heavy in 14 percent. Higher than in any prior month. Will continue near present level. WHITEFLIES in 82 percent of groves; economic in 48 percent. Larval forms more abundant than in any prior month. Adult forms much above normal. Adults and eggs will increase. Highest districts east, north, west, and south. MEALYBUGS in 67 percent of groves; economic in 15 percent. Near normal and at moderate level. Will increase rapidly and enter high range before mid-July, then decrease. Highest districts east and west. (W.A. Simanton (Citrus Expt. Sta., Lake Alfred)).

REGULATED ARTICLES AND THEIR CERTIFICATION PERIODS ARE AS FOLLOWS:

<u>Crop or Article</u>	<u>Certification Period</u>
Small Grains such as Barley, Oats, and Wheat (1)	June 1-November 30
Corn (Shelled corn is NOT regulated)	
Fresh Market (sweet corn)	Year-round
Ear Corn, other than sweet corn	August 1-March 31
Grass and Forage Seed (1)	Year-round
Hay (except marsh hay) (2)	May 1-January 15
Straw and Marsh Hay	July 1-February 28
Sod	Year-round
Used Harvesting Machinery	Year-round
Fodder and Plant Litter	Year-round
Soybeans (1), (3)	September 1-March 15

(1) Small grains (except oats and barley), grass and forage seed, and soybeans cleaned to meet State or Canadian seed sales requirements are exempt from certification.

(2) Pelletized hay is exempt from certification and treatment requirements.

(3) Soybeans if transported in covered vehicles and moved to designated plants are exempt from certification.

CITRUS FLAT MITE (Brevipalpus lewisi) - ARIZONA - Building up. Heavy, treatment needed in some Yuma County groves. (Ariz. Coop. Sur.).

CITRUS THRIPS (Scirtothrips citri) - ARIZONA - Heavy on oranges and grapefruit, might require summer control. Treatments continued in nurseries and on small trees. (Ariz. Coop. Sur.).

A LEAFHOPPER (Homalodisca lacerta) - ARIZONA - Ranged 10-15 per citrus shoot at Yuma, Yuma County. Determined by M. Nielson, collected by M. Larson. (Ariz. Coop. Sur.).

OTHER TROP. & SUBTROP. FRUITS

FIG PSYLLID (Homotoma ficus) - CALIFORNIA - Nymphs and pupae medium on fig trees at Pleasant Hill, Contra Costa County. (Cal. Coop. Rpt.).

SMALL FRUITS

ROSE CHAFER (Macroductylus subspinosus) - MICHIGAN - Adults fed on grape foliage in every fruit growing region. (Thompson, June 15).

GRAPE BERRY MOTH (Paralobesia viteana) - MICHIGAN - First to third instars feeding on stems, flower buds, and young berries of grape clusters. (Thompson, June 15).

BLUEBERRY MAGGOT (Rhagoletis mendax) - NEW JERSEY - First caught June 12. Many trapped by June 14 in normally heavily infested areas. Egg laying should begin about June 24. (Ins.-Dis. Newsltr.).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - CALIFORNIA - One to many thrips per berry on bushberries in Fresno County causing serious problem in marketing fresh berries. Moved onto ripening berries in home berry patches in such numbers that berries not useable. (Cal. Coop. Sur.).

ORNAMENTALS

BLACK VINE WEEVIL (Brachyrhinus sulcatus) - OHIO - Adult emergence underway in Taxus planting in Columbiana County. Mostly adults heavy on block of T. baccata repandens in Geauga County. (Roach). NEW HAMPSHIRE - Hundreds of larvae and adults injuring plants in Hillsborough County. (Conklin).

A GEOMETRID MOTH (Coryphista meadii) - NEVADA - Larvae medium to heavy; some heavy defoliation to barberry and Oregon-grape at Reno and Sparks, Washoe County. (Nev. Coop. Rpt.).

PUSS CATERPILLAR (Megalopyge opercularis) - TEXAS - Medium; infested ornamentals at Edna, Jackson County. (Wilson).

BAGWORM (Thyridopteryx ephemeraeformis) - TEXAS - Light to moderate on evergreens in Midland County. Heavy on evergreens at College Station, Brazos County. (Neeb, Green).

A WHITEFLY (Tetraleurodes errans) - IDAHO - Adult emergence heavy June 12 on Oregon-grape at Twin Falls, Twin Falls County. (Barr, Sutherland).

FOREST AND SHADE TREES

EUROPEAN PINE SHOOT MOTH (Rhyacionia buoliana) - WISCONSIN - Pupation underway at Chilton, Calumet County. Infested about 7 terminals on one mugho pine. (Wis. Ins. Sur.).

SPRUCE BUDWORM (Choristoneura fumiferana) - NEW MEXICO - Some damage on most of spruce checked at Santa Fe and Glorieta, Santa Fe County. (Heninger). MINNESOTA - In fifth and sixth instars in north area. Pupae on nursery planting of Colorado spruce near Little Falls, Morrison County. (Minn. Pest Rpt.). INDIANA - Specimens collected in Lake County in May determined by D.M. Weisman. Previously reported only in 1922 and 1928. (Schuder, Clark).

BALSAM TWIG APHID (Mindarus abietinus) - WASHINGTON - Heavy on grand fir June 10 at Puyallup, Pierce County. Apterous adults and new nymphs abundant on new growth, sticking and matting together new needles. (Barstow).

PINE SPITTLEBUG (Aphrophora parallela) - WISCONSIN - Light on Scotch pine and European larch at Dane County site where none observed in previous years. Nymphal development complete as of June 17 at Middleton, Dane County; adults expected to disperse to new locations within 7 days. (Wis. Ins. Sur.).

LARGE ASPEN TORTRIX (Choristoneura conflictana) - MINNESOTA - Defoliation heavy on aspen in many areas of St. Louis, Lake, Cook, and Carlton Counties. Pupation about 90 percent. (Minn. Pest Rpt.).

SATIN MOTH (Stilpnotia salicis) - IDAHO - Third and fourth instars defoliated several hundred golden willow and silver-leafed poplars at Cascade, Valley County. Damage per tree double that of year ago. Majority of city trees require control. (Greenwell, Portman).

CALIFORNIA OAKWORM (Phryganidia californica) - CALIFORNIA - Moth flights heavy in San Francisco Bay area. Oak foliage severely damaged. Currently at Stockton, San Joaquin County. (Cal. Coop. Rpt.).

A NOCTUID MOTH (Enargia decolor) - MINNESOTA - Defoliation becoming apparent on all sizes of aspen in several locations in north Aitkin and southeast Itasca Counties. Larvae mostly in third instar. (Minn. Pest Rpt.).

NOTODONTID MOTHS - TEXAS - Early instars of Schizura ipomeae skeletonized Gregg County dogwoods. (Coster). NEW HAMPSHIRE - Trapped 2,139 Heterocampa guttivitta (saddled prominent) adults June 13-15 in blacklight trap at Ossipee, Carroll County. Also collected 148 adults of Cratichneumon sublatius (an ichneumon wasp), a parasite, June 10-15. (Blickle).

FALL WEBWORM (Hyphantria cunea) - OHIO - Moderate in Scioto Trail State Forest. Second and third instars on redbud, elm, and dogwood. (Ehlers). INDIANA - Hatching in Shelby County. (Clark).

OAK SKELETONIZER (Bucculatrix ainliella) - NEW HAMPSHIRE - Eggs and newly hatched larvae heavy on red oak leaves in Rockingham County. (Conklin).

ELM LEAF BEETLE (Pyrrhalta luteola) - ALABAMA - Second-generation larvae caused much defoliation of elms along streets and on lawns in Colbert, Lawrence, Morgan, Madison, and other north counties. Larvae fewer in east-central area and somewhat lighter than in past several years. (Somerville et al.). TENNESSEE - Larvae feeding on elms in Knox County. (Williams). SOUTH DAKOTA - Damaging larval numbers in elm grove in Charles Mix County. This is a new county record. (Kantack, Hegdahl). OKLAHOMA - First-generation adults emerged in many areas. Egg laying expected soon. (Okla. Coop. Sur.). TEXAS - Medium and widespread on Kent County elms. (Geeslin). NEW MEXICO - Heavy on elms at north Las Cruces, Dona Ana County. (Campbell). UTAH - Appeared on elms at Salt Lake and Holladay, Salt Lake County. (Knowlton). WASHINGTON - Heavy egg deposits by overwintered adults June 8 throughout Grant County. First instars on elm June 15 at Seattle, King County. (Barstow, Hunter).

NATIVE ELM BARK BEETLE (Hylurgopinus rufipes) - NORTH DAKOTA - Adults collected in window trap near Mandan, Morton County. This is a new county record. (Brandvik).

COTTONWOOD BORER (Plectrodera scalator) - NEW MEXICO - Damaged cottonwood trees at Carlsbad, Eddy County. (Marek).

PERIODICAL CICADA (Magiccicada septendecim) - MARYLAND - Heavy natural mortality of males and females in Prince Georges, Montgomery, Baltimore, and Harford Counties. Infestations in Allegany and Washington Counties continue heavy but expected to decline rapidly within next week. (U. Md., Ent. Dept.).

BIRCH LEAF MINER (Fenusa pusilla) - WISCONSIN - Damage severe at some sites; most noticeable in Brown, Calumet, Winnebago, Waushara, Dodge, Walworth, Eau Claire, and Wood Counties. First-generation larval development and damage almost finished. (Wis. Ins. Sur.).

EUROPEAN ELM SCALE (Gossyparia spuria) - CALIFORNIA - Heavy on elms at Grand Terrace, San Bernardino County. (Cal. Coop. Rpt.). NEW MEXICO - Heavy on American elm at Santa Fe, Santa Fe County. Honeydew heavy. (Heninger).

COTTONY MAPLE SCALE (Pulvinaria innumerabilis) - WASHINGTON - Severe on soft maples, covered 90 percent of branches at Othello, Adams County. (Hunter).

MAN AND ANIMALS

SCREW-WORM (Cochliomyia hominivorax) - Total of 3 cases reported in U.S. June 14-20 as follows: TEXAS - Val Verde 2; ARIZONA - Yavapai 1. Total of 32 cases reported in portion of Barrier Zone in Republic of Mexico as follows: Sonora 22, Chihuahua 7, Nuevo Leon 1, Tamaulipas 2. Total of 7 cases reported in Mexico south of Barrier Zone. Barrier Zone is area where eradication operation underway to prevent establishment of self-sustaining population in U.S. Sterile screw-worm flies released: Texas 40,468,000; New Mexico 1,120,000; Arizona 10,010,000; Mexico 109,420,000. (Anim. Health Div.).

HORN FLY (Haematobia irritans) - MARYLAND - Adults 15-60 per head in Frederick and Montgomery Counties. (U. Md., Ent. Dept.). FLORIDA - Adults averaged 825 per beef steer at Bryant, Palm Beach County. (Janes). MISSISSIPPI - Average per head by county: Monroe 175 on 60 head, Attala 25 on 300, Montgomery 175 on 140, and Yazoo 135 on 50. (Sartor). TEXAS - Heavy in Jackson and Stephens Counties. Moderate on cattle in Wilbarger, Wichita, Kinney, and Crockett Counties. (Boring et al.). OKLAHOMA - Averaged 500 per head on cattle in Payne County. Heavy in Cotton County; moderate in Osage County. (Okla. Coop. Sur.). MISSOURI - Ranged 2-100 (averaged 29.1) and 50-1,100 (averaged 283.6) per head on 2 herds in Boone County. (Munson). IOWA - Averaged 80 per head June 9 on Angus and Hereford cattle in Guthrie County; no back rubbers. Ranged 100-200 per head on pasture cattle with no back rubbers. (Iowa Ins. Inf.). WYOMING - Ranged 0-30 (averaged 10) per head on 2 herds in Niobrara and Converse Counties. (Lawson, Parshall). WISCONSIN - Moderately annoyed cattle in Calumet County. Nonexistent or slight elsewhere. (Wis. Ins. Sur.).

FACE FLY (Musca autumnalis) - OKLAHOMA - Three adults in herd of 25 cattle in Cherokee County; same herd infested last year. (Okla. Coop. Sur.). MISSOURI - Ranged 0-35 (averaged 9.2) and 0-30 (averaged 6.7) per animal on 2 herds in Boone County. (Munson). IOWA - Averaged 3 per head June 9; no back rubbers. Averaged 3-5 per face on unprotected pasture cattle in central area. (Iowa Ins. Inf.). WISCONSIN - Moderately annoyed cattle in Calumet County. Nonexistent or slight elsewhere. (Wis. Ins. Sur.). MARYLAND - Moderate to heavy, 10-40 per head, in Howard, Frederick, Baltimore, and Montgomery Counties. (U. Md., Ent. Dept.).

HOUSE FLY (Musca domestica) - FLORIDA - Very abundant around supplemental feeding areas in pastures and in holding pens at Bryant, Palm Beach County. More abundant than usual in Everglades during first half of June. (Janes). OKLAHOMA - Up to 50 per Scudder grid in untreated barns in Payne County. Moderate around Bryan County homes. (Okla. Coop. Sur.).

STABLE FLY (Stomoxys calcitrans) - GEORGIA - Annoyed De Kalb County horses. (Snoddy, Nolan, June 13). MARYLAND - Averaged 17 per head on 48 Holsteins near Woodboro, Frederick County. (U. Md., Ent. Dept.). WISCONSIN - Moderately annoyed cattle in Rusk, Polk, and Sauk Counties. Little or no problem elsewhere. (Wis. Ins. Sur.).

MOSQUITOES - TEXAS - Psorophora ciliata first observed May 4 in Jefferson County. P. confinnis common to numerous. Aedes sollicitans annoying at Sabine Pass May 7 and at Port Arthur. A. vexans larvae very numerous in Beaumont. Culex pipiens quinquefasciatus larvae very numerous in all polluted water. C. salinarius annoying, especially at Port Arthur. Coquillettidia perturbans adults numerous at Port Arthur during late May. Anopheles crucians in larger numbers at Port Arthur. (Jefferson County Mosq. Contr. Dis., May). OKLAHOMA - Psorophora spp. adults common, biting people in Payne County. (Okla. Coop. Sur.). ARKANSAS - P. confinnis heavy locally in Lonoke County, lighting counts as high as 60 per minute. Moderate in Lawrence County. Anopheles spp. light in Lonoke and Lawrence Counties. Culex spp. locally heavy in Phillips County and light in Lawrence County. (Meisch). IOWA - Mostly Aedes vexans appeared again at Ames, Story County, evening of June 12, seven days after aerial treatment. Bite counts were 1 in 15 minutes compared with 3-5 per minute before spraying. (Iowa Ins. Inf.). MINNESOTA - Light traps at Minneapolis and St. Paul trapped 14,171 females and 42,511 males week ending June 12. Large number of males indicates new brood. A. vexans accounted for 87 percent of total. A. vexans 111 of 142 females in evening bite collections, and 2,821 of 4,247 in daytime collections. A. trivittatus, A. cinereus, and A. stimulans other major species. Brood which emerged June 5-8 showing signs of stabilizing flight. Trap catches peaked June 15 and 17, should decline next week. Rains June 15-16 resulted in small brood which will begin to emerge June 22. This brood will not add significantly to present population. (Minn. Pest Rpt.). WISCONSIN - Heavy statewide except at some well-drained upland sites far from breeding areas. Biting still very intense in wooded lowlands and in many farm fields in east-central counties. Biting intense all day at most wooded sites and between 8:30 p.m. and 9:30 p.m. in residential areas. In west Dane County woodlands Aedes sticticus comprised about 70 percent and A. trivittatus 30 percent of biting populations. Severely annoyed cattle in Sauk, Richland, Calumet, Clark, Wood, Iowa, Outagamie, and Columbia Counties, and moderately in Oconto, Rusk, and Polk Counties. (Wis. Ins. Sur.).

HORSE FLIES - OKLAHOMA - Tabanus spp. 3-4 per head in favorable areas in Payne County. T. lineola (striped horse fly), T. abactor, T. mularis, and T. atratus (black horse fly) common. T. trimaculatus active and annoying people in McCurtain County. (Okla. Coop. Sur.). WISCONSIN - Numerous in localized areas. (Wis. Ins. Sur.). VERMONT - T. similis annoying cattle. Hybomitra lasiophthalma very abundant. (Nielsen, June 18).

DEER FLIES - MINNESOTA - Chrysops sp. numerous in hilly country in southeast area. (Minn. Pest Rpt.). WISCONSIN - Bothersome in Fond du Lac and Adams Counties. Moderately annoyed people and livestock in localized areas statewide. (Wis. Ins. Sur.).

BITING MIDGES - CALIFORNIA - Leptoconops torrens annoying at Sacramento, Sacramento County, and at West Sacramento, Davis, and Woodland in Yolo County. (Cal. Coop. Rpt.). OKLAHOMA - Culicoides obsoletus annoying in wooded areas in Cherokee County. (Okla. Coop. Sur.).

A LOUSE FLY (Lipoptena mazamae) - OKLAHOMA - Winged adults common in areas frequented by deer in Cherokee County. (Okla. Coop. Sur.).

COMMON CATTLE GRUB (Hypoderma lineatum) - TEXAS - Adult activity decreased throughout Trans-Pecos area. (Neeb).

ASSASSIN BUGS (Triatoma spp.) - ARIZONA - T. protracta (western bloodsucking conenose) light; moving into homes in foothills and Sahaurita in Pima County. (Ariz. Coop. Sur.). OKLAHOMA - T. sanguisuga (bloodsucking conenose) in several homes in Canadian County. (Okla. Coop. Sur.).

CHIGGER MITES (Eutrombicula spp.) - OKLAHOMA - Heavy in south area from McCurtain County to Cotton County. (Okla. Coop. Sur.).

LONE STAR TICK (Amblyomma americanum) - OKLAHOMA - Averaged about 1,000 per head on Cherokee County cattle. Very heavy on young deer. Adults declining, nymphs still heavy, and larvae light. Light on Choctaw County cattle. (Okla. Coop. Sur.).

BENEFICIAL INSECTS

LADY BEETLES - ARIZONA - Averaged 50 per 100 sweeps of alfalfa throughout Cochise County. (Ariz. Coop. Sur.). WYOMING - Adults averaged 4 per 10 sweeps of alfalfa in Goshen, Platte, Niobrara, and Converse Counties. (Lawson, Parshall).

A EULOPHID WASP (Tetrastichus julis) - MICHIGAN - This larval parasite of cereal leaf beetle recovered in Berrien and Cass Counties where liberations made in 1969. (Maltby, June 15).

AN ENCYRTID WASP (Trechmites insidiosus) - UTAH - This parasite of pear psylla released in Ogden, Weber County, pear orchards. (Davis).

FEDERAL AND STATE PLANT PROTECTION PROGRAMS

BOLL WEEVIL (Anthonomus grandis) - TEXAS - Catches increased on winged traps below Caprock and along edge of Caprock in Floyd and Dickens Counties. Overwintered weevils on April-planted cotton in Kent County. (Clymer, Rummel). For Boll Weevil in other areas see page 423.

CEREAL LEAF BEETLE (Oulema melanopus) - ILLINOIS - Larvae light on oats on farms for new county records. All determined by R.E. White. Collected at Oakland, Coles County, by B.L. Bradford June 11. At Martinsville, Clark County, by M. McCoy June 12. At Gibson City, Ford County, by M. Morano June 15. At Mechanicsburg, Sangamon County, by R.D. Lovejoy June 15. (PPD). MICHIGAN - Control operations almost completed. Very few reports of failure but reports of wheat damage increasing in scattered localities. New adults will emerge soon. Numbers high enough this year to injure some corn. (Ruppel, June 15). INDIANA - Larvae primarily in third and fourth instars at New Carlisle, St. Joseph County; averaged 1-2 per stem. (Shade). OHIO - Larval feeding usually completed by this time but small larvae observed in several oatfields in south area. (Treece).

WESTERN GRAPE LEAF SKELETONIZER (Harrisina brillians) - CALIFORNIA - Treatments underway at Clovis, Fresno County; 3 light infestations found June 11. Only active infestations in north area. (Cal. Coop. Rpt.).

GRASS BUGS - IDAHO - Labops spp. adults up to 50 per sweep in quackgrass, Newport bluegrass field margin, Newport grass pasture, and Merion bluegrass seed fields in Valley County. This population 99 percent nymphs 5 days ago. Migration into Merion bluegrass seed field prevented to date by border chemical treatment June 17. (Greenwell, Portman). UTAH - L. hesperius and Irbisia spp. damage usually severe on range grasses in Garfield and Kane Counties due to extremely

dry winter and early spring. (Lindsay). WYOMING - Irbisia sp. infested 40 acres of intermediate wheatgrass in Crook County. (Spackman). NEBRASKA - L. hesperius surveys June 1-5 in panhandle counties indicated 6-3,000 per 100 sweeps. Heaviest in crested wheatgrass. Counts of 300+ showed damage; thicker stands of grass had more damage and higher numbers of Labops spp. (Bell). SOUTH DAKOTA - Labops spp. in following counties as of June 18; Shannon, Fall River, Bennett, and Todd; heavy mostly in road ditches. Light to trace mostly in crested wheatgrass, some on downy brome and western wheatgrass, in Butte, Meade, Pennington, Custer, Haakon, Stanley, and Hughes Counties. Heaviest, 42 per sweep, in Shannon County at junction of U.S. Highway 18 and Wounded Knee Road, east of Pine Ridge. Counts of 20-25 per sweep common along roadsides where crested wheatgrass lush. Adults 15-18 per sweep on roadsides, 5 per sweep at field edges, and scarce 40 rods into field near Pine Ridge. (Zimmerman et al.).

GRASSHOPPERS - NEW MEXICO - Heavy in Tucumcari area in Quay County. (Durkin). KANSAS - First and second instars 75-150 per 50 sweeps of most alfalfa and sweetclover in Jackson, Atchison, Brown, and Nemaha Counties. Some light feeding damage. (Iselin). IOWA - Mostly Melanoplus femurrubrum late first and second instar averaged 2-3 per square yard in mixed forage legume plantings in Polk County June 18. (Iowa Ins. Inf.). NORTH DAKOTA - Cropland species averaged 2-3 per square yard in margins and less than 1 per square yard in fields in Cass, Richland, and Ransom Counties. Ranged 5-10 per square yard in some alfalfa fields and 60-70 per square yard in 1 red clover field. M. bivittatus and M. sanguinipes dominant; mostly first and second instars. Grasshoppers averaged 2 per square yard in sandhills of Richland and Ransom Counties. M. sanguinipes dominant. Hatch incomplete. (Grasser). Second to fourth instars of M. sanguinipes and M. bivittatus defoliated 25 percent of alfalfa field in south Burleigh County. Nymphs up to 40 per square yard. (Brandvik). MINNESOTA - M. bivittatus hatched in southern two-thirds of State. Populations spotty. Counts of 2 per square yard in 2 Rock County fields. Counts of 5 per square yard in north Kandiyohi County, with margin counts as high as 54 per square yard in 1 field. Some M. femurrubrum hatch in light soil areas but most eggs late eyespot to segmented. INDIANA - Early instars locally abundant in all southern districts on roadsides, and occasionally on alfalfa and other cultivated crops. (Meyer).

GYPSY MOTH (Porthetria dispar) - Defoliated oaks in woods in Colts Neck Township, Monmouth County, NEW JERSEY, and migrated into sweet corn field. As of June 12, much injury on lower leaves of corn in one field. Also infested orchard grass and weeds. (Ins.-Dis. Newsltr.). Defoliation expected to be heavy on 100,000 acres throughout northern and central New Jersey in 1970; more than twice acreage defoliated in 1969. Defoliation on estimated 100,000 acres expected on Long Island and in Orange, Richland, Sullivan and Ulster Counties, NEW YORK. In eastern PENNSYLVANIA, approximately 20,000 acres expected to be 70 percent defoliated and 5,000 acres completely defoliated. These areas not contiguous, but found in pockets throughout eastern part of State. (PPD).

IMPORTED FIRE ANT (Solenopsis saevissima richteri) - FLORIDA - Light in potted citrus in nursery at Naples, Collier County, for a new county record. Collected by J.H. Brown and R.O. Akins June 11. Determined by V.H. Owens; confirmed by D.R. Smith. (PPD).

JAPANESE BEETLE (Popillia japonica) - VIRGINIA - First adult of season in Pulaski County June 9. (Francis). First adult of season on newly set tobacco June 13 in Pittsylvania County. (Dominick). Adults infested grapes and ornamentals in Amelia and Montgomery Counties. (Allen, Roberts). MARYLAND - First adult activity in south area June 15 and on Eastern Shore June 16 in Somerset and Worcester Counties. (U. Md., Ent. Dept.).

MORMON CRICKET (Anabrus simplex) - NEVADA - Adults light and scattered in Humboldt Range and Seven Troughs area, Pershing County, June 8-12. (Burnett).

OBSCURE SCALE (Melanaspis obscura) - CALIFORNIA - Second treatment applied to 4 oaks in Capitol Park at Sacramento, Sacramento County. A persistent infestation of several years. (Cal. Coop. Rpt.).

PINK BOLLWORM (Pectinophora gossypiella) - Sterile moth releases June 12-18, CALIFORNIA - Coachella Valley 4,513,500, total to date 50,492,250; Kern County 1,200,000, total to date 11,171,700. ARIZONA - Redington, Pima County, 67,500; total to date 517,300. Five native moths trapped at Redington, one in release field, four in trapline to north and south. During June 10-16, 286 rosetted blooms found in Coachella. (PPD). NEW MEXICO - Trapped 10 adults in 10 hexalure traps at Carlsbad, Eddy County, and 7 adults in 6 hexalure traps in south Dona Ana County. (N.M. Coop. Rpt.).

RANGE CATERPILLAR (Hemileuca oliviae) - NEW MEXICO - Hatch continues in Union, Harding, and Colfax Counties. Hatch heavy June 5-9 in Lincoln County. Ranchers anticipate controls. (N.M. Coop. Rpt.).

WHITE-FRINGED BEETLES (Graphognathus spp.) - TENNESSEE - First adult of season in Shelby County June 9. (PPD).

HAWAII INSECT REPORT

General Vegetables - LEAF MINER FLIES (Liriomyza spp.) and GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) still generally medium to heavy on snap beans and watermelon at Waianae and Waimanalo, Oahu, despite regular spray programs. Light on snap beans at Haiku, Maui; no sprays made past month. CARMINE SPIDER MITE (Tetranychus cinnabarinus) very light on eggplant at Waikapu, Maui. Medium on eggplant, snap beans, and watermelon at Waimanalo and Waianae. (Kawamura).

Ornamentals - HAWAIIAN THRIPS (Taeniothrips hawaiiensis) nymphs and adults heavy, distorted many plumeria blossoms in North and South Kona, Hawaii. (Hoshioka).

Shade Trees - All stages of a PLATASPID BUG (Coptosoma xanthogramma) medium on terminals of several wiliwili trees (Erythrina sp.) at Kaneohe, Oahu. (Kawamura).

Miscellaneous Insects - Adults of an ANTHOMYIID FLY (Atherigona orientalis) heavy in houses at Lanai City, Lanai. Apparently a scavenger, breeding in rotting fruits and vegetable matter. (Miyahira). Many reports of loud stridulations at night due to a LONGHORN GRASSHOPPER (Euconocephalus nasutus) at Waipahu and Kaneohe, Oahu. (Kawamura).

DETECTION

New County Records - ALFALFA WEEVIL (Hypera postica) NORTH DAKOTA - Morton (p. 422). CEREAL LEAF BEETLE (Oulema melanopus) ILLINOIS - Clark, Coles, Ford, Sangamon (p. 432). ELM LEAF BEETLE (Pyrrhalta luteola) SOUTH DAKOTA - Charles Mix (p. 429). IMPORTED FIRE ANT (Solenopsis saevissima richteri) FLORIDA - Collier (p. 433). NATIVE ELM BARK BEETLE (Hylurgopinus rufipes) NORTH DAKOTA - Morton (p. 430).

CORRECTIONS

CEIR 20(25):401, 414 - A HARVESTER ANT (Pogonomyrex salinus) - IDAHO - ... should be A HARVESTER ANT (Pogonomyrmex salinus) - IDAHO ...

LIGHT TRAP COLLECTIONS

State	County	Date	Time	Temp.	Wind	Humid.	Wind	Dir.	Dir.	Dir.	Dir.	Dir.	Dir.	Dir.	Dir.	Dir.	Dir.	Dir.	Dir.	Crops
FLORIDA	Gainesville	6/13-18		BL			14	3												Spodoptera frugiperda
KANSAS	Great Bend	6/12-16		BL		18	6	6												Spodoptera frugiperda
MINNESOTA	Crookston	6/9-16		BL																Spodoptera frugiperda
	Kergus Falls	6/9-16		BL																Spodoptera frugiperda
	Maple Lake	6/9-16		BL																Spodoptera frugiperda
	Northington	6/9-16		BL																Spodoptera frugiperda
MISSISSIPPI	Stoneville	6/12-18	92-96	0.03	2BL	20	6	8	122											Spodoptera frugiperda
NEW HAMPSHIRE	Lee	6/16		BL		2														Spodoptera frugiperda
NEW JERSEY	Cedarville	6/12-16		BL																Spodoptera frugiperda
	Evesboro	6/12-16		BL		1		1												Spodoptera frugiperda
	Plainsboro	6/12-16		BL		4		0												Spodoptera frugiperda
NORTH DAKOTA	Bottineau	6/15-16		BL																Spodoptera frugiperda
	Cavalier	6/15		BL		6														Spodoptera frugiperda
	Fargo	6/15, 17		BL		16														Spodoptera frugiperda
OHIO	Reynoldsburg	6/12-18		BL		6	20													Spodoptera frugiperda
	Wooster	6/12-18		BL		11	54													Spodoptera frugiperda
TEXAS	Waco	6/12-18	72-94	None		66	1	129	2	34										Spodoptera frugiperda
WISCONSIN	Hancock	6/11-16		BL		2														Spodoptera frugiperda
	Madison	6/10-16		BL		14	4													Spodoptera frugiperda
WYOMING	Torrington	6/15																		Spodoptera frugiperda

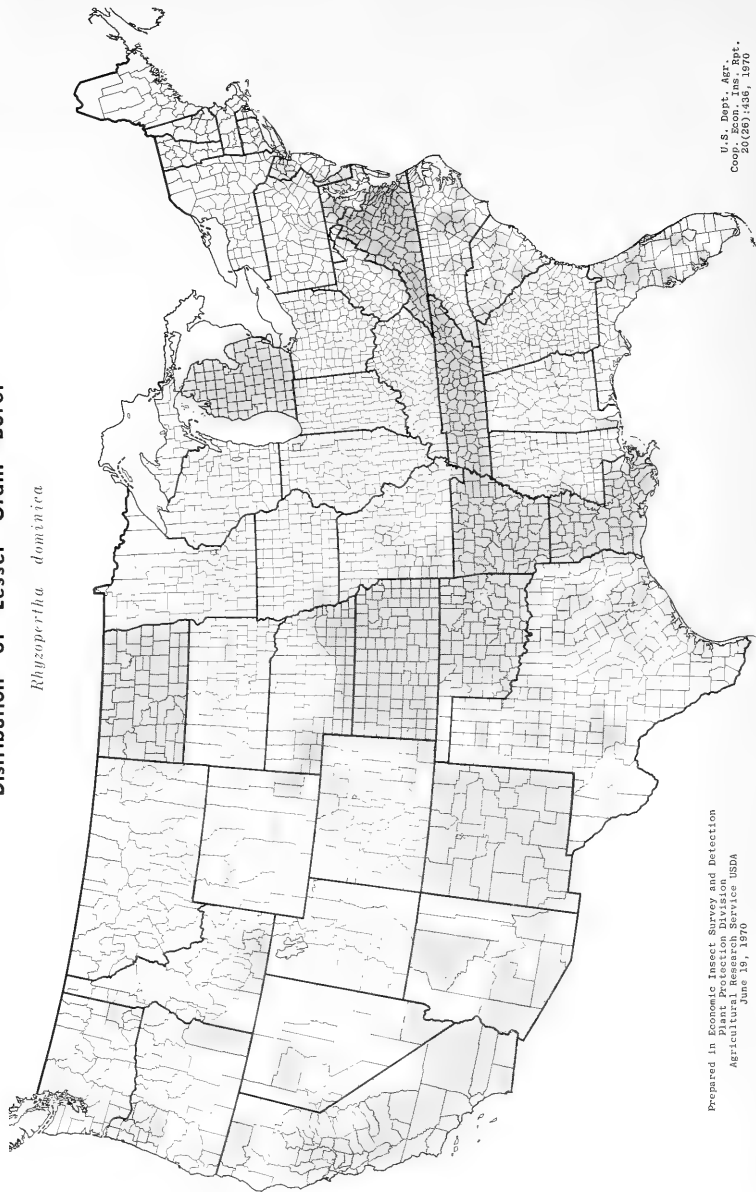
Weather of the week continued from page 418.

Kansas after a week of rain, the front moved eastward, it produced thundershowers in the northeast quarter of the Nation. Hail as large as soft balls, at Phoenix, Maryland and in the Potomac region. In Detroit, damaged automobiles and residences Thursday afternoon. The weekend brought scattered showers from the central Great Plains to southern New England and from Texas to North Carolina. South Carolina remained too dry with sparse rain except in the Greenville and Spartanburg area.

TEMPERATURE: Sunny skies and pleasant temperatures prevailed over the West last week. Afternoon maximums warmed from the 60's to the 80's in the Northwest and from 90's to about 105' in the southwestern deserts. A warm flow of tropical air from the Gulf of Mexico increased the temperatures and humidity over the East. Temperatures in Lower Michigan warmed to 90° on Wednesday. A slow-moving cold front brought weather to the Northeast by Friday. Weekly mean temperatures averaged above normal in the Far West and from southern Colorado and New Mexico to the Midwest, and below normal over Utah, Arizona, and from the northern Rocky Mountains to southern New England and New Jersey. (Summary Supplied by Environmental Data Service, ESSA.)

Distribution of Lesser Grain Borer

Rhyzopertha dominica



Prepared in Economic Insect Survey and Detection
Program
Agricultural Research Service USDA
June 19, 1970

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Economic Entomology
Coop. Econ. Insect Rep.
20 (26):436, 1970

UNITED STATES DEPARTMENT OF AGRICULTURE

Hyattsville, Maryland 20782

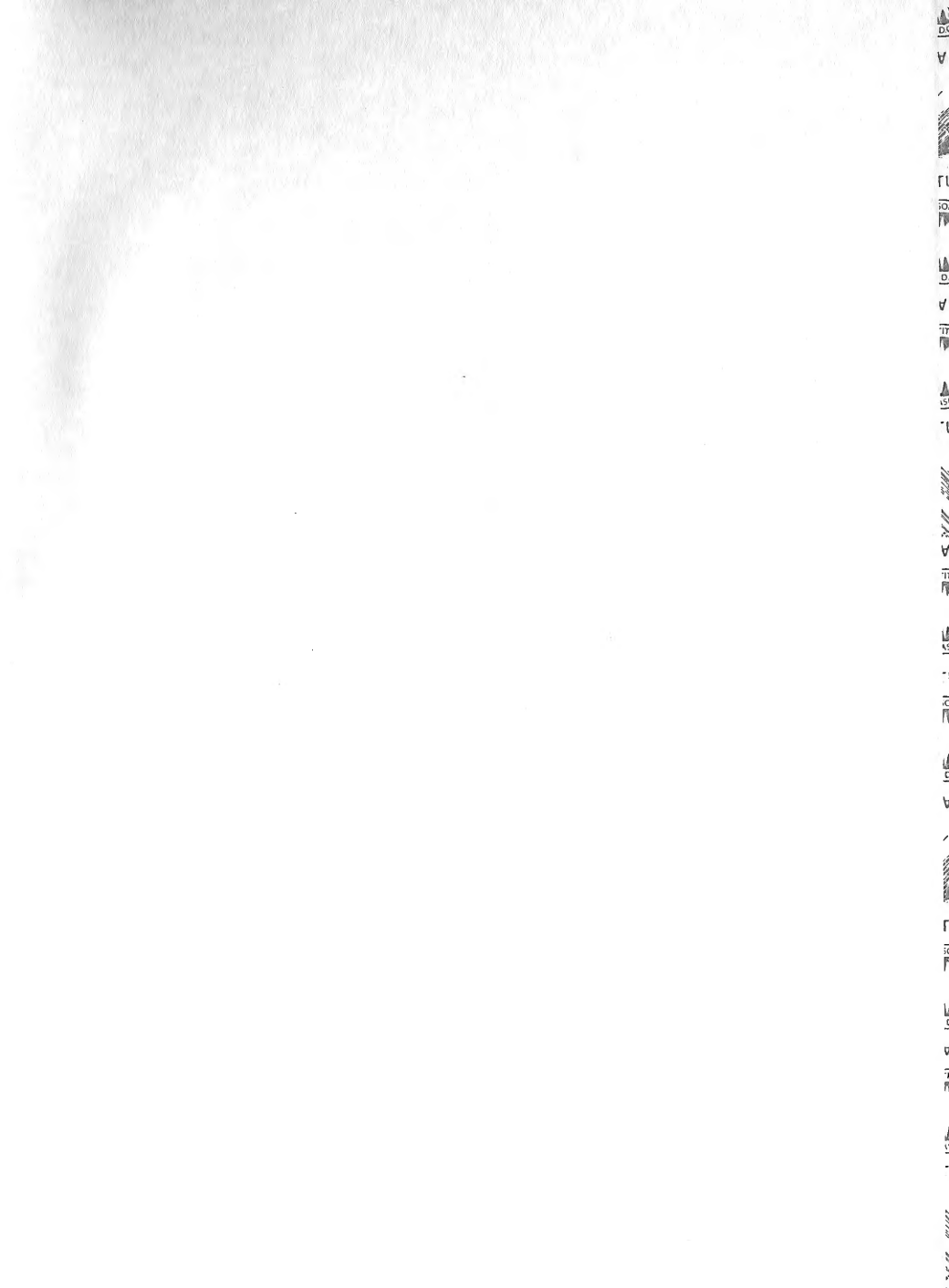
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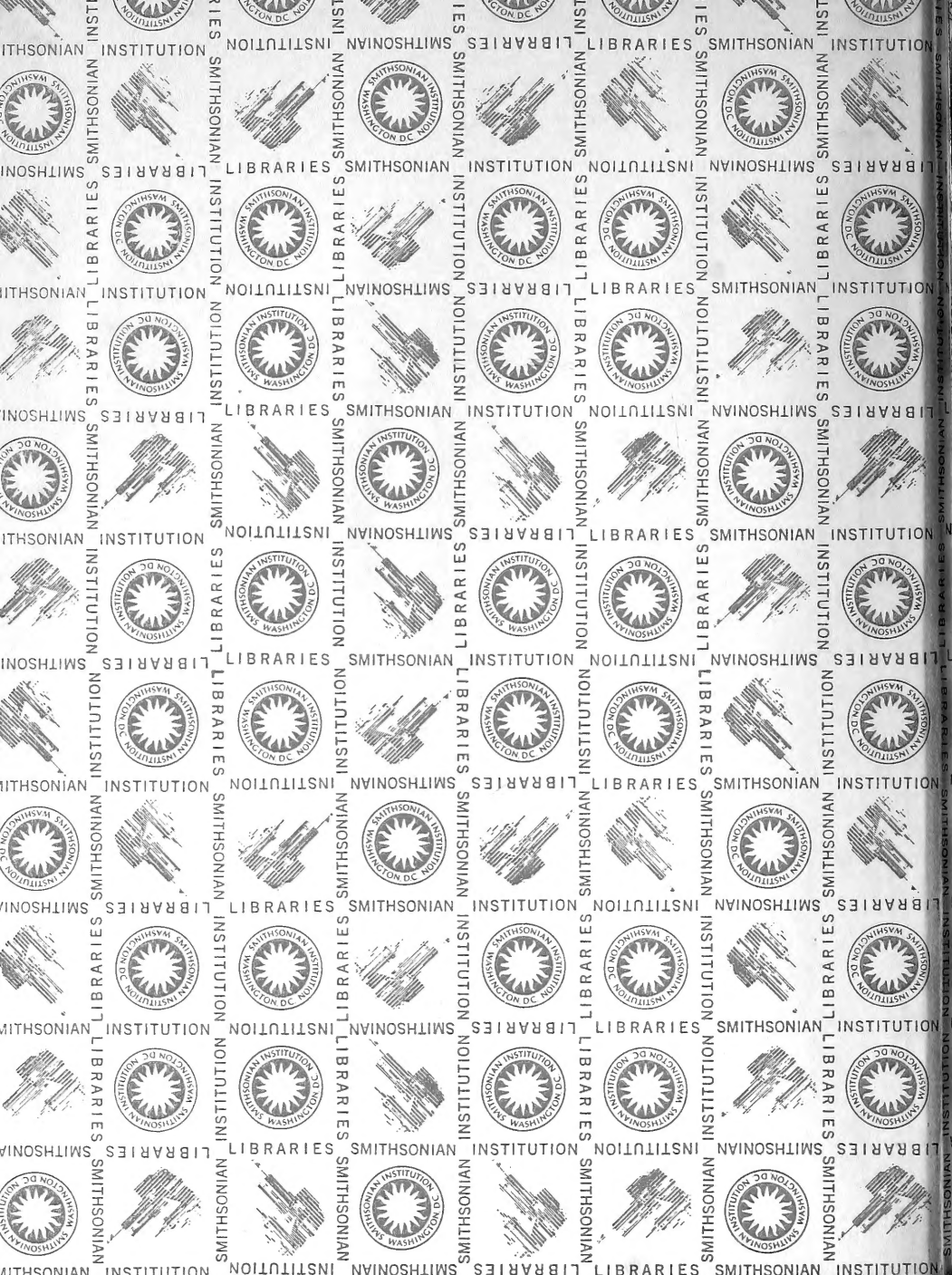


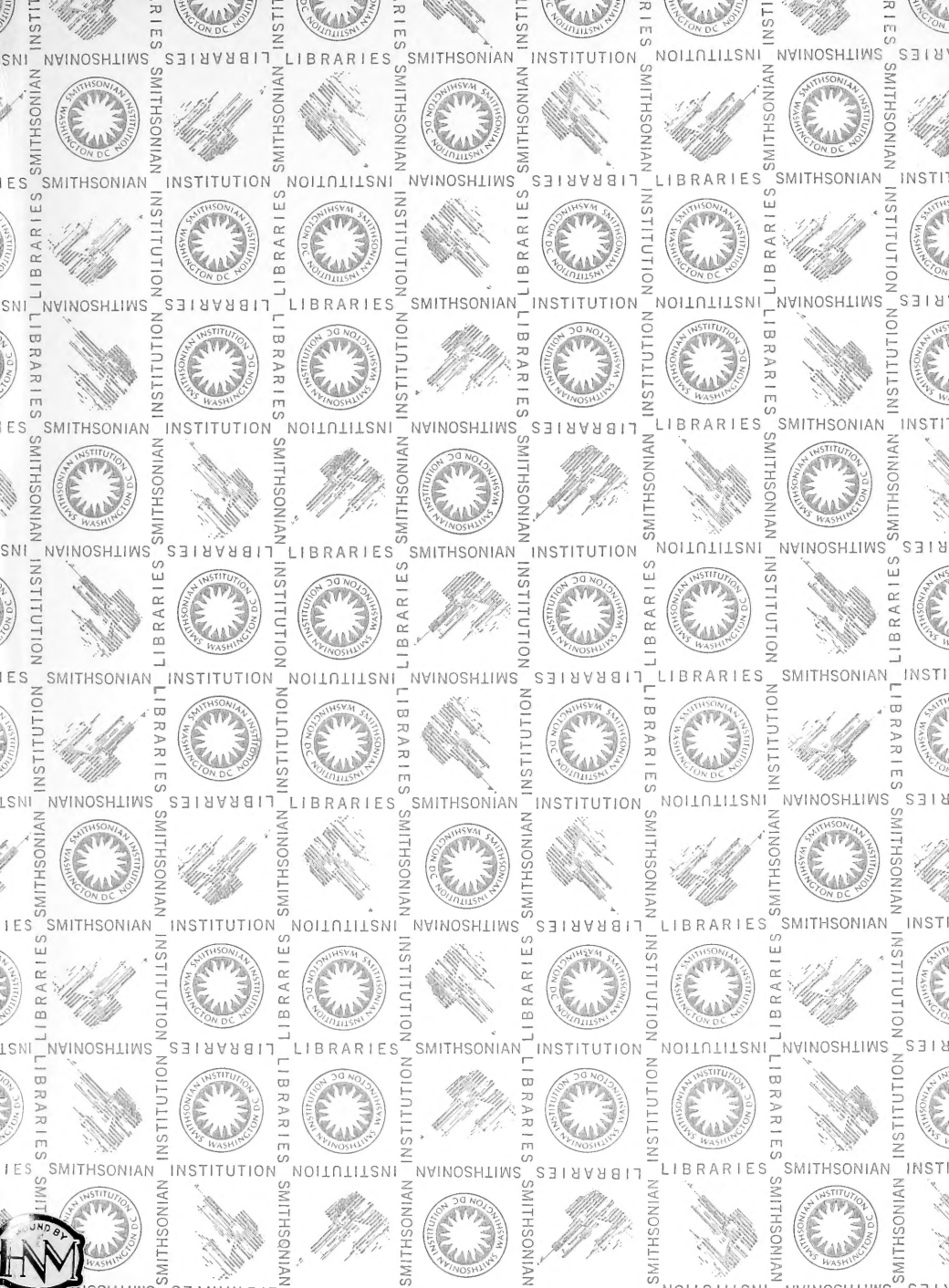
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