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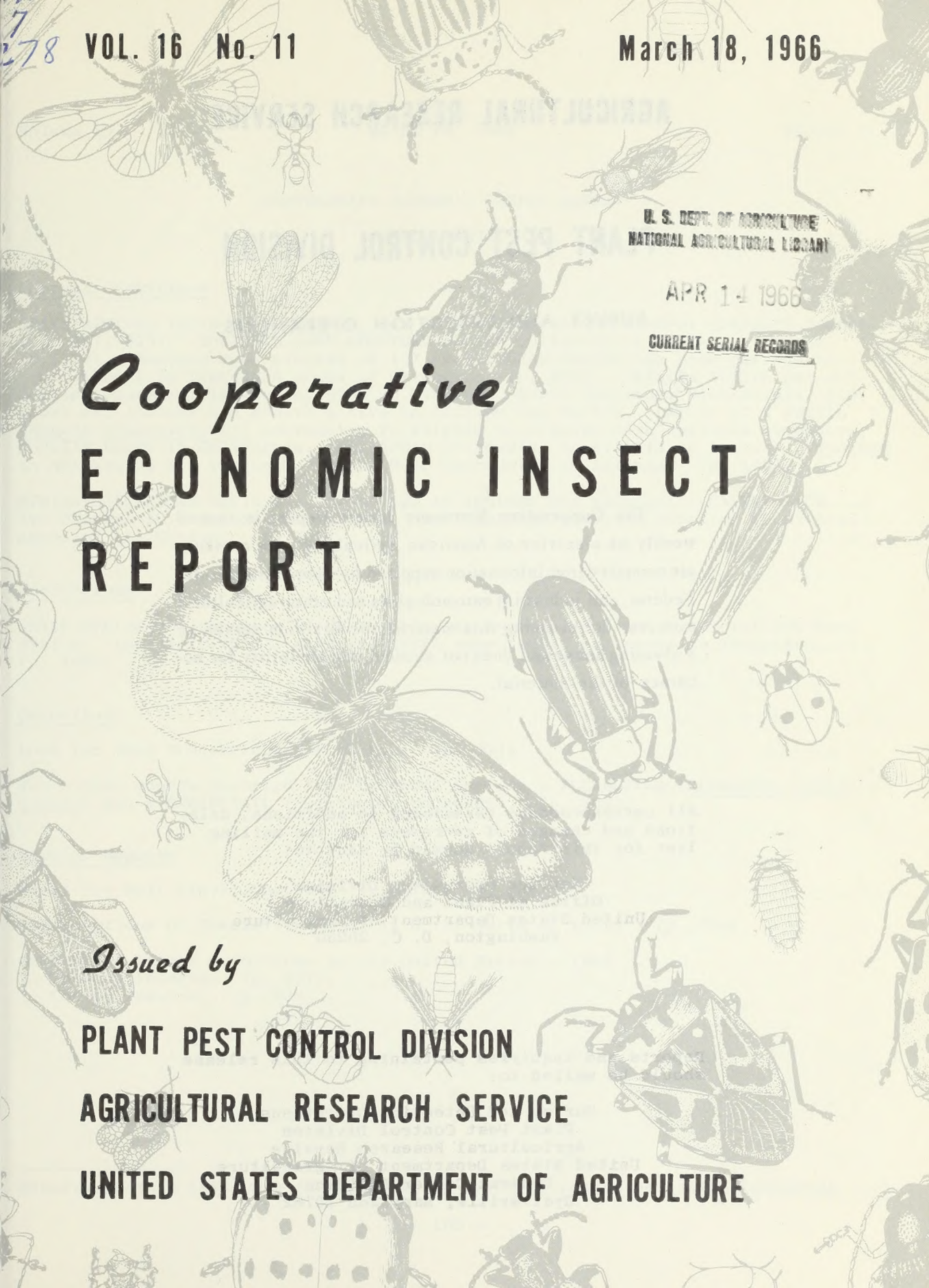
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*Cooperative*  
**ECONOMIC INSECT  
REPORT**

*Issued by*

**PLANT PEST CONTROL 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.

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## COOPERATIVE ECONOMIC INSECT REPORT

## HIGHLIGHTS

Current Conditions

GRAIN APHIDS, including GREENBUG, low in small grains in several Southern States. (pp. 197, 205). SOUTHERN CORN ROOTWORM adults collected in southern Indiana. (p. 197). Surveys show average of 1.7 viable GRASSHOPPER egg pods per square foot of soil in rangeland areas of Oklahoma. (p. 202). ALFALFA WEEVIL general across Tennessee; larvae detected in Virginia, North Carolina, Mississippi, Missouri and Indiana and adults active in Indiana and Nevada. Larvae of a WEEVIL (Hypera brunneipennis) increasing in alfalfa in Arizona with controls necessary; locally heavy in California. PEA APHID increasing in alfalfa in Arizona, reported in New Mexico and Virginia. LYGUS BUGS increasing in Arizona. (p. 198).

SPRING CANKERWORM adult males reported in Indiana and Missouri. CATTLE LICE troublesome in some Southern States. SUBTERRANEAN TERMITES swarming in several areas of the Nation. (p. 202).

Predictions

GRAIN APHIDS not expected to be troublesome on small grains in several Southern States. (pp. 197, 205). ALFALFA WEEVIL expected to be severe in Tennessee. (p. 198).

Detection

Look for Pine Processionary Moth Now. (p. 203).

New State records reported from Oklahoma include a FLEAHOPPER (Rhinacloa forticornis) and a SPRINGTAIL (Sminthurus packardi). (p. 203).

Special Reports

Names for Boll Weevil Complex. (p. 199).

Interceptions of Special Interest at U. S. Ports of Entry. (p. 204).

Summary of Insect Conditions in the United States - 1965

Tobacco Insects. (p. 207).

Cotton Insects. (p. 209).

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WEATHER OF THE WEEK ENDING MARCH 14

HIGHLIGHTS: (1) Dry, mild week most areas. (2) Heavy rains Pacific Northwest.

TEMPERATURE: Weatherwise, the week was tranquil compared to previous periods. Most of the Nation enjoyed variable sunshine with only scattered showers and temperatures characteristic of mid-April. Weekly averages were above normal from the Pacific to the Appalachians with departures of more than 9 degrees in the Great Basin, the northern Great Plains, and the Great Lakes region. Temperatures averaged above normal in New Mexico and Colorado for the first time since January. Parts of Oklahoma had the warmest weather in 14 weeks. Warming in the West was

Weather continued on page 214.

SPECIAL INSECTS OF REGIONAL SIGNIFICANCE

CORN LEAF APHID (Rhopalosiphum maidis) - ARIZONA - Continues to increase slowly on small grains in Maricopa and Pinal Counties. Very light on barley in Cochise and Graham Counties. (Ariz. Coop. Sur.). TEXAS - Very few found in barley in Wichita Falls area, Wichita County. (Daniels). OKLAHOMA - Light, 2-10 per linear foot, in small grain in central and north central counties. (Okla. Coop. Sur.).

GREENBUG (Schizaphis graminum) - OKLAHOMA - Ranged 2-10 per linear foot in wheat checked in Logan, Kingfisher, and Garfield Counties; 1-3 in barley in Garfield County, and oats and barley in Kingfisher County. Ranged 10-40 per linear foot in wheat in Grady and Caddo Counties, 2-30 in Tillman, Comanche and Jackson Counties. Greenbug "spots" appearing in few places in extreme southwest and near Hennessey, Kingfisher County. Light in wheat in Mayes, Bryan, Muskogee and McIntosh Counties. (Okla. Coop. Sur.). TEXAS - Recent surveys show generally light numbers in small grains in Panhandle area and in Vernon-Wichita Falls-Abilene area. Very few localized fields with populations that could increase to damaging numbers. Wheat and other grains beginning to grow; doubtful if problem develops this season. (Daniels).

SPOTTED ALFALFA APHID (Therioaphis maculata) - ARIZONA - Continues light in alfalfa in areas of Maricopa County. Few small colonies in Graham County. (Ariz. Coop. Sur.).

CORN, SORGHUM, SUGARCANE

EUROPEAN CORN BORER (Ostrinia nubilalis) - SOUTH DAKOTA - Larval collections made south of Volga, Brookings County, in area where Sympiesis viridula (a eulophid wasp) released several years ago. O. nubilalis larval numbers low compared with previous years; averaged less than 15 per 100 stalks. Parasitism attributed to S. viridula approximately 6 percent that of Diadegma punctoria (an ichneumon wasp) approximately 5 percent; 15-25 percent of larvae killed by other causes such as woodpecker predation. (Jones, Mar. 4).

SOUTHWESTERN CORN BORER (Zeadiatraea grandiosella) - OKLAHOMA - Live larvae found in 45 percent of dry cornstalks checked in McIntosh County field. (Okla. Coop. Sur.).

SOUTHERN CORN ROOTWORM (Diabrotica undecimpunctata howardi) - INDIANA - Adults collected in southern Harrison County March 3. Earliest collection date for State. (Huber).

SMALL GRAINS

GRAIN APHIDS - TENNESSEE - Infestations in small grains not expected to be troublesome this season. (Mullett). OKLAHOMA - Rhopalosiphum padi ranged 20-40 per linear foot in wheat in Tillman and Comanche Counties, 2-10 in wheat, oats and barley in Kingfisher, Logan and Garfield Counties. (Okla. Coop. Sur.). TEXAS - Populations of Rhopalosiphum fitchii-padi complex declined on small grains during past month. Very few Macrosiphum avenae found in Vernon-Wichita Falls area. As grains beginning to grow, problem not expected this season. (Daniels).

WINTER GRAIN MITE (Penthaleus major) - OKLAHOMA - Ranged 100-300 per linear foot in wheat in Comanche and Tillman Counties. (Okla. Coop. Sur.).

TURF, PASTURES, RANGELAND

A BILLBUG (Sphenophorus phoeniciensis) - ARIZONA - Adults heavy in many Bermuda grass lawns in Phoenix area, Maricopa County. (Ariz. Coop. Sur.).

For Grasshoppers, see Federal-State Plant Protection Programs, page 202.

FORAGE LEGUMES

ALFALFA WEEVIL (Hypera postica) - VIRGINIA - Larvae detected in Prince Edward, Culpeper, Hanover and Charles City Counties; 1-8 per 12 alfalfa tips; most first instars. (Pienkowski, Mar. 5). NORTH CAROLINA - Hatch late this year; only few larvae present in alfalfa in Piedmont area. (Campbell). TENNESSEE - Present generally across State; severe infestation expected. (Mullett). MISSISSIPPI - Larval counts per square foot in alfalfa as follows: 90 in De Soto County field; 80 in 2 Marshall County fields; 114 in Pontotoc County, with 11 samples taken in this field. (Dinkins et al.). MISSOURI - Egg hatch continues in Pemiscot County; 10-15 young larvae per 100 sweeps in several alfalfa fields. (Jones, Keaster). INDIANA - Trace numbers of small larvae present in some alfalfa March 8 in southern Harrison County. (Hintz). Trace numbers of adults active March 3 in same area. (Huber). NEVADA - Active adults averaged 1 per square inch in alfalfa in valley above Lovelock, Pershing County. (Ferraro).

A WEEVIL (Hypera brunneipennis) - ARIZONA - Larvae increasing in alfalfa in Yuma and Maricopa Counties. Heavy in all areas of Yuma County; controls necessary in Gila Valley and Yuma Mesa. (Ariz. Coop. Sur.). CALIFORNIA - Locally heavy on alfalfa in Escondido, San Diego County. (Cal. Coop. Rpt.).

BEE TARMY WORM (Spodoptera exigua) - ARIZONA - Larvae moderate to heavy in alfalfa in north Gila Valley, Yuma County; average 65 per 100 sweeps. (Ariz. Coop. Sur.).

ALFALFA CATERPILLAR (Colias eurytheme) - CALIFORNIA - Locally heavy on alfalfa in Escondido, San Diego County. (Cal. Coop. Rpt.).

DIAMONDBACK MOTH (Plutella maculipennis) - CALIFORNIA - Medium in alfalfa in El Centro, Imperial County. (Cal. Coop. Rpt.).

PEA APHID (Acyrtosiphon pisum) - ARIZONA - Increasing rapidly in Yuma, Maricopa and Pinal Counties. Small colonies appearing in alfalfa in Graham and Cochise Counties. (Ariz. Coop. Sur.). NEW MEXICO - Light on alfalfa in Dona Ana and Eddy Counties. (Elson, Kloefer). VIRGINIA - First-stage nymphs noted in field of alfalfa in Charles City County. (Pienkowski, Mar. 5).

LYGUS BUGS (Lygus spp.) - ARIZONA - Nymphs increasing in alfalfa in Maricopa and Yuma Counties; 80-160 per 100 sweeps in seed alfalfa areas of south Gila Valley. (Ariz. Coop. Sur.).

WESTERN FLOWER THRIPS (Frankliniella occidentalis) - CALIFORNIA - Locally heavy on alfalfa in Escondido, San Diego County. (Cal. Coop. Rpt.).

A SPRINGTAIL (Sminthurus packardi) - OKLAHOMA - Sminthurus sp. reported as heavy in alfalfa in Tillman County in CEIR 15(46):1263, determined as S. packardi by D. L. Wray. (Okla. Coop. Sur., Feb. 19). Several lots of Collembola collected from alfalfa in State by F. A. Fenton about 1950-1954 contained this species. However, this is first published record of S. packardi from State. (PPC).

CLOVER MITE (Bryobia praetiosa) - ARIZONA - Moderate to heavy populations damaging some alfalfa on Yuma Mesa, Yuma County. (Ariz. Coop. Sur.).



COTTON

Names for Boll Weevil Complex

In spite of the fact that considerable effort has been directed, during the last 50 years, to the problem of interpreting the significance of biological or geographical segregates in the populations of Anthonomus grandis (in the broad sense) and applying names to the segregates, the problem has not been solved. Evidence indicates that we are dealing with a "species" of insect that, occurring from Southern Mexico to Arizona on the West and to the Carolinas on the East, is susceptible to variations in details of biology and structure depending in part, at least, upon the ecology of the areas where the variants occur. The populations in Missouri, the Southeastern States and Texas show variations between themselves in details of biology. It would appear, therefore, that rather than two or three segregates there are as many as a half dozen, and probably more. If we are forced to give a name by which all these segregates can be recognized on morphological grounds we would have to revert to the name Anthonomus grandis Boh., the boll weevil.

Rose Ella Warner made an exhaustive study of the preserved material, accumulated over the past half century, in the National Collection. Analyses were made of her data and as a result most of the specimens she receives from Arizona and Western Mexico can be put in recognizable segregates. As you know, considerable effort is being made in Louisiana and Texas to reach a decision on this problem. Studies of living populations and cross breeding experiments are expected to shed light on the relationships between populations from widely separated geographical areas. This is possible, but we foresee a delay in reaching a satisfactory conclusion on names. In the meantime we all need a name for representatives of this wide-spread species.

We propose that an appropriate scientific name for the weevil in cotton in Northwestern Mexico, California, and Arizona is Anthonomus grandis Boh. complex, and an appropriate common name -- boll weevil complex. Weevils in cotton produced in the area from Texas to the East Coast will continue to be called Anthonomus grandis Boh., the boll weevil. The weevil in the thurberia plant should continue to be called A. grandis thurberiae Pierce. (Ent. Res. Div.).

PLANT BUGS - OKLAHOMA - Unspecified fleahopper reported as common in most cotton in Altus area, Jackson County, August 14, 1965, (CEIR 15(34):972) determined as 3 species: Rhinacola forticornis recorded for first time in State; Chlamydatus associatus and Spanogonicus albofasciatus reported for first time from Jackson County. Det. by R. C. Froeschner. (Okla. Coop. Sur., Mar. 5).

SUGAR BEETS

GREEN PEACH APHID (Myzus persicae) - ARIZONA - Increase continues on sugar beets for seed in Maricopa County areas. (Ariz. Coop. Sur.).

MISCELLANEOUS FIELD CROPS

FALSE CELERY LEAF TIER (Udea profundalis) - CALIFORNIA - Larvae infesting new plantings of safflower in Fresno County. (Cal. Coop. Rpt.).

DECIDUOUS FRUITS AND NUTS

CALIFORNIA PRIONUS (Prionus californicus) - CALIFORNIA - Medium in apricot tree roots in Hollister, San Benito County. (Cal. Coop. Rpt.).

WOOLLY APPLE APHID (Eriosoma lanigerum) - ALABAMA - Extremely high numbers observed on badly damaged root systems of apple trees on 2 Morgan County farms. (Vest, Parker et al.).

### CITRUS

Citrus Insect Situation in Florida - End of February - CITRUS RUST MITE (Phyllocoptura oleivora) infested 51 percent of groves (norm 60 percent); 28 percent economic (norm 37 percent). Decreased to moderate level; below average for February. North district showed greatest decline, but all districts decreased except west. Little change expected. Highest district west. TEXAS CITRUS MITE (Eutetranychus banksi) infested 23 percent of groves (norm 26 percent); 5 percent economic (norm 8 percent). Decreased to below February average; low in all districts. Very few important infestations expected in March. CITRUS RED MITE (Panonychus citri) infested 25 percent of groves (norm 36 percent); 13 percent economic (norm 12 percent). Continued below average; in low range in most districts. Highest district east, but north district expected to exceed it. SIX-SPOTTED MITE (Eotetranychus sexmaculatus) infested 5 percent of groves; none economic. Population very low; below normal; slight increase expected. GLOVER SCALE (Lepidosaphes gloverii) infested 74 percent of groves; 16 percent economic. Above average and at moderate level; little change expected. PURPLE SCALE (L. beckii) infested 78 percent of groves; 5 percent economic. Below average and at moderate level; no change expected. YELLOW SCALE (Aonidiella citrina) infested 70 percent of groves; 24 percent economic. Population will continue near current record high level. Highest districts central and south. CHAFF SCALE (Parlatoria pergandii) infested 57 percent of groves; 8 percent economic. Below average and further decrease expected. Highest district is south. BLACK SCALE (Saissetia oleae) infested 35 percent of groves; 21 percent economic. Still above normal but will continue decrease to low level. Highest districts east and central. Destructive larval forms of WHITEFLIES infested 61 percent of groves, but pupation underway. MEALYBUGS slightly above average. New flush of growth started in all groves; bloom opened in about 10 percent of groves. APHIDS scarce but expected to appear in numbers by end of March. (W. A. Simanton (Citrus Expt. Sta., Lake Alfred)).

### GENERAL VEGETABLES

THRIPS - NEW MEXICO - Ranged 2-4 per plant on some larger onions in southern Dona Ana County. (Elson, Campbell).

### ORNAMENTALS

ARMORED SCALES - FLORIDA - Unaspis euonymi and Parlatoria pergandii severe on stems of 11 out of 15 plants of Euonymus japonicus in Plant City, Hillsborough County. Scales so numerous that some stems killed. (Herrman, Mar. 3). MARYLAND - Aspidiotus perniciosus immatures heavy on pyracantha at University Park, Prince Georges County. (U. Md., Ent. Dept.).

For Tuliptree Scale, see Federal-State Plant Protection Programs, page 202.

APHIDS - ALABAMA - Isolated, heavy infestations of Macrosiphum rosae occurring on some well-protected rose plants used as foundation plantings at 2 locations in Jefferson County. Small numbers occurring on new growth in rose gardens in central area. (McQueen). CALIFORNIA - Nymphs and adults of Aphis spiraeicola heavy on Viburnum japonicum nursery stock in Rancho Santa Fe, San Diego County. (Cal. Coop. Rpt.).

## FOREST AND SHADE TREES

EASTERN TENT CATERPILLAR (Malacosoma americanum) - ALABAMA - Egg masses ranged 2-10 on isolated wild cherry trees in Morgan County; none noted on other tree species. Most egg masses lightly but partially destroyed, apparently by bird feeding. No hatch observed, although trees budding and leafing. (Parker et al.).

SPRING CANKERWORM (Paleacrita vernata) - INDIANA - Males emerged in West Lafayette, Tippecanoe County, March 2. (Chandler). MISSOURI - Males active in Columbia, Boone County. First observed March 9. (Stone).

A PSYLLID (Pachypsylla venusta) - ALABAMA - Overwintered galls containing larvae heavy on isolated and older hackberry trees on lawns and along field borders. Galls so heavy in some instances, trees appear heavily fruited. Survival apparently unaffected by extreme low temperatures of minus 10° F. (McQueen).

DOGWOOD CLUB-GALL MIDGE (Mycodiplosis alternata) - ALABAMA - Galls heavy on dogwood in Morgan County. (Parker et al.).

## MAN AND ANIMALS

MOSQUITOES - MARYLAND - Second and third-stage Aedes spp. larvae collected from woodland pools in College Park area, Prince Georges County. (U. Md., Ent. Dept.).

LOUISIANA - Larval collections by Jefferson Parish Department of Mosquito Control March 7-11 contained Aedes vexans, Anopheles quadrimaculatus, Culex salinarius, and Culiseta inornata. Light trap collections continued light. (Stokes).

OKLAHOMA - Adults of Culiseta inornata taken occasionally in light traps in Stillwater, Payne County. Unspecified mosquitoes biting people in Tulsa and Oklahoma Counties. (Okla. Coop. Sur.).

CATTLE GRUBS (Hypoderma spp.) - OKLAHOMA - Most H. lineatum dropped from backs of cattle to pupate. (Okla. Coop. Sur.). MISSOURI - Survey of cattle herds, hide buyers and slaughter houses in northern fourth of State indicates infestation lowest in years. Western range-cattle average approximately 30 percent "grubby" (over 5 per head) and "native" (midwestern stock) average approximately 15 percent "grubby". Averaged 7 (range 0-39) per head in feeder cattle on-the-hoof in northwestern district. (Houser). SOUTH DAKOTA - Appearing in young Hereford stock at Brookings, Brookings County. Later this year compared with previous years. Averaged 9.7 per animal on 40 untreated calves brought from Highmore area, Hyde County, in December. H. bovis and H. lineatum believed present. (Kohler).

A LOUSE FLY (Lipoptena sp.) - OKLAHOMA - Present on 17.9 percent of the deer at check stations in Cherokee, Muskogee and Sequoyah Counties ranged 1-10 per head. (Okla. Coop. Sur.).

CATTLE LICE - ALABAMA - Becoming more of a problem on herds in Marion, Madison, Lee and Morgan Counties. (Price et al.). OKLAHOMA - Moderately on cattle in Mayes and Bryan Counties. (Okla. Coop. Sur.). MISSOURI - Abnormally troublesome on beef cattle in Nodaway County. (Swope). UTAH - Cattle rubbing due to infestations near Hyrum, Cache County. (Knowlton).

TICKS - OKLAHOMA - Total of 815 ticks taken from deer at check stations in Cherokee, Sequoyah, Muskogee, Adair, Wagoner and Delaware Counties during November 1965, determined as follows: Of total, 728 (89.3 percent) Ixodes scapularis, again dominant species, with 97 pairs in copulae taken; 30 (3.7 percent) Dermacentor albipictus, slightly less than 4.5 percent found farther south (CEIR 16(10): 173); remaining 57 (7 percent) Amblyomma americanum, somewhat higher than 2.7 percent found in earlier group; numbers per head somewhat less, 5-400. (Okla. Coop. Sur.).

For Status of Screw-worm in the Southwest, see page 203.

## HOUSEHOLDS AND STRUCTURES

SUBTERRANEAN TERMITES (Reticulitermes spp.) - NEW JERSEY - Reticulitermes sp. wing forms active in many areas. (Ins.-Dis. Newsltr.). DELAWARE - First swarms of R. flavipes of season noted in New Castle County first week of March. (MacCreary). MARYLAND - R. flavipes winged forms swarming on several properties in Hyattsville, Prince Georges County. (U. Md., Ent. Dept.). VIRGINIA - Reticulitermes sp. adults collected in home in Sussex, Sussex County. (Isakson, Parson). NORTH CAROLINA - R. flavipes swarmed in large numbers at Wake County location March 4. First report of season. (Wray). NEVADA - Large numbers of R. hesperus adults swarming in office in Reno, Washoe County. (Ream).

ANTS - NORTH CAROLINA - Acanthomyops interjectus swarmed inside Burke County home March 4. Det. by D. A. Mount. (Speas). VIRGINIA - Acanthomyops claviger reproductive common in Staunton location, Augusta County. (Isakson, Morse). DELAWARE - Crematogaster lineolata troublesome in kitchens in New Castle County. (Burbutis). NEW JERSEY - A. interjectus active in many areas. (Ins.-Dis. Newsltr.).

A CARPENTER ANT (Camponotus vicinus) - CALIFORNIA - Adults heavy in walls of residence in Gualala, Mendocino County. (Cal. Coop. Rpt.).

## STORED PRODUCTS

WHITE-SHOULDERED HOUSE MOTH (Endrosis sarcitrella) - CALIFORNIA - Heavy in old feed storage tanks in Nipomo and in poultry feed and litter in Arroyo Grande, San Luis Obispo County. (Cal. Coop. Rpt.).

## BENEFICIAL INSECTS

Beneficial Insects in Mississippi - Survey of 400 linear feet of wintergrass with vacuum sweeper in Oktibbeha County revealed following: 25 Geocoris spp., 30 Nabis spp., 10 brown lacewings, one Hippodamia convergens, and 2 unspecified lady beetle larvae. Survey of 400 linear feet of oats with vacuum sweeper revealed 20 Nabis spp., one Geocoris sp., 15 brown lacewings and 10 lady beetle larvae. (Dinkins et al.).

LADY BEETLES - ALABAMA - Thousands of Coleomegilla maculata fuscilabris adults observed in 2 large hibernating locations in Morgan County; moving to top of surface trash. (Brown, Robinson). Few Hippodamia convergens adults observed flying in central area where temperatures over 60° F. (McQueen).

SYRPHID FLIES - ALABAMA - Adults laying eggs on arborvitae where aphids increasing in Morgan County. (McQueen).

DAMSEL BUGS (Nabis spp.) - ARKANSAS - Activity of these and hymenopterous parasites increasing in northwest. (Ark. Ins. Sur.).

## FEDERAL-STATE PLANT PROTECTION PROGRAMS

GRASSHOPPERS - OKLAHOMA - Egg pod surveys in rangeland areas of Beckham, Washita, Roger Mills, Harmon, Greer and Pittsburg Counties showed average of 1.7 viable egg pods of several species per square foot of soil. Bee fly or ground beetle larvae noted at several stops. Light numbers of egg pods destroyed by predators. (Okla. Coop. Sur.).

TULIPTREE SCALE (Toumeyella liriodendri) - CALIFORNIA - Host property addresses from previous surveys in San Jose inspected; 2 additional deciduous magnolias found infested. Heavily infested wood in 11 trees pruned, treated; 135 hosts sprayed. Pest under eradication treatment in State. (Cal. Coop. Rpt.).

STATUS OF THE SCREW-WORM (Cochliomyia hominivorax) IN THE SOUTHWEST

During the period March 6-12 no cases were reported in the United States. The Republic of Mexico reported 4 cases as follows by State: Sonora 1, Tamaulipas 1, and Territorio sur de Baja California 2. Sterile screw-worm flies released: Texas 20,126,250 and Mexico 70,668,000.

Year	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
	Current	Cumulative	Current	Cumulative	Current	Cumulative
1964	1	1	85	368	1.17	0.27
1965	0	4	31	468	0.00	0.85
1966	0	26	21	189	0.00	13.75

Table 1. Comparison of specimens reported during corresponding week in 1964 and 1965 in Southwestern Eradication Area. (1966 area figures include cases reported from Arizona and/or California; 1965 figures reflect those from the 5-State area).

Year	Positive Cases		Negative Cases		Ratio of Positive Cases to 100 Cases Negative	
	Current	Cumulative	Current	Cumulative	Current	Cumulative
1965	17	412	17	267	100.00	154.30
1966	4	395	12	165	33.33	239.39

Table 2. Comparison of specimens reported during corresponding week and in a corresponding area in 1965 in the United States-Mexico Barrier Zone.\*

Mexico Field Study - During this period 183 cases were identified in Mexico south of the Barrier Zone as follows: Jalisco 9, Veracruz 25, Guerrero 6, Sinaloa 26, Oaxaca 20, Tabasco 13, Michoacan 2, Queretaro 1, Durango 6, San Luis Potosi 4, Nayarit 10, Puebla 4, Chiapas 20, Yucatan 32, Hidalgo 1, Colima 2, Campeche 1, Zacatecas 1.

\* Barrier Zone - Area in which screw-worm eradication operations are being carried out in an effort to prevent establishment of self-sustaining screw-worm populations in the United States. (Anim. Health Div.).

INSECT DETECTION

Look for Pine Processionary Moth Now

In southern areas, look for dingy gray webs in pine branches containing hairy caterpillars, blackish in color and with yellow and brown markings. These caterpillars are 1 to 1.5 inches in length. Habit of moving in "procession", head to tail, very noticeable. Larvae often clump together when entering ground to pupate.



Thaumetopoea pityocampa (Denis & Schiffmuller) is a serious defoliator of pine forests in Italy, Spain and Switzerland. Outbreaks also have been reported from other countries including Yugoslavia and France. This thaumetopoeid moth has been recorded in southern Europe, Syria, Turkey, Tunisia, Lebanon and Libya. The night-feeding larvae often cause complete defoliation of infested trees. Bark beetles attack trees weakened by T. pity-

ocampa. Outbreaks may involve whole forests but usually do not last more than two years. The larvae are capable of producing cases of severe urtication in humans.

For more details see CEIR 9(50):1045.

PLANT BUGS - OKLAHOMA - Unspecified fleahopper reported as common in most cotton in Altus area, Jackson County, August 14, 1965, (CEIR 15(34):972) determined as 3 species: Rhinacloa forticornis recorded for first time in State; Chlamydatus associatus and Spanogonicus albofasciatus reported for first time from Jackson County. Det. by R. C. Froeschner. (Okla. Coop. Sur., Mar. 5). (p. 199).

A SPRINGTAIL (Sminthurus packardi) - OKLAHOMA - Determined by D. L. Wray from specimens collected on alfalfa in Tillman County week ending November 5, 1965. (Okla. Coop. Sur., Feb. 19). (CEIR 15(46):1263). Several lots of Collembola collected from alfalfa in State by F. A. Fenton about 1950-1954 contained this species. However, this apparently first published record of S. packardi in State. (PPC). (p. 198).

#### INTERCEPTIONS OF SPECIAL INTEREST AT U. S. PORTS OF ENTRY

Some important interceptions that were reported by the Plant Quarantine Division, ARS, USDA, during January 1966, follow. These reports are based on identifications received from Federal taxonomists at the U. S. National Museum during the month, and include any of special interest from recent months that were not previously reported.

LEEK MOTH (Acrolepia assectella (Zell.)) 3 times; twice in stores at Charleston, South Carolina, and once in air cargo at Dulles International Airport, Virginia.

CHINESE ROSE BEETLE (Adoretus sinicus (Burm.)) twice in air baggage at Honolulu, Hawaii.

CITRUS BLACKFLY (Aleurocanthus woglumi Ashby) 5 times; at Brownsville (1) and Laredo (4), Texas.

PEACH FRUIT MOTH (Carposina niponensis (Wlsm.)) once at New York, New York.

MEDITERRANEAN FRUIT FLY (Ceratitis capitata (Wied.)) 18 times; at Hawaii (14); New York (2), New York; Norfolk (1), Virginia; San Diego (1), California.

MELON FLY (Dacus cucurbitae Coq.) 3 times at San Diego, California.

A CRAMBID MOTH (Diatraea considerata (Hein.)) twice in baggage at Calexico, California.

AN ANOBIID BEETLE (Ernobius sp., probably abietis (F.)) (recorded as a destructive cone pest in parts of Europe and USSR) 8 times in baggage; at Chicago (1), Illinois; McGuire AFB (1), New Jersey; John F. Kennedy International Airport (1), and New York (1), New York.

A PYRAUSTID MOTH (Evergestis forficalis (L.)) (pest of crucifers) once at New York, New York.

BEAN BUTTERFLY (Lampides boeticus (L.)) once in Honolulu, Hawaii.

CABBAGE MOTH (Mamestra brassicae (L.)) 15 times; at Boston (1), Massachusetts; Cleveland (3), Ohio; Jacksonville (1), Florida; New York (4), New York; San Juan (4), Puerto Rico; Seattle (2), Washington.

A WEEVIL (Premnotrypes sp.) (potato borer of importance in South America) once at Houston, Texas.

A NOCTUID MOTH (Sesamia nonagrioides (Lef.)) (a small grain pest) in air baggage at John F. Kennedy International Airport, New York.

AN AVOCADO SEED MOTH (Stenoma catenifer Wlsm.) 30 times; at Bermuda (1); Brownsville (18), Hidalgo (1), Laredo (4), and Galveston (1), Texas; Miami (2), Florida; New Orleans (2), Louisiana; New York (1), New York.

A FRUIT-TREE SPIDER MITE (Tetranychus viennensis Zacher) (pest of apples and pears in Europe and Japan) 8 times; at Portland (3), Oregon; Seattle (3), Washington; Travis AFB (2), California.

WHITE GARDEN SNAIL (Theba pisana (Müller)) 12 times (6 alive, 6 dead); at Boston (4), Massachusetts; Dover (1), Delaware; John F. Kennedy International Airport (2) and New York (1), New York; Mobile (1), Alabama; Norfolk (2), Virginia; Wilmington (1), North Carolina.

KHAPRA BEETLE (Trogoderma granarium Everts) 56 times; at Anchorage (1), Alaska; Baltimore (6), Maryland; Charleston (11), South Carolina; Cleveland (1), Ohio; Dover (1), Delaware; Houston (1), Texas; Jacksonville (1), Florida; New Orleans (1), Louisiana; New York (17), New York; Norfolk (1), Virginia; Philadelphia (4), Pennsylvania; Portland (3), Oregon; San Diego (1), San Francisco (1) and San Pedro (1), California; San Juan (1), Puerto Rico; Seattle (2), Washington; St. Thomas and St. John (1), Virgin Islands; Wilmington (1), North Carolina.

GRASS CYST NEMATODE (Heterodera punctata) 3 times; at McGuire AFB (1) and Hoboken (1), New Jersey; Jacksonville (1), Florida.

GOLDEN NEMATODE (Heterodera rostochiensis) 7 times; at San Francisco (3), California; Jacksonville (2), Florida; Charleston (1), South Carolina; New York (1), New York.

#### CORRECTIONS

CEIR 16(8):130 - Distribution of Alfalfa Weevil (Hypera postica) - Delete Marion County, Missouri, (isolated record in northeast). Add Bernalillo County, New Mexico, and Golden Valley County, North Dakota.

CEIR 16(10):173 - COMMON CATTLE GRUB (Hypoderma lineatum) - OKLAHOMA - Note should read: Ranged 8-20 per head on calves in Tillman County, heavy in Cotton County week ending February 26. Averaged less than 5 per head on untreated yearling steers in Canadian County. (Okla. Coop. Sur.).

#### LIGHT TRAP COLLECTIONS

GEORGIA (Tifton, 3/2-9; temp. 30-70° F.; precip. 1.90 in.; blacklight) - Heliothis zea, H. virescens, Manduca sexta, M. quinquemaculata all zero.

TEXAS (Waco, 3/5-11; blacklight) - Pseudaletia unipuncta 19, Peridroma saucia 27, Feltia subterranea 15. (Brownsville, 3/5-11; temp. 37-75° F.; precip. 0.46 in.; 2 blacklight) - Agrotis ipsilon 1, F. subterranea 3, P. saucia 1, Pseudaletia unipuncta 6.

#### ADDITIONAL NOTES

ARKANSAS - GRAIN APHIDS - Aphid numbers currently low due to extremely low temperatures. Although buildup expected if warm weather continues, no severe problem anticipated because of present low populations. PEA APHID (Acyrtosiphon pisum) low on alfalfa and vetch in northwest. COMMON CATTLE GRUB (Hypoderma lineatum) averaged approximately one per head in 17 head of cattle in Benton County. No CATTLE LICE found in this herd. (Ark. Ins. Sur.).

## HAWAII INSECT REPORT

Cereal and Forage Insects - A GRASSHOPPER (Schistocerca vaga) - Female taken in Waianae, Oahu, confirms previous reports in area. Waianae approximately 5 miles from Nanakuli, 20 miles from Sand Island. (Yonamine).

Fruit Pests - A FALSE SPIDER MITE (Brevipalpus phoenicis) medium to heavy on papaya fruits on 3 acres in Waimanalo, Oahu. Spray program curtailed due to wet conditions. (Sato). SOUTHERN GREEN STINK BUG (Nezara viridula var. smaragdula) adults light on terminals of young citrus in Wailuku, Maui, at 500 feet elevation. (Takishita). COTTONY-CUSHION SCALE (Icerya purchasi) - All stages on grapefruit and orange trees in Lawai, Omao, and Kalaheo, Kauai; heavy in shaded areas. Light numbers of Rodolia cardinalis (vedalia) appearing. (Au).

Truck Crop Insects - A NOCTUID MOTH (Chrysodeixis chalcites)-Larvae medium on tomato in Hilo, Hawaii Island; fruit damage noticeable. (Yoshioka). GREENHOUSE WHITEFLY (Trialeurodes vaporariorum) eggs, nymphs and adults heavy on snap beans and eggplants in scattered areas in Waianae, Oahu; light to medium on 2 acres of snap beans in Waimanalo. Light on tomato at 1,300 feet elevation in Omaopio, Maui. (Yamamoto, Sato, Miyahira). A GRASSHOPPER (Atractomorpha ambigua) feeding on seeding mustard cabbage at C Village, Ewa Plantation, Oahu; 2 adults per sweep. Damage light to moderate. (Higa). LEAF MINER FLIES (Liriomyza spp.) light on tomato in Omaopio, Maui, and on 0.25-acre area in Wailua, Kauai. Heavy on Dolichos lablab (lablab beans) in Lihue, Kauai; 85 percent of leaves infested. (Miyahira, Au, Fujimoto). LEEK MOTH (Acrolepia assectella) larvae light on 1 acre of green onions in Waimanalo, Oahu. (Sato). No evidence of SOUTHERN GREEN STINK BUG on wild hosts in Omaopio, Maui, although occasional adult reported. Adults light on 0.25-acre of snap beans in Waianae, Oahu. Fifth-stage nymphs light on preferred wild weed host (Malva parviflora (cheeseweed)) in abandoned cattle feeding pens at Honouliuli, Oahu; 2-3 per plant noted; adults scarce. (Miyahira, Yamamoto, Davis).

Forest, Ornamental and Shade Tree Insects - COCONUT LEAF ROLLER (Hedylepta blackburni) caused light to heavy damage to coconut fronds in various localities on Kauai; light in Poipu, moderately heavy in Wailua and Kapaa. Damage heaviest in exposed coastal areas. (Au). All stages of COTTONY-CUSHION SCALE light on Casuarina sp. (ironwood tree) in Waimanalo, Oahu. (Hironaka). First and second-stage larvae of a NOCTUID MOTH (Achaea janata) observed for first time this year on croton plants in Lanikai, Oahu. Further increase and spread expected. (Davis). GREEN SCALE (Coccus viridis) medium (mostly nymphs) on gardenia and plumeria in scattered areas in Kaneohe, Oahu; about 90 per gardenia leaf and 50 per terminal of young plumeria plants. Medium to heavy on plumeria in Kapaa, Kauai. (Chong, Au). Sporadic occurrence of a twig-boring BARK BEETLE (Xylosandrus compactus) noted on twigs of Prosopis pallida (kiawe or mesquite) on western coast of Oahu between Nanakuli and Maile. Of 10 scolytid beetles examined, 8 were X. compactus, and 2 tentatively determined as Stephanoderes sp. This new locality record and most westerly spread of X. compactus on Island of Oahu since first discovered at Kailua in 1961. (Davis).

Beneficial Insects - A CERAMBYCID BEETLE (Plagiohammus spinipennis) pupating in stems of lantana at Kau, Hawaii Island, approximately 7 months after oviposition. (Harley).

Miscellaneous Insects - All stages of RED-BANDED THRIPS (Selenothrips rubrocinctus) medium to heavy on Schinus terebinthifolius (Christmas-berry) in Ewa, Oahu. (Higa).

Weather at Honolulu - During January the average maximum temperature was 76.9°F. and the average low was 67.2°F. at the Honolulu Substation of the Weather Bureau; precipitation totaled 2.82 inches. During February, the average maximum temperature was 75.8°F., the average low 65.9°F.; precipitation totaled 4.10 inches.



SUMMARY OF INSECT CONDITIONS IN THE UNITED STATES - 1965  
(continued from page 190)

TOBACCO INSECTS

Highlights:

TOBACCO FLEA BEETLE was unusually abundant in southern Indiana and was more than usually destructive to newly set and young tobacco plants in Maryland. The second generation of this leaf beetle ranged medium to heavy on large tobacco in Virginia. Infestations ranged up to heavy on this crop in Georgia. SOUTHERN POTATO WIREWORM caused up to 42 percent loss in some fields of shade-grown tobacco in Florida, and populations were higher than for 2 years in North Carolina. TOBACCO BUDWORM was heavy on tobacco in Georgia and was a major pest of this crop in Alabama. HORNWORMS were very minor on tobacco in 1965. GREEN PEACH APHID necessitated controls on 10,000 acres of tobacco in Maryland and heavy populations were spotty in Virginia. GARDEN SPRINGTAIL was important on tobacco in the bed and THRIPS were conspicuous on newly set plants over a wide area of Maryland.

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TOBACCO FLEA BEETLE (*Epitrix hirtipennis*) was unusually abundant throughout the southern tobacco-growing area of INDIANA during 1965. Up to 8 adults per leaf were common on young transplants during the latter part of June, and treatment was warranted in many fields. By early August, tobacco had populations of 20-30 adults per plant and "shot-hole" feeding injury was common. *Epitrix* spp. damaged several fields of tobacco in southwestern OHIO the last week of August. Tobacco flea beetle adults were more than usually destructive to newly set and young tobacco plants in MARYLAND. Populations were also high during most of August and early September. This leaf beetle was one of the most important pests of tobacco in the bed in Maryland. Overwintered tobacco flea beetle adults were light to medium on newly set tobacco in VIRGINIA. Emergence of the second generation peaked later than usual and populations were medium to heavy on large tobacco. Heavy infestations occurred largely in areas of Charlotte, Mecklenburg and Brunswick Counties where drought conditions prevailed in Virginia during 1965.

Tobacco flea beetle ranged light to heavy on tobacco in the plant bed in GEORGIA, and infestations in the field were heavy on newly transplanted tobacco. Tobacco flea beetle caused light damage to shade-grown tobacco in some plant beds in the Quincy area of FLORIDA. Growers have become more aware of this pest and losses have been reduced effectively in the plant beds with proper use of insecticides. Heavy rainfall during April hindered emergence of the first brood, thus populations were light in this area. The second brood emerged in moderate numbers and caused most of the damage to the shade-grown tobacco crop in the field in the Quincy area. Moderate to heavy damage to tobacco resulted where controls were not applied properly. Unspecified FLEA BEETLES were a major problem on tobacco in ALABAMA.

WIREWORMS, mostly SOUTHERN POTATO WIREWORM (*Conoderus falli*), caused light losses to the shade-grown tobacco crop in the Quincy area of FLORIDA. Some fields, however, were heavily damaged and losses were as high as 42 percent. Heavy rains during June hindered insecticide applications and losses were greatest at that time. TOBACCO WIREWORM (*Conoderus vespertinus*) ranged light to heavy across the tobacco belt in GEORGIA during the first half of the year, with infestations being more severe than in recent years. Tobacco wireworm and southern potato wireworm populations on tobacco in NORTH CAROLINA were higher than during the previous 2 years. Economic damage, however, was not extensive because of treatments and favorable growing conditions during transplanting. Tobacco wireworm was generally light on tobacco in VIRGINIA, but spotted medium to heavy infestations were reported in certain areas of Pittsylvania, Mecklenburg and Brunswick Counties.

VEGETABLE WEEVIL (Listroderes costirostris obliquus) infestations on tobacco in the plant bed in GEORGIA ranged light to moderate through June 30.

TOBACCO BUDWORM (Heliothis virescens) larval populations were light to moderate on shade-grown tobacco in the Quincy area of FLORIDA, with some light damage reported. Larvae were as numerous as ever observed on unsprayed plots of flue-cured tobacco in the same area of the State. Counts of 2.4 larvae per plant were typical during May and June, with counts of slightly more than 3 per plant occurring. Biocontrol curtailed populations of this pest, with Cardiochiles nigriceps (a braconid wasp) and Peucetia viridans (a green spider) being the principal agents. Tobacco budworm ranged light to heavy on tobacco throughout the tobacco belt of GEORGIA before June 30, and this noctuid was one of the major pests of tobacco in ALABAMA during 1965. Larval infestations of CORN EARWORM (H. zea) were heavy on tobacco in GEORGIA the latter part of the first half of the season.

BUDWORMS (Heliothis spp.) were more prevalent on tobacco in NORTH CAROLINA throughout the 1965 season than they were in 1964, but Campoletis perdistinctus (an ichneumon wasp) was also very abundant and kept budworm populations in check. Budworms were unusually light on tobacco in VIRGINIA for the second consecutive year and were not problem on tobacco in MARYLAND for the third consecutive year.

CABBAGE LOOPER (Trichoplusia ni) infestations were lighter on shade-grown tobacco in the Quincy area of FLORIDA than in 1964, but remained the number-one pest of this crop, causing moderate losses. In late June and early July, cabbage looper was occasionally observed damaging tobacco in VIRGINIA. LOOPERS (Trichoplusia spp.) were not reported as a problem on tobacco in NORTH CAROLINA during 1965 as they were in some areas of the State in 1964.

Other noctuids were reported as infesting shade-grown tobacco in the Quincy area of FLORIDA. BEET ARMYWORM (Spodoptera exigua) was light and caused light damage to the crop. Infestations of VARIEGATED CUTWORM (Peridroma saucia) and BLACK CUTWORM (Agrotis ipsilon) were lower than in 1964, but caused moderate losses to some fields of shade-grown tobacco in the area.

CUTWORMS were generally light on tobacco in VIRGINIA, but heavy infestations were reported in a few Mecklenburg County fields. Cutworms, especially CLAY-BACKED CUTWORM (Agrotis gladiaria), caused moderate injury to newly set plants in a few fields in MARYLAND.

TOBACCO HORNWORM (Manduca sexta) was not damaging to shade-grown tobacco in the Quincy area of FLORIDA. First moths were trapped April 27, compared with April 26, 1964. Catches indicated 51.9 percent fewer moths taken in 1965. Eggs in unsprayed plots of flue-cured tobacco in the Quincy area were numerous, but late-stage larvae were rarely observed. This is attributed to biological control, mainly by predatory wasps and Peucetia viridans (a green spider). Tobacco hornworm was a major pest of tobacco in ALABAMA but infestations were light on tobacco in GEORGIA.

Populations of HORNWORMS (Manduca spp.) were lower on tobacco in NORTH CAROLINA than in 1964, when numbers were very light. Hornworms were generally light on tobacco in VIRGINIA, but more numerous than in 1964. Moth catches in blacklight traps were substantially larger than those of 1964. Hornworms were again below normal on tobacco in all section of MARYLAND, with injury ranging light to moderate. These pests caused some damage to tobacco in southwest OHIO during 1965.

POTATO TUBERWORM (Phthorimaea operculella) infestations were light on shade-grown tobacco in the Quincy area of FLORIDA, and little damage was reported. This pest was rarely observed on flue-cured tobacco in this area during 1965, although it was economic on tobacco in 1964.

GREEN PEACH APHID (Myzus persicae) populations during late July and August ranged moderate to heavy throughout the 5 tobacco-growing counties of MARYLAND. Over 10,000 acres of tobacco were treated to control this pest in the State. Infesta-

tions of this aphid ranged light to heavy on tobacco in Pittsylvania, Halifax, Mecklenburg and Brunswick Counties, VIRGINIA, but heavy populations were spotty. Entomogenous fungi increased in late July and aided the population decline in some areas. Green peach aphid was light on tobacco in the plant bed and in the field in GEORGIA through June 30. This aphid was light on shade-grown tobacco in the Quincy area of FLORIDA and no losses to the crop were recorded. M. persicae was not a problem on flue-cured tobacco in this area, either in experimental plots or in commercial plantings.

BROWN STINK BUG (Euschistus servus) occasionally damaged tobacco in VIRGINIA during the 1965 season and was more common than at any time during the past 5 years.

SOUTHERN MOLE CRICKET (Scapteriscus acletus) was light to moderate in tobacco in the field in GEORGIA by the end of June. A SNOWY TREE CRICKET (Oecanthus sp.) caused some damage to field tobacco near Oakville, St. Marys County, MARYLAND, during July.

GARDEN SPRINGTAIL (Bourletiella hortensis) was one of the most important pests of tobacco in the bed and THRIPS were conspicuous on newly set plants over a wide area during late May and June in MARYLAND. CRANE FLY larvae were also important on tobacco in the bed in the State this year.

The value of the shade-grown tobacco crops in FLORIDA was estimated to be \$15,340,800 in 1965. Insect losses to this crop were estimated at 5.2 percent, or \$797,722. Cabbage looper (2.3 percent), cutworms (1.6 percent), flea beetles (0.5 percent), budworms (0.4 percent), wireworms (0.1 percent) and other insects (0.3 percent) contributed to the overall loss. The outlook for 1966, in view of 1965 infestations in Florida, indicates an apparent increase in insect populations. Losses from insects should range 6-8 percent of the crop value. Unfavorable weather conditions in March and April could bring about a reduction in these estimated losses. Insects expected to increase in population in 1966 are cabbage looper, flea beetles, cutworms and budworms. Beet armyworm is unpredictable, but may be more numerous than in 1965. Some losses are expected from wireworms, but these should not average greater than in 1965. It is expected that wireworm losses will be reduced with more acreage treated for control.

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## COTTON INSECTS

### Highlights:

BOLL WEEVIL populations and damage were unusually high in North Carolina, and sufficient numbers entered hibernation in the fall of 1965 in Alabama to be of concern if winter survival is normal. This pest was heavier than during the past 3 years in Arkansas. Boll weevil was again heavy below the Caprock in Texas and reported above the Caprock for the third consecutive year. Larvae of Anthonomus grandis complex were collected in California for the first time. BOLLWORM was of concern on cotton in the West, but infestations were lighter in Oklahoma than last year and were the lightest since 1961 in Missouri. BOLLWORMS (Heliothis spp.) were of some concern throughout the Cotton Belt; infestations were lighter in Georgia than in 1964, but populations caused considerable damage in some untreated cotton in North Carolina. PINK BOLLWORM was reported for first time in California; spread was general in eastern and southern Arizona; infestations resulted in much lower yields and grades of cotton in the Pecos Valley of New Mexico, and heavy losses in other areas of the State. Several PLANT BUGS caused some damage to cotton in a few areas, and THRIPS (Frankliniella spp.) damaged cotton through July in Arizona. SPIDER MITES necessitated controls in Nevada, and infestations were less severe on cotton in the Brazos River Bottom area of Texas than in 1964. Spider mites, mainly STRAWBERRY SPIDER MITE, were a problem on seedling cotton plantings in Missouri.

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BOLL WEEVIL (Anthonomus grandis) populations and damage were unusually high in NORTH CAROLINA during 1965. The November 1 forecast for cotton yield was 40 percent below that of 1964 and 23 percent below the 1959-1963 average. These yield reductions were due to boll weevil and excessive rains during the growing season. Boll weevil was present in large numbers in North Carolina early in the season and increased as the season progressed. On the Coastal Plain only 3 growers that began treatment early and maintained a regular schedule despite the rains were able to keep damage to a low level. Boll weevil infestations in GEORGIA, however, were low during the first 6 months of the year, except for a few fields. During the week of June 21, counts ranged 0-33 percent punctured squares and averaged 7 percent. Winter hibernation survival surveys for boll weevil in ALABAMA indicated that survival was much higher than in 1964. Counts made on farms in Henry, Dallas, Tuscaloosa and Morgan Counties in April, May and June were about the same as during the survival survey in these counties in March. The numbers of weevils entering hibernation in the fall of 1965 in these counties were as follows: Henry 2,126, Dallas 5,239, Tuscaloosa 3,627 and Morgan 5,158. Boll weevil populations have again built up rather high throughout Alabama and sufficient numbers entered hibernation in the fall of 1965 to be of general concern if winter survival is normal. This situation is of major concern in the northern portion of the State where most of the cotton is grown. Infestations appeared early in 1965 with heavy egg laying. Cotton made excellent growth, affording excellent shade for larvae in squares during June and July, with favorable moisture and heavy emergence of first-generation weevils in late June and mid-July. This condition continued through succeeding generations. High boll weevil populations and unsuitable weather for effective controls resulted in extreme damage to cotton in southeastern Alabama counties.

Boll weevil was heavier in ARKANSAS in 1965 than for the past 3 years, but was lighter than it has traditionally been. The percentage of fields with economic populations, as shown by point sampling, ranged from 0.3 percent to 20.3 percent, with a seasonal average of 10.8 percent. This compares with a range of zero to 7 percent and a season average of 2.8 percent in 1964. Boll weevil was present in cotton fields in MISSOURI during the 1965 season but was of no economic importance. Boll weevil infestations appeared in cotton in OKLAHOMA in mid-June. By early August, populations were heavy in many areas and remained so the rest of the season. Punctured squares ranged 80-100 percent in untreated fields by mid-September. Boll weevil was again heavy below the Caprock in the western area of TEXAS, with weevils reported above the Caprock for the third consecutive year. Widespread infestations with heavy damage to cotton were reported in some sections of the Rio Grande Valley and Rolling Plains areas. Heavy local damage to cotton by this curculionid was reported in the gulf coast area and in the Blacklands and eastern area of Texas.

Four larvae of Anthonomus grandis complex taken from a green cotton boll 2.5 miles west of Winterhaven, Imperial County, constituted a new State record for CALIFORNIA. Another WEEVIL (Anthonomus sp.) does not appear to have extended its range significantly in ARIZONA. Some extremely heavy infestations were still present in some fields, however. During the 1965 season, over 38,000 acres were infested on more than 500 properties in Cochise, Maricopa, Pima, Pinal, Santa Cruz and Yuma Counties, Arizona.

BOLLWORM (Heliothis zea) was present in varying infestations in CALIFORNIA during the season and required continuous treatments. Populations of this noctuid began increasing in NEVADA during August and required controls into early September. Bollworm populations occurred in all cotton areas in ARIZONA during the summer and fall months, with population peaks during early September. Scattered, heavy populations caused some economic loss in Arizona in 1965, but the amount of insecticides used this season were below those used during 1964. Mostly scattered, light to moderate bollworm populations damaged cotton in the cotton-growing areas of NEW MEXICO, with only a limited number of growers treating for this pest. Bollworm damage in TEXAS was about the same as occurred during 1964. Although widespread infestations occurred throughout the State, these were generally light during 1965, except for some locally heavy damage. Bollworm infestations in

OKLAHOMA were considerably lighter this year than in 1964. Activity began in mid-June and continued through mid-October. Egg and larval counts seldom ranged over 30 percent infestation. Bollworm infestations in cotton in MISSOURI were the lightest since 1961. Larvae ranged 0-10 per 100 terminals during critical periods. Average counts were quite low this season and the percent of the scouted fields that were infested were also low.

TOBACCO BUDWORM (Heliothis virescens) moths were numerous in June and early July, comprising 22 percent on sugar baited hosts in southeastern ARKANSAS during the period June 10-30. The percentage dropped to 9.6 percent for July 1-7 and was then insignificant through early September. No H. virescens moths were taken in a light trap in the same area during the period June 10 through July 7. Of the 1.165 Heliothis spp. larvae collected from cotton in Arkansas during July and August, only 11, or 0.94 percent, were H. virescens. This compares with 1.49 percent in 1964 and 5.9 percent in 1963. Infestations of bollworms were lighter in Arkansas during 1965 than they were in 1964. The seasonal average percent of fields with bollworms present was 42.2 in 1965 compared with 48.7 in 1964 and a 5-year average of 48.1 percent. The seasonal average percent of fields with more than 3 larvae per 100 terminals was 12.9 compared with 17.3 in 1964 and 20.8 on 1963. Lighter infestations of bollworms are also reflected by the percent of fields with more than 4 percent damaged squares. The seasonal averages for 1965, 1964 and 1963, respectively were 5.5 percent, 10.5 percent and 16.9 percent. Tobacco budworm damage to cotton in TEXAS was about the same as in 1964. Although widespread infestations occurred throughout the State, they were generally light, but there was some locally heavy damage reported.

Moth flights and egg laying by bollworm and tobacco budworm occurred early in April, May and June in ALABAMA, but adult populations were not reflected by the number of larvae entering pupation in cotton fields. Pupation occurred in and moth flights originated from vetch, crimson clover, corn and many other crops. Controls for these pests were not general in Alabama until necessary for boll weevil (Anthonomus grandis), at which time sufficient dosage and spacing of applications were made to control both insects. Heavy larval populations developed late throughout Alabama on grain sorghum, sweet corn, and late cotton squares, blooms and bolls, as well as other crops. Control of this cotton insect complex apparently was not as difficult in 1965 as prior to 1963 when it became equal to or greater in importance than boll weevil. This may be due to better knowledge of control methods by growers. Bollworms (Heliothis spp.) were very light in cotton in GEORGIA until the week of June 21. Egg counts during this week ranged 0-9 and averaged 3 per 100 terminals. Larval counts during this period ranged 0-6 and averaged 4 per 100 terminals. Heliothis spp. were not a problem on cotton in NORTH CAROLINA until late in the season. Increases were rapid during the third week of August and considerable damage occurred in some untreated fields.

CABBAGE LOOPER (Trichoplusia ni) appeared in ALABAMA cotton as early as June, but did not feed on leaves in noticeable numbers until August. A complex of T. ni and Pseudoplusia includens was present in all fields affected. Populations did not reach suspected damaging proportions except where considerable controls had been applied for other insects. Reports did not indicate any special efforts were made specifically for these 2 loopers, although numerous but isolated fields were ragged by high populations that were controlled by naturally occurring viruses. Cabbage looper infestations were light and just appearing at the end of June in GEORGIA. Cabbage looper caused some damage to cotton in OKLAHOMA during the 1965 season, and localized populations occurred in cotton in TEXAS, but were not a general problem there. Cabbage looper populations were much smaller in ARIZONA cotton than they were in 1964. Parasites aided in keeping populations below economic proportions in the State. Infestations of T. ni were at economic levels in some cotton fields in NEVADA where controls were necessary in mid-June and early July. In CALIFORNIA, this noctuid was not as severe in cotton as in previous years. Virus diseases were noted in some areas.

PINK BOLLWORM (Pectinophora gossypiella) male moths were taken in sex lure traps in Riverside and Imperial Counties, CALIFORNIA, and a single larva was taken from

a green boll late in December. This is the first record of this cotton pest in California. Light to heavy infestations of pink bollworm appeared throughout Graham, Maricopa and Pinal Counties, ARIZONA. Spread was general, with infestations in nearly all areas of eastern and central portions of the State. Moths were numerous in sex lure traps in Yuma County, previously uninfested, but only a few larvae were taken during gin trash and field inspections. Pink bollworm built up rapidly during late summer and fall in the Pecos Valley of NEW MEXICO, resulting in much lower yields and grades of cotton than in previous years. Infestations were also light to heavy in southern Dona Ana County fields late in the season. Cotton bloom surveys in Eddy County in June indicated that large numbers of larvae survived the winter; 10 percent of blooms in several fields checked were found rosetted. Heavy losses resulted from heavy infestations which built up during the summer and fall in Eddy and Chaves Counties. Late buildup in southern Dona Ana County cotton fields caused the loss of the "top crop" in a number of fields. Light to heavy infestations also occurred in several fields near Columbus and east of Deming in Luna County, New Mexico.

Pink bollworm was again present in the Rio Grande Valley and gulf coast areas of TEXAS, and infestations in the trans-Pecos area increased considerably over those present in 1964. Pink bollworm caused some damage to cotton in OKLAHOMA and more larvae were recovered during gin trash inspections in ARKANSAS than in 1964. Pink bollworm is still not known to occur in MISSOURI; observations by cotton scouts and inspections of gin trash and lint cleaners failed to reveal this pest's presence in the State.

BEE T ARMYWORM (Spodoptera exigua) caused early damage to cotton in several CALIFORNIA counties, but was unimportant on cotton during 1965 in NEVADA. Beet armyworm populations were subnormal during the cotton season in all areas of ARIZONA, with a minimum amount of controls being necessary. Beet armyworm did damage cotton stands in the Rolling Plains area of TEXAS, however.

YELLOW-STRIPED ARMYWORM (Prodenia ornithogalli) also damaged cotton stands in the Rolling Plains of TEXAS, but infestations were lighter in ARKANSAS cotton during 1965 than they were in 1964. COTTON LEAFWORM (Alabama argillacea) was present in fields of cotton in MISSOURI, but was of no economic importance.

Several species of CUTWORMS were present in cotton in MISSOURI, but these too were not of economic importance this season. Cutworms were responsible for damage to cotton in Rolling Plains area of TEXAS. These pests caused a considerable problem in early cotton in CALIFORNIA, as cool, damp weather was ideal for development.

GARDEN WEBWORM (Loxostege similalis) damaged stands of cotton in the Rolling Plains of TEXAS and WEBWORMS (Loxostege spp.) destroyed several fields of cotton in southwestern OKLAHOMA in mid-July. EUROPEAN CORN BORER (Ostrinia nubilalis) was present in some cotton fields in MISSOURI but was of no economic importance.

COTTON SQUARE BORER (Strymon melinus), although present in cotton in MISSOURI during the season, was of no economic importance. This lycaenid butterfly caused some damage to cotton in OKLAHOMA, and occurred in local areas of TEXAS but created no general problem.

SALT-MARSH CATERPILLAR (Estigmene acrea) occurred locally in TEXAS cotton but was not a general problem, and was present in very light populations during the fall in ARIZONA causing very little damage. Little control was used in Arizona. Salt-marsh caterpillar was present in CALIFORNIA primarily in desert cotton. Also in California, larvae of a LEAF ROLLER MOTH (Platynota stultana) were quite damaging to cotton in many locations. COTTON LEAF PERFORATOR (Bucculatrix thurberiella) was a local problem on cotton in Imperial County, CALIFORNIA. The lack of stub cotton in California has materially reduced infestations of this pest. Light infestations of cotton leaf perforator were found in most areas of ARIZONA with an occasional moderate infestation noted in Yuma County and in the southern portion of the State.

COTTON APHID (*Aphis gossypii*) infestations in GEORGIA cotton were light through June 30. Early populations of 1-24 per plant on 2 to 4-leaf cotton occurred throughout ALABAMA. Large numbers of convergent lady beetle (*Hippodamia convergens*) appeared in these infestations, were controlled in 10-20 days. The amount of delay in plant growth, fruiting and yields were unpredictable. Some light control applications were made for cotton aphid but this was not general. Cotton aphid infestations in Alabama also occurred during main fruiting periods in July, August and September. Cotton aphid was lighter throughout the 1965 season in ARKANSAS than during 1964, and although present on cotton in MISSOURI, was not of economic importance. Cotton aphid caused some damage to cotton in OKLAHOMA this season. This aphid occurred on cotton throughout TEXAS; however, populations varied from light to heavy, even within local areas. A late buildup of cotton aphid during October and November created a problem because of honeydew on cotton lint in scattered fields in the Pecos and Mesilla Valleys of NEW MEXICO. This aphid was unimportant on cotton in NEVADA during 1965.

APHIDS as a group were not much of a problem on cotton in NORTH CAROLINA, and although present on cotton in CALIFORNIA, were not as damaging as in past years.

LEAFHOPPERS infested cotton in most areas of CALIFORNIA and caused considerable damage. WHITEFLIES were also present on cotton in a few locations of that State.

LYGUS BUGS (*Lygus* spp.) were major pests of cotton in CALIFORNIA, but were probably lighter in number than in 1964. Lygus bugs began moving into cotton in NEVADA during August when desert vegetation dried up; controls were required at this time. Late August rains stimulated growth of desert plants and lygus bugs then moved from cotton to these plants and no additional treatments were necessary. Medium infestations of lygus bugs were present in cotton in ARIZONA from June through September. The spring infestation of these bugs increased in June and damage ranged moderate to heavy in many areas. Treatments were necessary to protect cotton in the early growing stages. Heavy local populations of lygus bugs were reported on cotton in the trans-Pecos and north central areas of TEXAS.

TARNISHED PLANT BUG (*Lygus lineolaris*) and another plant bug, *Neurocolpus nubilis*, were economic in less than one-fourth of one percent of the cotton fields surveyed in ARKANSAS this season. *N. nubilis* infested 93 percent of the scouted cotton fields in MISSOURI at one time during the 1965 season, but numbers were economic in only 2 percent of these fields. A complex of COTTON LEAFHOPPER (*Psallus seriatus*), tarnished plant bug and RAPID PLANT BUG (*Adelphocoris rapidus*) also infested 93 percent of the scouted cotton fields in Missouri at one time during the season; however, economic numbers were present in only the same 2 percent of these fields.

Cotton fleahopper was economic in a very small percent of cotton in ARKANSAS during the 1965 season, but moderate to heavy populations damaged cotton from mid-June to mid-August in OKLAHOMA. Cotton fleahopper occurred on cotton throughout TEXAS, with populations varying from light to heavy even within local areas. Light to moderate infestations of a BLACK FLEAHOPPER (*Spanogonicus albofasciatus*) occurred on cotton in central areas of ARIZONA. Populations were light on cotton in the eastern area and in Yuma County. Population peaks in Arizona occurred about June 15. Heavy populations of FALSE CHINCH BUGS (*Nysius* spp.) developed on cotton in Merced County, CALIFORNIA.

THRIPS were general on cotton in CALIFORNIA most of the season and were unimportant on this crop in NEVADA. The cool, wet spring in ARIZONA was ideal for the buildup of *Frankliniella* spp. Heavy populations occurred on cotton in most areas of the State, especially in higher elevations. Damaging populations of *Frankliniella* spp. remained on cotton through July. Several species of thrips were present on cotton throughout TEXAS; however, populations varied from light to heavy even within local areas. Moderate to heavy populations of Thrips spp. and *Frankliniella* spp. damaged cotton in OKLAHOMA from early June to mid-July. Thrips were of minor importance on cotton in ARKANSAS this season. TOBACCO THRIPS (*Frankliniella fusca*), FLOWER THRIPS (*F. tritici*) and *Sericothrips variabilis*

infested cotton in MISSOURI but were of no economic importance.

FIELD CRICKETS (Gryllus spp.) caused some damage to cotton in Imperial County, CALIFORNIA, during the 1965 season.

Infestations of SPIDER MITES (Tetranychus spp.) required controls in late May, early June and July in Nye County, NEVADA, especially where cotton was adjacent to alfalfa. Tetranychus sp. infested cotton in the Brazos River Bottom area in central TEXAS, but was generally much less severe than in 1964. Other species of spider mites were present in cotton over the State in varying populations. Spider mites, mainly STRAWBERRY SPIDER MITE (Tetranychus atlanticus), were a problem in seedling cotton plantings in MISSOURI. By mid-August, one-third of the scouted cotton fields in the State was infested. Spot treatments and some treatment of complete fields were made in several instances during July and August in Missouri. Spider mite damage in the Sand Mountain and Tennessee Valley areas of ALABAMA in many past seasons has equaled or exceeded that of boll weevil (Anthonomus grandis). Infestations and damage by these pests, however, were light in the State during 1965. Partial or complete controls were necessary on some farms, but no major control effort developed in Alabama during the 1965 season. Spider mite infestations were light to moderate on cotton in GEORGIA during the first half of the season.

MITES generally were not much of a problem on cotton in NORTH CAROLINA this year. Mite infestations on cotton in ARKANSAS were heavier in June 1965 than they were in June 1964; however, infestations as a whole were lighter in 1965 than last year. Mites were present on cotton in CALIFORNIA early and continued all through the season.

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Weather continued from page 196.

avored by a persistent East Coast High that kept temperatures about 6 degrees below normal in the Southeast where it was the 4th consecutive cool week.

PRECIPITATION: Wet weather was the rule in the Pacific Northwest. A storm off the coast early in the week brought over 8 inches of rain to portions of Oregon; Cape Blanco recorded 13.4 inches in 3 days. The heavy precipitation, lashing the area from Canada to northern California, was accompanied by gale winds up to 60 m.p.h. The storm abated by Thursday, but by the weekend, rain once again commenced. Warm air flowing over the rapidly melting snow cover in the upper Midwest produced a blanket of thick fog during the weekend. Visibilities frequently lowered to only a few yards thus restricting travel. Wisconsin's rivers and creeks became free of ice last week ending one of the shortest ice seasons on record in that State. The mild weather also created a severe flood threat as the snow- and ice-melt brought many rivers to critical stages. Widely scattered showers produced generally light amounts west of the Appalachians, but some of the heavier showers gave totals of more than an inch. For the first week in 5 months, Tennessee experienced little or no rain. Weekend precipitation in the Northeast reminded the Nation that winter is not yet over. Several inches of snow fell over upstate New York and New England causing hazardous driving conditions but extending the skiing season. The Southeast, meanwhile, was dry as the deluges of the last month ended. (Summary supplied by Environmental Data Service, ESSA).





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