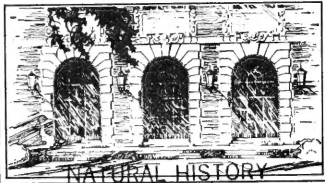


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NATURAL HISTORY

SURVEY



Biological Notes No. 81

**ANNOTATED CHECKLIST OF THE
BUTTERFLIES
OF ILLINOIS**

Roderick R. Irwin • John C. Downey

ILLINOIS NATURAL HISTORY SURVEY
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ANNOTATED CHECKLIST OF THE BUTTERFLIES OF ILLINOIS

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ILLINOIS has undergone a vast amount of ecological change since its settlement, and the pace of this change has accelerated in recent years. Change has taken several forms—in agriculture and industry, in metropolitan areas, in highway development, and in the clearing of land for residential subdivisions and shopping centers. The widespread use of chemical insecticides and herbicides is also strongly suspected of having contributed to ecological change, and in particular, a decline in butterfly populations.

By the 1860's, when continuous butterfly collecting began in Illinois, agricultural development of the state was already well advanced, and thus it is difficult to assess its effect on the original butterfly fauna. The other changes are more recent. We believe that at least three butterflies have been extirpated within Illinois. On the other hand, some species have been added to the Illinois butterfly fauna.

Ecological succession, a concept well discussed by Shapiro (1966), and in many cases a result of man's alteration of his environment, is discernible in localities which have been studied for many years. At Streator, La Salle County, where Irwin collected for more than 30 years, a species once locally common, *Anaea andria*, is now rare and has not been taken since 1955, while *Chlosyne gorgone*, not found there at all until 1964, quickly became abundant.

With the increasingly destructive alteration of the environment by man, it becomes ever more important to record conditions as they now exist and to document the record by the collecting and proper deposition of specimens wherever possible. This is the principal objective of this study.

The present survey of Illinois butterflies began in 1962, when Downey canvassed the Illinois members of the Lepidopterists' Society, seeking distributional data on Illinois Lycaenidae (Downey 1966). The encouraging response by Illinois lepidopterists led the authors to expand the survey to include all of the 146 butterfly species that presently occur in the state.

This report is a distributional study, not a manual for the identification of Illinois butterflies. Little descriptive material is included, and then only if the Illinois population of a species presents special problems not discussed in popular butterfly manuals. One of the most widely used manuals is Klots' field guide (1951), and we recommend that it be used in conjunction with this publication. Nearly all listed species are illustrated in this guide by Klots, and, for convenience, references to his work are given in the synonyms. Klots mentioned Illinois in the ranges of several species for which

there appear to be no Illinois records. Unfortunately, he was unable to locate notes used in the preparation of the field guide in order to support his statements.

At first glance, it might appear that the butterfly fauna of Illinois is relatively uninteresting. However, the great length of the state from north to south and the presence within its borders of three life zones (Merriam 1894), permit establishment of more widely diverse faunas than in most other states. Many Illinois butterflies are statewide in distribution. Transition and even Canadian Zone species such as *Speyeria atlantis*, *Polygonia faunus*, and *Nymphalis vaualbum j-album* occur in extreme northern Illinois. At the southern extremity of the state we find butterflies of distinctly Lower Austral affinities. Some of them are infrequent, e.g. *Atlides halesus*, whereas others are relatively frequent.

The apparent absence of many species in some sections of the state, particularly the northwestern counties, is an illusion created by lack of intensive collecting. The most concentrated collecting in Illinois has been in the Chicago area, where many lepidopterists live. The southern tier of counties has also had relatively good collecting coverage.

METHODS

Our data are presented in the form of an annotated checklist. The scientific name of the species is followed by its common name according to Klots (1951). The synonymy is not intended to be complete but includes a reference to the original description and type-locality, references to names preoccupied or cited in error (designated by double dagger), and references to Worthington (1880), Holland (1931), Klots (1951), and dos Passos (1964, 1969a, 1970). We also include references to widely used synonyms not included in the other citations.

Early authors used the term "*in Indis*" indiscriminately to indicate the habitat of species which they described from either the East or West Indies. We consider this term to refer to the West Indies when it applies to Illinois butterflies.

The distribution of each species known in Illinois from more than six localities is illustrated by a map. Individual records, listed alphabetically by counties, are given for species known from six or fewer localities.

No distinction has been made between records based on specimens actually examined by the authors and those submitted by collaborators or obtained from the literature. All of the latter were carefully evaluated before being accepted, and those which appeared at all questionable were checked by examination of the specimens involved; where this was not possible, the records were not used. Critical determinations were made by specialists studying particular butterfly groups.

In some areas, due to the number and closeness of localities, two or even three nearly adjoining localities

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in the same county may be represented by a single dot on a map.

All butterflies ever actually taken in Illinois have been listed, including such obvious casuals as *Timochares rufifasciatus*, *Eumaeus atala*, *Nymphalis californica*, *Danaus gilippus strigosus*, and *Phyciodes texana*. We decided against segregating such forms, since they represent valid records. It is obvious that they are not permanent components of the state fauna, but attempting to segregate them would inevitably have resulted in errors of judgment.

The arrangement and nomenclature of the list for the most part follow the latest checklist of the Nearctic butterflies (dos Passos, 1964) and its revisions (dos Passos, 1969a, 1970). Departures are explained in the discussion of the species in question. The species numbers are included in the references to the checklist, for example, "dos Passos 1964:3 (No. 24)."

In addition to distributional data, we have presented, in condensed form, some information on ecological preferences, number of broods per season, and dates of earliest and latest capture in Illinois.

DESCRIPTION OF AREA

Early in the 19th century, when settlement of Illinois began, much of the state was forest-covered, but also prominent were vast areas of tall-grass prairie with woodlands along the larger streams. Vestal (1931) divided Illinois into eight vegetational divisions on the basis of the original flora. Jones & Fuller (1955) assembled distributional data and maps of Illinois plants into a volume which, with the supplement by Winteringer & Evers (1960), is indispensable to the student of Illinois butterflies.

Nearly all of Illinois lies within the Upper Austral life zone, but the southern tip of the state is ecologically quite distinct. This consists of the floodplains of the Ohio and Mississippi rivers in Alexander, Pulaski, and Massac counties. Cypress swamps, formerly extensive, are characteristic of this area, which is the most northerly outlier of the Austroriparian subdivision of the Lower Austral zone. Its butterfly fauna has corresponding affinities.

HISTORICAL RESUMÉ

The earliest recorded butterfly observation and collecting in Illinois was done by Edward Doubleday, an eminent English entomologist, who visited the state in the late autumn of 1837. His account of the trip (Doubleday 1838) contains little entomological observation. The insects which Doubleday collected during his journey are now in the British Museum.

The earliest resident worker to make significant contributions to the knowledge of the Illinois butterfly fauna was Benjamin Dann Walsh. The first official State Entomologist of Illinois, he began his studies in 1860 and continued them until his death. He was a correspondent of W. H. Edwards, and supplied the latter with much Illinois material, from which Edwards described at least two butterflies. These descriptions are among the earliest specific references to Illinois butterflies. The main portion of Walsh's collection, following his death, was deposited in the Chicago Academy of Sciences, where

it was destroyed in the Chicago fire of 1871. Some of it, however, had been retained by his successor, William Le Baron, and became the nucleus of the present collection of the Illinois Natural History Survey.

Le Baron and Cyrus Thomas, the second and third State Entomologists of Illinois, published notes and incidental references to butterflies in their official reports, chiefly from an economic point of view.

Scudder (1869) reported 19 species from Marion Township, Ogle County.

French (1878) discussed 61 Illinois butterflies from the economic standpoint, and in 1879 published the earliest comprehensive state list. It is virtually unknown and exceedingly rare. The copy recently found in the archives of Southern Illinois University is the only one known to us and probably one of very few extant. This list is in the form of a rather primitive key to the Illinois species, of which 113 are included. Ninety-nine of these are considered to have been correctly attributed to Illinois.

Worthington (1880) published a state list of 120 species, of which 109 appear to have been validly included. Snyder (1896) listed 56 species taken at North Evanston, Cook County, and Hart (1903) listed 50 of the commoner Illinois species. Adams (1915) listed a small number of butterflies in connection with an ecological study in Coles County. C. L. Remington (1943) published an account of the Rhopalocera of Principia College, at Elsau, Jersey County. Wright (1951) listed and figured 11 of the most common Illinois butterflies in a popular manual. Downey (1966) discussed the distribution of Lycaenidae in Illinois. Cushing (1970) listed 56 species from the vicinity of Prairietown, Madison County (one species was incorrectly included). Irwin (1971) gave several new records of Hesperidae from Illinois, most of which represented important extensions of known ranges.

The remaining papers on the Illinois butterfly fauna (Riley 1870, Wyatt 1905, Frison 1919, C. L. Remington 1942, Conway 1956, Phillips 1961 and 1966, and Irwin 1968) have been limited in scope to one or few species.

Between 1965 and 1969, Irwin prepared various preliminary lists of Illinois butterflies, reproduced by hectograph and Xerox, which were distributed to the various collaborators in this project as a guide to the progress being made. These were cited by Masters (1969). Some of the data they contain have subsequently been revised.

A number of recent Illinois records are contained in the various Field Season Summaries published by the Lepidopterists' Society (C. L. Remington 1947; P. S. Remington 1948, 1949, 1951; and Heitzman 1968).

A more comprehensive account of the history of butterfly collecting in Illinois and of the principal collectors and collections in the state will be published elsewhere as an outgrowth of this study.

SOURCES AND ACKNOWLEDGMENTS

The principal institutions featuring collections of the butterflies of Illinois are the Field Museum of Natural History in Chicago and the Illinois Natural History Survey in Urbana. Smaller collections are found in other museums and in various state universities.

Individual collections at the Field Museum are those

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The most comprehensive collection of Illinois butterflies is at the Illinois Natural History Survey. Individual collections deposited in the Survey collection are those of R. M. Barnes (in part), E. Beer, A. Bolter, R. R. Irwin, A. Mares, A. H. Mundt (via the Irwin and R. M. Barnes collections), W. A. Nason, S. H. Peabody, O. T. Plumb (via the Irwin collection), Charles Robertson, and G. W. Wren (including the Margaret M. Cary butterflies).

The Illinois State Museum at Springfield contains a small general collection. The major portion consists of the bulk of the R. M. Barnes collection, together with the Chicago area collection of J. W. E. Glattfeld and some local material.

Southern Illinois University at Carbondale possesses an excellent collection of southern Illinois butterflies. There is no longer any G. H. French material at this institution, despite his long service on its staff; the only extant French butterflies are in other collections.

The above institutional collections cited, and others from which fewer records were obtained, are abbreviated as follows: AMNH (American Museum of Natural History, New York City, New York); CM (Carnegie Museum, Pittsburgh, Pennsylvania); FMNH (Field Museum of Natural History, Chicago, Illinois); INHS (Illinois Natural History Survey, Urbana); ISM (Illinois State Museum, Springfield); SIU (Southern Illinois University, Carbondale); USNM (United States National Museum, Washington, D. C.).

The collaborators whose contributions constitute a large proportion of the records obtained during the survey are identified by the following abbreviations: RAA (Richard A. Arnold, Hinsdale, Illinois); JKB (John K. Bouseman, Champaign, Illinois); JLB (Jackson L. Boughner, Chicago, Illinois); TGB (Thomas G. Brady, La Grange, Illinois); GC (Gary Christoph, Chicago, Illinois); PJC (Patrick J. Conway, Chicago, Illinois); JCD (John C. Downey, Cedar Falls, Iowa); TE (Theodore Ellis Jr., Danville, Illinois); MOG (Murray O. Glenn, Henry, Illinois); JRR (J. R. Heitzman, Independence, Missouri); RRI (Roderick R. Irwin, Chicago, Illinois); DL (Don Laibly, Rock Island, Illinois); RL (Ronald Leuschner, Gardena, California); GMC (Gary McCoy, Park Forest, Illinois); GN (Gregory Nielsen, Chicago, Illinois); LSP (the late Leonard S. Phillips, Wheaton, Illinois); OAP (Owen A. Perkins, Royal Oak, Michigan); CLR (Charles L. Remington, New Haven, Connecticut); LS (Larry Schatz, Elmwood, Illinois); NGS (Norman G. Seaborg, Lockport, Illinois); VGS (V. G. Sasko, Chicago, Illinois); TT (Thomas Taylor, Peoria, Illinois); AKW (the late Alex K. Wyatt, Chicago, Illinois); CW (Colin W. Wyatt, Farnham, Surrey, England). We express our very sincere gratitude to these collaborators, and to the following other individuals: Gordon L. Adams, Karl R. Gardner, David F. Hess, Kurt Johnson, M. C. Nielsen, P. S. Remington, Joseph Roberds, Frank Rutkowski, and Michael J. Smith. Without their cordial assistance the completion of this survey would have been impossible.

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Dr. C. L. Remington kindly allowed us to use freely a manuscript, "Annotated check list of the Rhopalocera of Elshah, Illinois," which he prepared as a result of his observations on the campus of Principia College. He had also published (Remington 1943) on these earlier.

Mr. Louis D. McNeese of Centreville, St. Clair County, collected for us during the summer of 1966, and obtained many new county records.

Mrs. Jane Merchant of Southern Illinois University assisted us in locating a copy of French's 1879 list of Illinois butterflies.

In processing the manuscript for printing, at the Illinois Natural History Survey, O. F. Glissendorf and P. W. Smith did the final manuscript review and editing, and Lloyd LeMere designed the cover.

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BUTTERFLIES OF ILLINOIS

HESPERIIDAE

Panoquina ocola (Edwards)

Ocola skipper

Hesperia ocola Edwards 1863a:20 (type-locality "Georgia, Florida and Texas").

Prenea ocola: Holland 1931:398.

Panoquina ocola: Klots 1951:270; dos Passos 1964:3 (No. 24).

Illinois records.—JERSEY COUNTY: Pere Marquette State Park, September 10, 1935, Lauck (CW).

We have not seen this specimen, but we believe the record to be valid. The species probably occurs at least occasionally in the southern counties.

Calpodès ethlius (Stoll)

Brazilian skipper

Papilio ethlius Stoll 1782(4):212 (type-locality "Suri-nam").

Calpodès ethlius: Holland 1931:399; Klots 1951:269; dos Passos 1964:3 (No. 27).

Illinois records.—COOK COUNTY: Chicago, emerged August 27 and August 29, 1923, from larvae found on *Canna*, Dohmen (FMNH).

This skipper is probably not established anywhere in Illinois, occurring only when introduced on *Canna*, or perhaps occurring casually in extreme southern Illinois.

Lerodea eufala (Edwards)

Eufala skipper

Hesperia eufala Edwards 1869:311 (type-locality "Apalachicola, Florida").

Lerodea eufala: Holland 1931:396; Klots 1951:267; dos Passos 1964:3 (No. 29).

Illinois records.—KANE COUNTY: Elgin, September 21, 1941, September 20, 1942, Wyatt (FMNH); Elgin, September 20, 1942, Beer (INHS). MARSHALL COUNTY: Lacon, September 28, 1931, R. M. Barnes (INHS). PUTNAM COUNTY: October 1, 1931, Glenn (INHS).

Apparently *eufala* is rare and casual in northern Illinois. It should also be found in southern Illinois, since it is a species of southern affinities.

Amblyscirtes linda H. A. Freeman

Linda's roadside skipper

Amblyscirtes linda H. A. Freeman 1943:19 (type-locality "Hope Hill Farm, Faulkner County, Arkansas"); Klots 1951:264.

Amblyscirtes aenus linda: dos Passos 1964:4 (No. 34b).

Illinois records.—JACKSON COUNTY: Makanda, July 8, 1896, Snyder (FMNH).

We found the only known Illinois specimen of *linda* in the series of *A. belli* H. A. Freeman in the Field Museum collection. It was sent to Freeman, who confirmed our determination. We separate *linda* from *A. aenus* Edwards on the advice of Freeman (personal communication). In the absence of additional records, it is difficult to evaluate the status of *linda* and some of the other species of the genus in Illinois. They may be established elements of the fauna, or they may be casuals from further south.

Amblyscirtes samoset (Scudder)

Pepper and salt skipper

Hesperia samoset Scudder 1864:176 (type-locality "Massachusetts and New Hampshire").

Hesperia hegon Scudder 1864:176 (type-locality "White Mountains [New Hampshire]").

Amblyscirtes samoset: Worthington 1880:49; Holland 1931:362; dos Passos 1964:4 (No. 37).

Amblyscirtes hegon: Klots 1951:263.

Illinois records.—Map 1.

Widely scattered records are indicative of statewide distribution, but the species is apparently local and uncommon in Illinois. There are a number of records from Cook County, but none is recent (FMNH). Snyder (1896) found *samoset* "rare" at Evanston, Cook County. There is one brood, April 12 through June 19.

Amblyscirtes aesculapius (Fabricius)

Textor skipper

Hesperia aesculapius Fabricius 1793:347 (type-locality "North America").

Pyrgus textor Hübner "1818" [1827-1831]: Plate 580 (type-locality "United States").

Amblyscirtes textor: Holland 1931:363; Klots 1951:263. *Amblyscirtes aesculapius*: dos Passos 1964:4 (No. 40).

Illinois records.—POPE COUNTY: Lusk Creek, near

Eddyville, July 7, 1967, August 9, 1967, August 30, 1967, Downey (SIU). UNION COUNTY: Pine Hills, August 21, 1966, August 25, 1966, September 1, 1966, Downey, determined by H. A. Freeman (INHS) (Fig. 1).

As in the case of other species of this genus, it is difficult to assess the status of *aesculapius* in Illinois, but the number of records suggests that it is established in extreme southern Illinois.

Amblyscirtes carolina (Skinner)

Carolina roadside skipper

Pamphila carolina Skinner 1892:222 (type-locality "south of Hamlet, Richmond County, North Carolina").

Amblyscirtes carolina: Holland 1931:362; Klots 1951:263; dos Passos 1964:4 (No. 41).

Illinois records.—UNION COUNTY: Pine Hills, September 1, 1966, Downey, determined by H. A. Freeman (INHS) (Fig. 1).

This record extends the known range of this skipper, recorded previously from Georgia to Virginia (Klots 1951) and Mississippi (Mather & Mather 1958).

Amblyscirtes vialis (Edwards)

Roadside skipper

Hesperia vialis Edwards 1862a:58 (type-locality "Rock Island, Illinois; Lake Winnipeg").

Amblyscirtes vialis: Worthington 1880:49; Holland 1931:362; Klots 1951:262; dos Passos 1964:4 (No. 45).

Illinois records.—Map 2.

A. vialis is apparently widely distributed in Illinois but very local. It may be common where found, as at Elshah, Jersey County (CLR) and Mason State Forest, Mason County (TT). Elsewhere, however, it is scarce (Perry-Township, Mercer County) (PJC) or absent altogether. The dates of capture in Illinois suggest that there are two broods: April 21 through May 30 and July 17 through August 30.

Amblyscirtes belli H. A. Freeman

Bell's roadside skipper

Amblyscirtes belli H. A. Freeman 1941:50 (type-locality "Lancaster and two miles west of Vickery, Dallas County, Texas"); Klots 1951:264.

Amblyscirtes celia belli: dos Passos 1964:5 (No. 46b).

Illinois records.—POPE COUNTY: Lusk Creek, near Eddyville, August 9, 1967, Downey, determined by H. A. Freeman (INHS).

We give *belli* full specific rank on the advice of H. A. Freeman, who said (personal communication to L. J. Paulissen) that "there are no subspecies in that genus, as . . . *celia* and *belli* fly together in Texas."

Atrytonopsis hianna (Scudder)

Dusted skipper

Hesperia hianna Scudder 1868a:382 (type-locality "Quincy and Dorchester, Massachusetts").

Atrytonopsis hianna: Holland 1931:394; Klots 1951:259; dos Passos 1964:5 (No. 50).

Illinois records.—**BUREAU COUNTY:** Ohio Township (G. M. Dodge?) (Scudder 1889). **COOK COUNTY:** Chicago, May 24, 1896, Wyatt (FMNH); no date, Westcott (INHS). **GREENE COUNTY:** 2 mi. S Eldred, May 2, 1963, Sanderson (INHS). **JERSEY COUNTY:** Pere Marquette State Park, September 16, Lauck (CW). **POPE COUNTY:** Lusk Creek, near Eddyville, May 20, 1963, Downey (INHS). **SCOTT COUNTY:** W of Glasgow, May 2, 1963, Sanderson (INHS).

This skipper is apparently single-brooded; the September record from Jersey County is unusual. We have not seen the specimen on which it was based, and the record may be erroneous. It appears from the available data that *hianna* is widely distributed but rare and erratic in Illinois.

Euphyes dion (Edwards)

Dion skipper

Pamphila dion Edwards 1879:238 (type-locality "southern shore of Lake Michigan, in Indiana; Hamilton, Ontario"); Worthington 1880:49.

Atrytone dion: Holland 1931:388; Klots 1951:255.

Euphyes dion: dos Passos 1964:6 (No. 62).

Illinois records.—**COOK COUNTY:** Winnetka, July 28, 1958, Irwin (INHS) (Fig. 1); Teasons Woods Forest Preserve, 3 mi. NW Palos Park, 14 ♂♂ 2 ♀♀, July 8, 1966, Arnold, Brady, and Irwin (RAA, TGB, INHS) (Fig. 1); locality not stated, July 15, 1959, July 7, 1960, July 4, 1962, July 7, 1962, Boughner (JLB). **CHAMPAIGN COUNTY:** Urbana, July 3, 1891, Mitchell (INHS). **LAKE COUNTY:** Waukegan, July 31, 1943, Herz (FMNH).

This insect is apparently restricted to northeastern Illinois and is mainly limited to marshes and boggy meadows. It is local and generally scarce but may occur in some numbers where found. It is probably single-brooded.

Euphyes dukesi (Lindsey)

Dukes' skipper

Atrytone (Euphyes) dukesi Lindsey 1923:209 (type-locality "Mobile County, Alabama").

Atrytone dukesi: Holland 1931:388; Klots 1951:255.

Euphyes dukesi: dos Passos 1964:6 (No. 63).

Illinois records.—**PULASKI COUNTY:** Karnak, September 2, 1924, Frison (INHS) (Fig. 1). **UNION COUNTY:** Pine Hills, September 10, 1966, Downey, determined by H. A. Freeman (INHS); Pine Hills, August 31, 1969, Irwin (INHS) (Fig. 1).

It appears that this distinctive skipper is established in southern Illinois. The record from Pulaski County was the first following its original description (Irwin 1971).

E. dukesi was once believed to be restricted to swamps and their immediate vicinity, but it has recently been found, in the southern portions of its range, in drier situations as well. Two sedges, *Carex lacustris* and *C. hyalinolepis*, are the probable hosts of *dukesi*. Both sedges occur in Illinois, the former being more confined to true swamp environments than is the latter. In the southern portion of the range of *dukesi*, *C. lacustris* does not occur and the insect utilizes *C. hyalinolepis* (Irwin 1972). Because of the rather wide occurrence of both sedges in the

state and the presence of *dukesi* as far north as Michigan, it seems possible that the skipper may occur elsewhere than in the extreme southern counties.

Euphyes conspicua (Edwards)

Black dash

Hesperia conspicua Edwards 1863a:17 (type-locality "Lansing, Michigan").

Hesperia pontiac Edwards 1863a:17 (type-locality "Lansing, Michigan").

Pamphila pontiac: Worthington 1880:49.

Atrytone pontiac: Holland 1931:388.

Atrytone conspicua: Klots 1951:258.

Euphyes conspicua: dos Passos 1964:6 (No. 64).

Illinois records.—Map 3.

This is another species that is found mainly in marshes and boggy meadows. It is local but may be common where found. It is apparently limited to northern Illinois. There is one brood, June 20 through August 9.

Euphyes bimacula (Grote & Robinson)

Two-spotted skipper

Hesperia bimacula Grote & Robinson 1867c:433 (type-locality "Philadelphia, Pennsylvania").

Hesperia illinois Dodge 1872:217 (type-locality "Bureau County, Illinois").

Pamphila bimacula: Worthington 1880:49.

Atrytone bimacula: Holland 1931:388; Klots 1951:258.

Euphyes bimacula: dos Passos 1964:6 (No. 66).

Illinois records.—Map 4.

E. bimacula (Fig. 1) is sporadic but locally common. Like other members of the genus, it occurs in bogs and wet meadows, and it appears to be limited to the northern portion of the state. See discussion of *Oarisma powesheik* (Parker), below. The species is single-brooded, June 19 through July 20.

Euphyes vestris metacomet (Harris)

Dun skipper

Hesperia metacomet Harris 1862b:317 (type-locality "Massachusetts").

Pamphila rurea Edwards 1862a:58 (type-locality "Rock Island, Illinois").

Pamphila metacomet: Worthington 1880:49.

Atrytone ruricola: Holland 1931:388; Klots 1951:258.

Euphyes vestris metacomet: dos Passos 1964:6 (No. 67b).

Illinois records.—Map 5.

The dun skipper is common and generally distributed throughout Illinois. Although Klots (1951) suggested that there is but one brood and gave dates of flight from June through August, we have records of the species from April 28 through September 16. This extended flight period strongly suggests that the species is at least double-brooded in Illinois.

Poanes massasoit (Scudder)

Mulberry wing

Hesperia massasoit Scudder 1864:171 (type-locality "Carver, Massachusetts; Connecticut, New England").

Pamphila massasoit: Worthington 1880:49.

Poanes massasoit: Holland 1931:389; Klots 1951:249; dos Passos 1964:7 (No. 72).

Illinois records.—KANE COUNTY: Elgin, many specimens and dates, June 28 through August 15, Bristol and Herz (FMNH, INHS). IROUOIS COUNTY: 2 mi. NE Beaverville, June 29, 1965, Irwin (INHS) (Fig. 1). McHENRY COUNTY: McHenry Dam State Park, July 17, 1971, Christoph (GC).

Although *massasoit* is known from few localities, it is doubtlessly found elsewhere in suitable habitats in the northern half of the state. At Beaverville, Iroquois County, we found it flying in company with *Euphyes bimaculata*. Like that species, *massasoit* is an inhabitant of bog and marsh environments. It is local but may be common where found. There is probably only one brood.

Poanes hobomok (Harris)

Hobomok skipper

Hesperia hobomok Harris 1862b:313 (type-locality "Massachusetts").

Poanes hobomok: Holland 1931:390; Klots 1951:250; dos Passos 1964:7 (No. 73).

Illinois records.—Map 6.

P. hobomok is generally distributed throughout Illinois, although records are few and widely scattered. It is common where found. The species has been confused with *P. zabulon*, rendering many older records in the literature unreliable. It is single-brooded. The earliest and latest dates of capture are May 20 and July 4.

The females are dimorphic; most are similar to the males, but the dark female form *pocahontas* is occasionally found. The dark form does not appear to be common in Illinois and may not occur throughout the state. The only localities from which it has been recorded are Palos Park (Fig. 1) and River Grove, in Cook County, between June 2 and July 1.

Poanes zabulon (Boisduval & Le Conte)

Zabulon skipper

Hesperia zabulon Boisduval & Le Conte 1834: Plate 76 (type-locality "North America").

Pamphila zabulon: Worthington 1880:49.

Poanes zabulon: Holland 1931:390; Klots 1951:250; dos Passos 1964:7 (No. 74).

Illinois records.—Map 7.

Like *P. hobomok*, *zabulon* appears to be distributed throughout Illinois. It is, however, less common than the foregoing species. Both *hobomok* and *zabulon* are less restricted in habitat than their congeners and are not confined to marsh environments. Unlike *hobomok*, *zabulon* is double-brooded. The first brood is smaller in numbers than the second and has been recorded from May 5 through July 8. The second brood is larger, appearing in early August and reaching maximum numbers 3 weeks later. Earliest and latest dates for the second brood in Illinois are August 9 and September 13.

Poanes viator (Edwards)

Broad winged skipper

Hesperia viator Edwards 1865:202 (type-locality restricted to "Goose Lake Prairie, Grundy County, Illi-

nois" by Shapiro "1970" [1971]:110 by designation of neotype) (Fig. 1).

Pamphila viator: Worthington 1880:49.

Phycanassa viator: Holland 1931:392.

Poanes viator: Klots 1951:249; dos Passos 1964:7 (No. 78).

Illinois records.—GRUNDY COUNTY: Goose Lake Prairie, July 28, 1969, 1 ♂ 1 ♀, Cashatt (INHS). McHENRY COUNTY: McHenry Dam State Park, July 17, 1971, 2 ♂♂ 2 ♀♀, Christoph and Nielsen (GC, GN).

Before the recent rediscovery of this skipper in northern Illinois, the only indication of its presence in the state was Edwards' designation of "Northern Illinois and New Orleans" as the original type-locality. Shapiro conducted an extensive search of major institutional collections but found no syntypes or other Illinois *viator*. He therefore designated the male specimen from Grundy County listed above as the neotype of the species (Shapiro, *loc. cit.*).

Search for *viator* at the Goose Lake locality in 1970 and 1971 did not produce any additional examples, but it was discovered in McHenry County. It may occur in similar marsh habitats elsewhere in northern Illinois. It is single-brooded and very local. The flight is said by Conway (personal communication) to resemble that of *P. massasoit*.

Problema byssus (Edwards)

Byssus skipper

Pamphila byssus Edwards 1880b:224 (type-locality "Indian River, Florida").

Problema byssus: Holland 1931:386; Klots 1951:252; dos Passos 1964:8 (No. 83).

Illinois records.—JERSEY COUNTY: Elsay (campus of Principia College), July 5, 1942, July 7, 1942, June 27, 1943, P. S. Remington (P. Remington 1956). LA SALLE COUNTY: Streator, July 20, 1963, McCoy (INHS); Streator, July 20, 1964, Irwin (INHS) (Fig. 1). MASON COUNTY: Mason State Forest, July 11, 1963, July 19, 1963, Taylor (TT). MERCER COUNTY: Perryton Township ("local, common when found, late June—early July") (PJC). MONROE COUNTY: 3 mi. S Valmeyer, June 27, 1956, Sanderson (INHS). PEORIA COUNTY: Robinson Park, 10 mi. N Peoria, July 7, 1961, Taylor (TT).

The lack of old records suggests that this may be a comparatively recent addition to the Illinois fauna, probably adventive from west of the Mississippi rather than from the South. It appears to be gradually increasing its range in Illinois following the larger rivers, on or near which most of the known examples of *byssus* in Illinois have been found. Some authors regard this as a prairie species, but its apparent prosperity in Illinois may indicate that it is adapting to a more varied habitat.

Atrytone delaware (Edwards)

Delaware skipper

Hesperia delaware Edwards 1863a:19 (type-locality "Philadelphia [Pennsylvania]").

Hesperia logan Edwards 1863a:18 (type-locality "Lansing, Michigan").

Pamphila delaware: Worthington 1880:49.

Atrytone logan: Holland 1931:387; Klots 1951:254.

Atrytone delaware: dos Passos 1964:8 (No. 86).

Illinois records.—Map 8.

The Delaware skipper has been recorded from scattered localities throughout Illinois. It probably occurs over the entire state but is not common. Females superficially resemble the male of *Problema byssus*. It is probably single-brooded, June 17 through August 30.

Atalopedes campestris (Boisduval) Sachem

Hesperia campestris Boisduval 1852:316 (type-locality "California").

Hesperia huron Edwards 1863a:16 (type-locality "Illinois, Georgia, Texas, Washington, D. C.").

Pamphila huron: Worthington 1880:49.

Atalopedes campestris: Holland 1931:385; Klots 1951:243; dos Passos 1964:9 (No. 87).

Illinois records.—Map 9.

This insect is common and generally distributed throughout Illinois. It is a characteristic species of late summer and autumn. We have records from May 23 (probably overwintered individuals) through November 6, with maximum abundance in August and September.

Pompeius verna (Edwards) Little glassy wing

Pamphila verna Edwards 1862a:57 (type-locality "Illinois; Washington [D. C.]").

Pamphila pottawatomie Worthington 1880:50 (type-locality "Chicago, Illinois; Lake County, Indiana").

Pamphila verna: Worthington 1880:49.

Polites verna: Holland 1931:380; Klots 1951:245.

Pompeius verna: dos Passos 1964:9 (No. 88).

Illinois records.—Map 10.

P. verna is common and generally distributed throughout Illinois. According to Klots (1951), *verna* is single-brooded, but we have records from May 12 through September 9, indicating the possibility of a second brood. The skipper becomes most common in mid-June and remains numerous through mid-July.

Wallengrenia egeremet (Scudder) Broken dash

Hesperia egeremet Scudder 1864:174 (type-locality "Massachusetts, Georgia, Western States, New England").

Pamphila egeremet: Worthington 1880:49.

Catia otho egeremet: Holland 1931:386.

Wallengrenia otho egeremet: Klots 1951:248; dos Passos 1964:9 (No. 89b).

Illinois records.—Map 11.

The broken dash is a common skipper throughout Illinois. Most authors consider it a subspecies of *W. otho* (J. E. Smith), but Forbes (1960) gave it full specific rank and illustrated genitalic differences which appear to be distinctive. Dr. L. J. Paulissen informed us (personal communication) that *otho* and *egeremet* occur together in Arkansas "with no apparent or obvious intergrading, a criterion of speciation." *W. egeremet* is single-brooded. We have records from June 2 through August 17.

Polites coras (Cramer) Peck's skipper

Papilio coras Cramer 1775(1):51 (type-locality "Suri-nam").

Hesperia peckius Kirby 1837:300 (type-locality "North America").

Pamphila peckius: Worthington 1880:49.

Polites peckius: Holland 1931:382; Klots 1951:246.

Polites coras: dos Passos 1964:9 (No. 90).

Illinois records.—Map 12.

This skipper is exceedingly common and generally distributed throughout Illinois. *P. coras* and the next species are the most abundant skippers of the state. Earliest and latest dates are April 16 and October 3.

Polites themistocles (Latreille) Tawny edged skipper

‡*Papilio taumas* Fabricius (*nec* Hufnagel) 1787:84 (type-locality "North America").

‡*Papilio thaumas* Fabricius (*nec* Hufnagel) 1793:327.

Hesperia themistocles Latreille "1819" [1824]:769 (type-locality "southern America").

Hesperia ceres Boisduval & Le Conte 1834: Plate 76 (type-locality "North America").

Pamphila ceres: Worthington 1880:49.

Polites taumas: Holland 1931:381.

Polites themistocles: Klots 1951:245; dos Passos 1964:10 (No. 95).

Illinois records.—Map 13.

Like the preceding species, *P. themistocles* is very abundant and occurs throughout Illinois. Records are at hand from April 29 through September 29.

Polites origenes (Fabricius) Cross line skipper

Hesperia origenes Fabricius 1793:328 (type-locality "West Indies").

Hesperia ceres Harris (*nec* Boisduval & Le Conte) 1862b:316 (type-locality "Massachusetts, Southern States").

Hesperia manataaquia Scudder 1864:175 (new name).

Pamphila manataaquia: Worthington 1880:49.

Polites manataaquia: Holland 1931:380; Klots 1951:245.

Polites origenes: dos Passos 1964:10 (No. 96) (*lapsus calami*).

Illinois records.—Map 14.

P. origenes is far less numerous than *themistocles*, which it closely resembles, but is still of fairly frequent occurrence. Records, although scattered, indicate a general distribution throughout Illinois. Dates of capture are from June 4 through September 1.

Polites mystic (Edwards) Long dash

Hesperia mystic Edwards 1863a:15 (type-locality "Connecticut, Michigan, Canada West").

Pamphila mystic: Worthington 1880:49.

Polites mystic: Holland 1931:383; Klots 1951:247; dos Passos 1964:10 (No. 97).

Illinois records.—Map 15.

P. mystic is apparently limited to northeastern Illinois. It is locally frequent. We follow Brown (1966c) in ascribing the authorship of *mystic* to Edwards rather than Scudder. The species is single-brooded, from May 22 through July 15. Most records are from mid-June.

Hesperia ottoe Edwards
Ottoe skipper

Hesperia ottoe Edwards "1866" [1867]:207 (type-locality "Kansas"); Klots 1951:239; dos Passos 1964:12 (No. 112).

Erynnis ottoë: Holland 1931:374.

Illinois records.—LAKE COUNTY: Waukegan, July 28, 1946, 1 ♀, Wyatt (FMNH). MASON COUNTY: Mason State Forest, July 19, 1963, 1 ♀, Taylor, determined by H. A. Freeman (INHS) (Fig. 1); Mason State Forest, July 11, 1964, 1 ♀, July 19, 1964, 8 ♂♂ 3 ♀♀, Taylor (TT).

Irwin (1971) has noted the recent discovery of this species in Illinois. The status of *ottoe* in Illinois is uncertain. All specimens taken in Illinois have been found in sand areas.

Hesperia dacotae (Skinner)
Dakota skipper

Pamphila sassacus dacotae Skinner 1911:412 (type-locality "Volga, South Dakota").

Erynnis dakotae: Holland 1931:374.

Hesperia dacotae: Klots 1951:238; dos Passos 1964:12 (No. 113).

H. dacotae was credited to Illinois by Klots (1951:237, key to *Hesperia*). There are three specimens of *dacotae* in the Carnegie Museum from Illinois. They are a male, labeled in part "Ridgeland, 1895, W. E. Longley," from the A. W. Lindsey collection; another male, very dirty, labeled "sassacus ♂/Ills." in the hand of W. H. Edwards; and a female, labeled in part "No. Ill. 1889" and "*Hesperia dacotae* ♀ Skin. det. A. W. Lindsey 1940." We assume that Lindsey also examined the other two specimens listed and rely upon his determinations. These specimens may have been the basis for Klots' record. Ridgeland, in 1895, was a station on the Chicago and North Western Railroad, about one mile east of Oak Park, Cook County. The status of *dacotae* in Illinois at the present time is unknown. In view of the great ecological change in the Chicago area since the late 19th century, it would appear most unlikely that a prairie species such as *dacotae* would have been able to maintain itself there, but the recent finding of *Hesperia ottoe* in the state may belie this assumption. Perhaps it occurs elsewhere in northern Illinois, especially in the extreme northwestern portion of the state. Lindsey, Bell, & Williams (1931) did not mention Illinois in their discussion of *dacotae*, but it may be that Lindsey was unaware at that time of the existence of the Illinois specimens.

Hesperia sassacus Harris
Indian skipper

Hesperia sassacus Harris 1862b:315 (type-locality "Massachusetts"); Klots 1951:238; dos Passos 1964:12 (No. 114).

Pamphila sassacus: Worthington 1880:49.

Erynnis sassacus: Holland 1931:373.

Illinois records.—COOK COUNTY: Evanston, June 22, 1896, Snyder (FMNH). *H. sassacus* should be of more frequent occurrence in Illinois than the single record indicates. Worthington indicated personal knowledge of its capture in Illinois. We have numerous records from nearby localities in northwestern Indiana.

Hesperia leonardus Harris
Leonard's skipper

Hesperia leonardus Harris 1862b:314 (type-locality "Massachusetts"); Klots 1951:237; dos Passos 1964:12 (No. 117).

Pamphila leonardus: Worthington 1880:49.

Erynnis leonardus: Holland 1931:376.

Illinois records.—COOK COUNTY: Spears Woods Forest Preserve, September 4, 1972, Irwin and Seaborg (INHS, NGS). MASON COUNTY: Mason State Forest, September 1, 1963, September, 1964, Taylor (INHS, TT). PEORIA COUNTY: Kickapoo Creek, 1956, Taylor (TT). VERMILION COUNTY: Danville, August 24, 1968, Ellis and Irwin (TE, INHS) (Fig. 1).

This distinctive late-summer and autumn species should be more numerous and widespread in Illinois than these few records indicate. There is one brood, flying exclusively in late August and September.

Hylephila phyleus (Drury)
Fiery skipper

Papilio phyleus Drury 1773(1):25 (type-locality "Antigua, St. Christopher's, Nevis, etc.").

Pamphila phylaeus: Worthington 1880:49.

Hylephila phylaeus: Holland 1931:377.

Hylephila phyleus: Klots 1951:243; dos Passos 1964:13 (No. 122).

Illinois records.—Map 16.

Scattered records of this species are at hand throughout Illinois. It is fairly common in late summer and autumn. There are a few early season records, perhaps representing overwintering individuals. It has been observed May 14 through October 9, with most records in September.

Thymelicus lineola (Ochsenheimer)
European skipper

Papilio lineola Ochsenheimer 1808:230 (type-locality "Germany").

Adopaea lineola: Holland 1931:366; Klots 1951:232.

Thymelicus lineola: dos Passos 1964:14 (No. 123).

Illinois records.—Map 17.

This introduced European species (Fig. 1) is a recent adventive in Illinois. Much interest has attached to its spread in North America since its presence was discovered in 1910. First found in the Chicago area in 1957, *lineola* is now well established in several localities there; new ones are found each year. The species appears to be expanding its range beyond the Chicago metropolitan area and in time will probably spread throughout the state (Irwin 1968). It sometimes reaches enormous abundance in a very restricted locality, exceed-

ing in numbers all other butterflies during the height of its flight period. *T. lineola* occurs in many habitats and has been taken in vacant lots and along railroad tracks within the city of Chicago. The species is single-brooded, appearing shortly after the middle of June (earliest date June 15). It quickly reaches a peak of abundance, then gradually diminishes, and disappears about the middle of July. The latest date of capture is July 14, but few specimens have been noted after the first week of July. It will be of interest to note the possible effect on our native grass-feeding skippers of the increase and spread of this species—comparable, perhaps, to that of *Pieris rapae* on the native species of that genus.

Oarisma powesheik (Parker)

Powesheik skipper

Hesperia powesheik Parker 1870:271 (type-locality "Grinnell, Iowa").

Oarisma powesheik: Holland 1931:360; Klots 1951:231; dos Passos 1964:14 (No. 127).

The only evidence of the occurrence of this skipper in Illinois is found in Dodge (1872). In the original description of *Hesperia illinois* (= *Euphyes bimaculata*), he said: "This species [*illinois*] was discovered by Mr. E. A. Dodge, in Burcan [Bureau] County, Illinois. The first specimen was taken June 20, 1872. It was quite abundant upon grassy slopes on the high rolling prairie that forms the divide between the Illinois and Rock rivers. . . Two weeks later *Hesperia Powesheik*, Parker, appeared abundantly in the same locality." Klots (1951) attributed *O. powesheik* to northern Illinois, possibly on the basis of this record. Blatchley (1891) recorded it from Whiting, Lake County, Indiana, saying that it is "a western species not before recorded east of Illinois."

French (1879) and Worthington (1880) did not list *powesheik* from Illinois, despite the earlier record of Dodge, but they did include "*Thymelitus*" *garita* (Rea-kirt). The two species are congeneric and have been confused in the past. We regard it as probable that these authors referred to *powesheik*; it is unlikely that true *O. garita* occurs as far east as Illinois.

The area described by Dodge has not been well collected, and *powesheik* may still occur in local colonies. In the absence of specimens on which the Dodge record was founded, the possibility that they were incorrectly identified cannot be ruled out, although it is difficult to imagine with what other insect Dodge could have confounded this distinctly marked form.

Ancyloxypha numitor (Fabricius)

Least skipper

Hesperia numitor Fabricius 1793:324 (type-locality "West Indies").

Ancyloxypha numitor: Worthington 1880:48; Holland 1931:367; dos Passos 1964:14 (No. 130).

Ancyloxypha numitor: Klots 1951:231.

Ancyloxypha longleyi French 1897:80 (type-locality "Ridgeland, west of Chicago, Illinois").

Illinois records.—Map 18.

This diminutive skipper is common and generally distributed throughout Illinois. It occurs principally among tall grasses bordering streams and roadside ditches. There are at least two broods, with dates from

May 18 through September 28. French applied the name *longleyi* to the color variety, frequently occurring with typical *numitor*, having the fore wings solidly black.

Lerema accius (J. E. Smith)

Clouded skipper

Papilio accius J. E. Smith 1797:45 (type-locality "[probably Screven County,] Georgia").

Lerema accius: Holland 1931:396; Klots 1951:260; dos Passos 1964:15 (No. 134).

Illinois records.—JACKSON COUNTY: Carbondale, August 24, 1880, French (AMNH via A. B. Klots).

More intensive collecting in southern Illinois would probably reveal that this species is found in the extreme southern counties as a casual adventive.

Nastra lherminier (Latreille)

Swarthy skipper

Hesperia lherminier Latreille "1819" [1824]:777 (type-locality "Carolina").

Hesperia fusca Grote & Robinson 1867a:2 (type-locality "Atlantic District").

Megistias lherminieri: Holland 1931:395.

Lerodea lherminieri: Klots 1951:266.

Nastra lherminier: dos Passos 1964:16 (No. 137).

Illinois records.—MADISON COUNTY: Alton, July 26, 1941, Lauck, (CW). POPE COUNTY: Lusk Creek, near Eddyville, July 31, 1967, August 5, 1967, Downey, determined by H. A. Freeman (INHS). VERMILION COUNTY: Danville, August 20, 1967, Irwin, determined by H. A. Freeman (INHS) (Fig. 1).

This small and undistinguished species is probably commoner in the southern portion of Illinois than the few records would indicate. It may be overlooked because of its diminutive size and drab appearance.

Pholisora catullus (Fabricius)

Common sooty wing

Hesperia catullus Fabricius 1793:348 (type-locality "West Indies").

Pholisora catullus: Worthington 1880:49; Holland 1931:345; Klots 1951:218; dos Passos 1964:17 (No. 148).

Illinois records.—Map 19.

This butterfly is common to abundant everywhere in Illinois, even in urban areas. Its several hosts, principally lamb's-quarter (*Chenopodium*), favor disturbed soils (Shapiro 1966). It is double-brooded. Extreme dates are April 24 through September 10, but most records appear during the summer months of June through August.

Pyrgus centaurae wyandot (Edwards)

Grizzled skipper

Hesperia wyandot Edwards 1863a:21 (type-locality "Long Island [New York]; Washington, D. C.").

Hesperia centaurae: Holland 1931:340.

Pyrgus centaurae wyandot: Klots 1951:215; dos Passos 1964:19 (No. 157b).

Illinois records.—COOK COUNTY: Chicago, no date Schlieter, (FMNH ex A. L. McElhose collection).

This is "a very old record," according to Wyatt (personal communication). It is probably casual, as Illinois lies somewhat south of the normal range of this subspecies of *centaurae*.

Pyrgus communis (Grote)

Checkered skipper

‡*Hesperia tessellata* Scudder (*nec* Hewitson) 1872:73 (type-locality "Pennsylvania, Maryland, Iowa, Florida, Alabama, Texas, Missouri and California").

Syrichthys communis Grote 1872:69 (type-locality "Central Alabama").

Pyrgus tessellata: Worthington 1880:49.

Hesperia communis: Holland 1931:342.

Pyrgus communis: Klots 1951:215; dos Passos 1964:19 (No. 161).

Illinois records.—Map 20.

The checkered skipper, common throughout Illinois, is a characteristic species of autumn; early season records are few. There is considerable color variation. Records are available from March 22 through November 14, but the species reaches its greatest abundance during late August and throughout September.

Erynnis icelus (Scudder & Burgess)

Dreamy dusky wing

Nisoniades icelus Scudder & Burgess 1870:288 (type-locality "New England").

Thanaos icelus: Worthington 1880:49; Holland 1931:350.

Erynnis icelus: Klots 1951:222; dos Passos 1964:20 (No. 163).

Illinois records.—COOK COUNTY: Palos Park, May 22, 1927, May 30, 1931, Herz (FMNH); Palos Park, May 31, 1914, Gerhard (FMNH); Palos Park, May 7, 1922, May 30, 1923, Beer (INHS). LAKE COUNTY: "Beach" (Waukegan Dunes), May 21, 1922, Wyatt (FMNH). McHENRY COUNTY: Algonquin, June 8, June 11, Nason (INHS). MADISON COUNTY: Alton, April, 1948, Lauck (P. S. Remington 1948).

E. icelus is superficially similar to *Erynnis brizo*, but the genitalia offer abundant distinct characters. Like *brizo*, it is a single-brooded spring species, but appears somewhat later in the season. It appears to be less common than *brizo*; we have numerous records of the latter, but the above are the only Illinois records of the present species. We have not seen the material on which the Alton record is based and suggest that there may be a slight question as to its correctness since the locality is widely disjunct from the remainder of the known range of *icelus* in Illinois. It may, however, occur in the intervening territory, having been overlooked or confused with the following species.

Erynnis brizo (Boisduval & Le Conte)

Sleepy dusky wing

Thanaos brizo Boisduval & Le Conte 1834: Plate 66 (type-locality "North America").

Thanaos brizo: Worthington 1880:49; Holland 1931:349.

Erynnis brizo: Klots 1951:222; dos Passos 1964:20 (No. 164).

Illinois records.—Map 21.

E. brizo is rather common, probably throughout Illinois, although available records are widely scattered. It is a single-brooded, early spring butterfly of woodland roads and clearings. It has been recorded as early as March 30 and as late as May 18.

Erynnis baptisiae (Forbes)

Wild indigo dusky wing

Thanaos baptisiae Forbes 1936:111 (type-locality "Woods Hole, Massachusetts").

Erynnis baptisiae: Klots 1951:227; dos Passos 1964:20 (No. 167).

Illinois records.—Map 22.

This species and *E. lucilius* constitute a pair of nearly indistinguishable but biologically divergent siblings, differing almost entirely in food-plant selection. Unlike the other species of *Erynnis* in Illinois, these are inseparable by means of genitalic characters. For this reason, it is virtually impossible to separate them with certainty when host plant association is lacking. The species are monophagous, *E. baptisiae* feeding upon *Baptisia* (wild indigo), and *E. lucilius* on *Aquilegia* (columbine). Burns (1964) stated that there are indications of differences in larval morphology. Differentiation of the adults is complicated by the presence in both species of two differing temporal phenotypes.

The older literature is almost wholly unreliable because of authors' failure to separate properly the species comprising this complex. Before the recognition of *baptisiae* as a separate species, it was lumped with *persius* or *lucilius*; most old records of "*E. persius*" from the eastern states, probably including that of Worthington from Illinois, actually refer to *baptisiae*.

E. baptisiae is the dominant member of the complex in Illinois. The existence of *E. lucilius* and *persius* in Illinois has not been confirmed. Only records based on specimens with positive food plant association data have been accepted. H. A. Freeman determined a number of Illinois *Erynnis* as *E. baptisiae* (Fig. 1), and these records have likewise been accepted. *E. baptisiae* is probably statewide in distribution and common, although authentic records are few and widely scattered. The record from Macon County is that of the allotype female from Decatur.

Host-associated material is greatly needed in order to determine accurately the range of *baptisiae* in Illinois, as well as to confirm the suspected presence of *lucilius*. *E. baptisiae* is multivoltine, with dates of capture in Illinois ranging from April 17 through September 10, and develops differing spring and summer phenotypes as above indicated.

Burns (1964) presented a monographic treatment of the genus *Erynnis*. The *persius* species group received special attention.

Erynnis zarucco (Lucas)

Zarucco dusky wing

Thanaos zarucco Lucas 1857:641 (type-locality "Cuba").

Thanaos terentius: Holland 1931:354.

Erynnis zarucco: Klots 1951:227; dos Passos 1964:20 (No. 168).

Illinois records.—JACKSON COUNTY: Big Muddy Game Refuge, October 3, 1971, Nielsen, determined by R. R. Irwin (INHS).

The occurrence of *E. zarucco* in Illinois, previously considered probable, was confirmed by the above record, which represents a northward extension of its range in the Mississippi Valley. According to Burns (1964:167) *E. zarucco* is sporadic north of Tennessee, and southern Illinois is probably the northern limit of its range.

***Erynnis martialis* (Scudder)**
Mottled dusky wing

Nisoniades martialis Scudder 1869:335 (type-locality "New Jefferson and Dallas County, Iowa").

Thanaos martialis: Worthington 1880:49; Holland 1931:352.

Erynnis martialis: Klots 1951:223; dos Passos 1964:20 (No. 169).

Illinois records.—Map 23.

This easily recognizable species appears to be scarce but statewide in distribution. There are two broods with dates of capture from May 3 through August 21. According to Burns (1964), *E. martialis* exhibits two temporal phenotypes. The host plant is *Ceanothus americanus* (New Jersey tea) (Burns, *loc. cit.*).

***Erynnis horatius* (Scudder & Burgess)**
Horace's dusky wing

Nisoniades horatius Scudder & Burgess 1870:301 (type-locality "New England, Texas, Massachusetts").

Thanaos horatius: Holland 1931:353.

Erynnis horatius: Klots 1951:223; dos Passos 1964:21 (No. 173).

Illinois records.—Map 24.

Although *horatius* is widespread in Illinois, and probably common, our records reflect only one or two captures in each locality from which it has been reported. This indicates that it must have been widely overlooked or confused with other *Erynnis*, chiefly *juvenalis*. Nearly all of the material we studied was taken from July to September. Although the species is double-brooded, we have only two records of spring specimens from Illinois. Burns (1964) stated that *horatius*, like other multivoltine *Erynnis*, develops spring and summer phenotypes. Host plants include various species of *Quercus* (oaks).

***Erynnis juvenalis* (Fabricius)**
Juvenal's dusky wing

Hesperia juvenalis Fabricius 1793:339 (type-locality "America").

Thanaos juvenalis: Worthington 1880:49; Holland 1931:353.

Erynnis juvenalis: Klots 1951:226; dos Passos 1964:21 (No. 174).

Illinois records.—Map 25.

E. juvenalis is generally distributed throughout Illinois and is rather common. All records are from mid-April through early June. Late-season records are unconfirmed and probably represent *horatius*, except for one authentic male from Lee Center, Lee County, Oc-

tober 1, 1934 (INHS, *ex* Emil Beer collection). Since Burns (1964) asserted that *E. juvenalis* is strictly univoltine except at the southern limits of its range, in Florida, this anachronistic record is difficult to explain. Host plants are oaks of various species.

***Timochares ruptifasciatus* (Plötz)**
Timochares skipper

Antigonus ruptifasciata Plötz 1884:27 (type-locality "South America").

Timochares ruptifasciata: Klots 1951:228.

Timochares ruptifasciatus: Holland 1931:356; dos Passos 1964:22 (No. 179).

Illinois records.—JERSEY COUNTY: Elsay, August 29, 1941, C. L. Remington (P. S. Remington 1956). The individual was an obvious casual, perhaps wind-borne.

***Staphylus hayhurstii* (Edwards)**
Southern sooty wing

Hesperia hayhurstii Edwards 1870:22 (type-locality "Missouri").

Pholisora hayhurstii: Worthington 1880:49; Klots 1951:218.

Pholisora hayhursti: Holland 1931:346.

Staphylus mazans hayhurstii: dos Passos 1964:23 (No. 188b).

Illinois records.—Map 26.

This species is apparently absent in the northern counties; it is "scarce" in Perryton Township, Mercer County, at the apparent northern limit of its range in Illinois (PJC) but is more common southward. At Elsay, Jersey County, Remington found two broods. The first, flying from mid-May throughout June, consisted of "considerable numbers," and the second, in late August, was smaller. We separate this species from *S. mazans* (Reakirt) on the advice of H. A. Freeman (personal communication).

***Thorybes bathyllus* (J. E. Smith)**
Southern cloudy wing

Papilio bathyllus J. E. Smith 1797:43 (type-locality "[probably Screven County,] Georgia").

Eudamus bathyllus: Worthington 1880:49.

Thorybes bathyllus: Holland 1931:335; Klots 1951:212; dos Passos 1964:25 (No. 200).

Illinois records.—Map 27.

This skipper is generally distributed throughout the state and is common. It has been recorded from late April through September.

***Thorybes pylades* (Scudder)**
Northern cloudy wing

‡*Eudamus bathyllus* Harris (*nec* J. E. Smith) 1862b:312 (type-locality "Massachusetts").

Eudamus pylades Scudder 1870:207 (new name); Worthington 1880:49.

Thorybes pylades: Holland 1931:335; Klots 1951:212; dos Passos 1964:25 (No. 201).

Illinois records.—Map 28.

This species is distributed throughout Illinois. It

is more abundant than *bathyllus* and has an earlier flight period. The extreme dates of capture are May 14 and July 29.

Achalarus lyciades (Geyer)
Hoary edge

‡*Papilio lycidas* J. E. Smith (*nec* Cramer) 1797:89 (type-locality "[probably Screven County, Georgia]").

Proteides lyciades Geyer 1832: Plate 599 (type-locality "Bahia").

Eudamus lycidas: Worthington 1880:49.

Achalarus lycidas: Holland 1931:336.

Achalarus lyciades: Klots 1951:210; dos Passos 1964:26 (No. 207).

Illinois records.—Map 29.

Records of the hoary edge are widely scattered throughout Illinois, indicating statewide distribution. *A. lyciades* is single-brooded and comparatively scarce in the northern portion of the state, double-brooded and more common southward. The earliest and latest dates are May 11 and September 1. At Elsay, Jersey County, the first brood flies from mid-May to mid-June and the second, fewer in numbers, in late August (CLR). The second brood is absent in the north. The skipper may be overlooked because of its resemblance on the wing to the more common *Epargyreus clarus*.

Autochthon cellus (Boisduval & Le Conte)
Golden banded skipper

Eudamus cellus Boisduval & Le Conte 1834: Plate 73 (type-locality restricted to "Jacksonborough, Screven County, Georgia" by Clark 1936b:7).

Rhabdoides cellus: Holland 1931:338.

Autochthon cellus: Klots 1951:211; dos Passos 1964:26 (No. 211).

Illinois records.—UNION COUNTY: Pine Hills, July 26, 1966 (Fig. 1), August 21, 1966, September 1, 1966, Downey (INHS, SIU).

The establishment of this scarce butterfly at the locality cited is indicated by the fact that Downey encountered it there three times in one season. It may occur elsewhere in southern Illinois.

Epargyreus clarus (Cramer)
Silver spotted skipper

‡*Papilio tityrus* Fabricius (*nec* Poda) 1775:532 (type-locality restricted to "Dayton, Rockingham County, Virginia" by Dixon 1955:7).

Papilio clarus Cramer 1775(1):66 (type-locality restricted to "Dayton, Rockingham County, Virginia" by Dixon, *loc. cit.*).

Eudamus tityrus: Worthington 1880:49.

Epargyreus tityrus: Holland 1931:329.

Epargyreus clarus: Klots 1951:206; dos Passos 1964:29 (No. 236).

Illinois records.—Map 30.

This large, strong-flying and robust skipper is common throughout Illinois. Records are from April 6 through September 28. It is at least double-brooded in most of the state.

PAPILIONIDAE

Battus philenor (Linnaeus)
Pipe vine swallowtail

Papilio philenor Linnaeus 1771:535 (type-locality "America"); Worthington 1880:47; Holland 1931:312; Klots 1951:179.

Battus philenor: dos Passos 1964:33 (No. 246).

Illinois records.—Map 31.

The pipe vine swallowtail is found throughout the state and is locally common. There are two broods. A spring generation flies from April 24 (Union County) through May 31. The summer brood, consisting of individuals that are larger than those in the spring brood, has been recorded from July 2 through September 23.

Papilio polyxenes asterius Stoll
Black or parsnip swallowtail

Papilio asterius Stoll 1782(4):194 (type-locality "New York, Virginia, Carolina").

Papilio asterias: Worthington 1880:47.

Papilio polyxenes asterius: Holland 1931:314; Klots 1951:172; dos Passos 1964:34 (No. 248a).

Illinois records.—Map 32.

The black swallowtail is the most common member of its family in Illinois, and it is generally distributed. Like other swallowtails, its spring brood consists of smaller, brighter individuals than the later generations. The earliest date is April 3 and the latest October 14. There is a record from Evanston, Cook County, February 18, 1896, Snyder (FMNH) but this is probably the result of premature emergence, perhaps from a pupa protected by a heated structure or influenced by abnormal weather.

Papilio cresphontes Cramer
Giant swallowtail

Papilio cresphontes Cramer 1777(2):106 (type-locality "New York, Jamaica, South Carolina"); Worthington 1880:47; Holland 1931:317; Klots 1951:173; dos Passos 1964:35 (No. 256).

Illinois records.—Map 33.

The largest of our butterflies, *P. cresphontes* has been recorded from localities in all parts of Illinois, but it is sporadic in occurrence and never common. Its broods conform to those of other swallowtails in Illinois, the first brood being smaller than the second both in size and number of individuals. The spring generation flies from May 14 (earliest date on record) through June and the summer brood appears near the end of July. The latest date of capture of this species is August 24, but the butterfly is probably on the wing into September in the southern counties. The giant swallowtail is often seen but less frequently captured because of its high, powerful flight. It tends to follow flight paths, but seldom rests except to feed upon flowers.

Papilio glaucus Linnaeus
Tiger swallowtail

Papilio glaucus Linnaeus 1764:190 (type-locality

"America"); Klots 1951:175; dos Passos 1964:36 (No. 262).

Papilio turnus: Worthington 1880:47; Holland 1931:318.

Illinois records.—Map 34.

This familiar and beautiful insect is moderately common and is generally distributed throughout the state. Early-season individuals, like those of other species of the genus, are on the average smaller in size than later specimens. Yellow females are uncommon to rare. We have seen only five specimens from Cook County, two of which were taken by Irwin near Willow Springs on August 8 and August 12, 1966 (INHS). There are seven records of yellow females from the Streator area in La Salle County (INHS, RRI) and only four other state records. Ellis regarded yellow females as "very rare" at Danville, Vermilion County. Only one specimen was taken there during a period of some 25 years (TE). Remington, however, found the yellow females "quite frequent" at Elsay, Jersey County (CLR). An accurate picture of the ratio of yellow females to dark ones cannot be determined from records obtained during this study, however, because it is not known whether or not all collaborators segregated their records of the yellow females. Dates on record range from April 7 through September 12.

Papilio troilus Linnaeus Spicebush swallowtail

Papilio troilus Linnaeus 1758:459 (type-locality suggested as "lower Delaware River" by Brown 1968:81); Worthington 1880:47; Holland 1931:320; Klots 1951:178; dos Passos 1964:36 (No. 267).

Illinois records.—Map 35.

Although there are no records from the northwestern counties, *troilus* probably occurs throughout Illinois. It is common in the southern half of the state but seems to be less common or rare northward. Although there are few records from Cook County, and most of them are old, we have found the species numerous at nearby Hessville, Indiana. At Streator, La Salle County, it was common only in 1955, having been found only once previously and not subsequently during more than 30 years of collecting. This butterfly is double-brooded, and the extreme dates of collection are April 2 and October 5.

Eurytides marcellus (Cramer) Zebra swallowtail

Papilio marcellus Cramer 1777(2):4 (type-locality "Virginia"); Klots 1951:179.

Papilio ajax: Worthington 1880:47; Holland 1931:321.
Graphium marcellus: dos Passos 1964:37 (No. 269).

Illinois records.—Map 36.

E. marcellus is locally common to abundant, occurring in close association with its host plant, pawpaw (*Asimina triloba*). Individuals of the large, dark, summer brood (*lecontei*) are more apt to stray from the vicinity of the plants than those of the smaller, lighter, and brighter spring brood. Records are lacking from northwestern Illinois and from the northernmost tier of counties (except Lake County). Jones & Fuller (1955) indicate the absence of *Asimina* from this gen-

eral area, thus predicating similar absence of the butterfly. Their distribution map of *Asimina* is nearly identical to that of *marcellus*, as is to be expected from the close host-plant association. As indicated by Klots (1951), there is considerable overlapping of broods in this species, but in general the individuals of the early spring brood are smaller and lighter, and have shorter tails, than the later butterflies. The earliest date for this brood is April 2 in southern Illinois (Union County), and for the northern area it is April 20 (La Salle County). The latest date of capture is September 20 (Greene County). In the generic placement of this species, we follow Munroe (1961).

PIERIDAE

Pieris protodice Boisduval & Le Conte Checkered white

Pieris protodice Boisduval & Le Conte 1829:45 (type-locality "New York and Connecticut"); Worthington 1880:47; Holland 1931:280; Klots 1951:200; dos Passos 1964:39 (No. 277).

Illinois records.—Map 37.

The checkered white is fairly common throughout Illinois, notwithstanding the probable harmful effect of competition with *Pieris rapae*. Early reports of the state entomologist of Illinois (Thomas 1878, 1880, 1881) include both *protodice* and *oleracea* among insects of economic importance as pests of cabbage and other Cruciferae. They could scarcely be so ranked today, *protodice* having been almost entirely displaced from this status by *rapae*. Earliest and latest dates of capture of *protodice* in Illinois are March 7 and October 5, respectively. Maximum numbers are reached in late August and early September.

Pieris napi oleracea (Harris) Mustard white

Pontia oleracea Harris 1829:402 (type-locality "New Hampshire and Massachusetts").

Pieris oleracea: Worthington 1880:47.

Pieris napi oleracea-hiemalis: Holland 1931:281.

Pieris napi oleracea: Klots 1951:201; dos Passos 1964:39 (No. 278d).

This species formerly occurred in northern Illinois but is now apparently extinct in the state. We have not seen any authentic specimens of Illinois *oleracea*, but the statements of French (1878), Thomas (1880) and Middleton (1881) leave no doubt of its presence. Thomas said, "This species is found only in northern latitudes, its range in this stage not extending even to the central portion so far as I am aware," while the words of Middleton were that it was then "found only in the northern part of the state." The species was not listed by Hart (1903). The distribution map of *oleracea* in Scudder (1889) shows the northern tier of counties lying within its range, whereas Blatchley (1891) listed it as found sparingly in northern Indiana. The present range of *napi*, and its southern limits, were discussed by Hovanitz (1962) and Mather (1964). *E. oleracea* now reaches southern Wisconsin and southern lower Michigan.

There are four specimens of *oleracea* in the INHS collection from the Selim H. Peabody collection. They

lack data, but it is possible that they are Illinois specimens.

The usual explanation for the range restriction of *oleracea* is the harmful competition imposed upon it by *P. rapae*. This has without doubt played an important role in its decline. However, as pointed out by Hovanitz (*loc. cit.*), the reduction of forest cover has probably been of equal if not greater importance in this respect, by virtually eliminating favorable habitats from the portion of the state formerly occupied by the species. Whatever the cause, there seems little question that *oleracea* has been extirpated from the Illinois fauna, although there is a possibility that it might occur casually in the extreme northeastern part of the state.

***Pieris rapae* (Linnaeus)**
European cabbage butterfly

Papilio rapae Linnaeus 1758:468 (type-locality restricted to "Sweden" by Verity & Querci 1923:20).

Pieris rapae: Worthington 1880:47; Holland 1931:282; Klots 1951:200; dos Passos 1964:40 (No. 280).

Illinois records.—Map 38.

This butterfly is abundant throughout Illinois, particularly in cultivated areas. Early spring individuals are smaller than those in later broods and have less heavy dark markings; these are sometimes reduced to a mere apical black spot, but we have never seen a specimen from Illinois in which the dark markings were entirely absent.

P. rapae is an introduced European species, as its common name implies, and is known to everyone as an exceedingly destructive pest on cabbage and other crucifers. It is foremost among all butterflies in economic importance. It is believed to have reached Illinois about 1876, and the first definite record of its capture appears to have been at "Maplewood, west of Chicago" in September, 1877, by Worthington (French 1878; Thomas 1880), although Scudder (1889) reported unauthenticated records of the insect in Illinois as early as 1874. Within a few years it had occupied the entire state, to the detriment not only of its hosts but of the native species of *Pieris*: *protodice* and *napi oleracea*.

The earliest and latest dates for *rapae* in Illinois are March 27 and October 6.

***Colias eurytheme* Boisduval**
Alfalfa butterfly, orange sulphur

Colias eurytheme Boisduval 1852:286 (type-locality "California"); Worthington 1880:47; Holland 1931:297; Klots 1951:183; dos Passos 1964:41 (No. 286).

Illinois records.—Map 39.

Abundant throughout Illinois, *eurytheme* is probably our commonest butterfly. Despite a great deal of study in recent years, the relationship between this species and *philodice* is unclear. We have assigned all specimens having any orange to *eurytheme*, and all clear yellow specimens to *philodice*; Klots (1951) indicated the reliability of this procedure with respect to eastern-area material. As he pointed out, however, white females of the two species are not always distinguishable

from each other with certainty; the spots in the border of the fore wing are usually somewhat larger in *eurytheme*.

Individual variants are frequently encountered, nearly all of them females. One consistently occurring variation has the upper surface of the fore wings white, sometimes with a buff suffusion, whereas the hind wings are a light yellow or greenish yellow. White females occasionally have this buff suffusion on both wings without any yellow or orange. The dark borders of the fore wings are occasionally very wide, accompanied by an enlargement of the basal dark area, so that the light area of the fore wings is much restricted. Such a white female was taken at Streator, La Salle County, September 26, 1946, Irwin (INHS). In this individual the hind wings are dark greenish yellow. A female taken at Highland Park, Lake County, in August, 1961, by May (FMNH) has the primaries and secondaries on the left side yellow with those on the right side white. Wyatt recorded a similar specimen taken by Bristol at Elgin, Kane County (AKW). A number of melanic aberrations of varying degree and of both sexes have been taken in Illinois (FMNH).

The earliest date of capture of *eurytheme* in Illinois is March 27. The latest date is December 7, at Arlington Heights, Cook County, McElhose (FMNH). This is the latest recorded date of flight for any butterfly in Illinois. On the day previous to this date, Irwin observed the species on the wing at Streator, La Salle County.

***Colias philodice* Godart**
Common or clouded sulphur

Colias philodice Godart 1819:100 (type-locality "North America, particularly in Virginia"); Worthington 1880:47; Holland 1931:293; Klots 1951:185; dos Passos 1964:41 (No. 287).

Illinois records.—Map 40.

The clouded sulphur is common and generally distributed throughout Illinois, although it is less abundant than *eurytheme*. Like that species, *philodice* tends to produce frequent individual variants, especially in the female sex. Some have white fore wings and yellow or yellowish hind wings, analogous to the variation in *eurytheme*. Others may have the light spots in the fore-wing border nearly or wholly obsolete; these have been found in both the white and yellow phases of the female. Still others are more or less unique in manner of variation. An example is a female taken at Streator, La Salle County, September 18, 1960, Irwin (INHS). In this individual the black of the borders is projected inwardly along the veins, especially those of the hind wings, giving it an odd appearance somewhat resembling *Colias cesonia*. It was regarded by F. M. Brown as a possible hybrid with *cesonia* but more likely a mere mutant *philodice*. Another unusual female was taken at Streator, La Salle County, 1942, Plumb (INHS). The dark borders of its hind wing are as wide and heavy as those of the fore wings, but without white spots or the incursion of white ground color, giving it a superficial appearance suggesting *Colias meadii* Edwards. We list these variants to illustrate the type of divergence which may be anticipated in the species. Records are from April 10 through November 18. Both *eurytheme* and *philodice* are multivoltine; the autumn

broods usually emerge in numbers about the middle of September, and, as indicated by the late dates of capture, fly until the end of the season, very late in some years.

Colias cesonia (Stoll)
Dog face

Papilio cesonia Stoll "1791" [1790]:176 (type-locality "Georgia").

Colias caesonia: Worthington 1880:47.

Zerene caesonia: Holland 1931:292.

Colias cesonia: Klots 1951:189; dos Passos 1964:44 (No. 299).

Colias caesonia, *gen. aut. rosa* McNeill 1889:44 (type-locality "3 mi. E Moline, Rock Island County, Illinois").

Illinois records.—Map 41.

Records of this species are from throughout Illinois. It is common southward, rarer in the northern counties. Occasionally considerable numbers of the species are found in more northern localities, especially at the Waukegan Dunes (Illinois Beach State Park), Lake County. Snyder (1896) recorded *cesonia* as "abundant" at Evanston, Lake County, in 1895. *C. cesonia* is probably an immigrant in most of northern Illinois, but a breeding resident further south and no doubt occasionally in the north as well. Irwin took two newly emerged males at Cornell, Livingston County, on August 16, 1966 (INHS); the dog face is consistently uncommon to rare in that area. The cold weather form *rosa*, described from Illinois, is the predominant autumn form of the species. Extreme dates on record are April 5 and October 15, and most records have been made during late summer and autumn (*rosa*).

The flight of *cesonia* is fast and strong, and this species seldom rests other than when visiting flowers.

Phoebis sennae eubule (Linnaeus)
Cloudless sulphur

Papilio eubule Linnaeus 1767:764 (type-locality "Carolina").

Callidryas eubule: Worthington 1880:47; Holland 1931:289.

Phoebis sennae eubule: Klots 1951:190; dos Passos 1964:45 (No. 302).

Illinois records.—Map 42.

Although there are no records for the northernmost tier of counties, the cloudless sulphur probably occurs at least sporadically in all parts of Illinois. It is generally rare in the northern portion of the state but occasionally appears in some numbers, usually in late summer or autumn and probably as the result of migratory movements. Irwin observed such movements at Streator, La Salle County, August 12 through 14, 1946, and again August 11 and 12, 1953. *P. s. eubule* appeared in great numbers at Ramsey, Fayette County, where L. S. Phillips saw or captured a total of 58 specimens on August 29 and 30, 1953 (LSP). There was a similarly impressive appearance of the insect at Urbana, Champaign County, in August 1925 when 28 specimens were taken by T. H. Frison (INHS). *P. s. eubule* is common to abundant in southern Illinois. C. L. Remington reported it in "great numbers" at Elsah, Jersey County,

late July through October (CLR). On August 31, 1969, Irwin observed many individuals along Illinois Highway 3 between East St. Louis and the Pine Hills, Union County.

All Illinois *sennae* are probably of the subspecies *eubule*. C. L. Remington (1943) listed two newly emerged examples of the mainland tropical subspecies *P. s. marcellina* (Cramer) from Elsah, Jersey County, but since Klots (1951) regarded the subspecific classification of *sennae* as "extremely complex and largely statistical," we believe it best to consider these specimens as only similar to *marcellina*. Both French (1879) and Worthington (1880) listed *sennae* and *eubule* separately. Exactly what they were calling by each name cannot, of course, now be determined with certainty, although French (*loc. cit.*) characterized *sennae* as having the "ground color pale dirty yellow, marks heavier," instead of "clear pale yellow" as in *eubule*. Inclusive dates for *eubule* in Illinois are April 19 through November with most records being in August and September.

Phoebis philea (Johansson)
Orange barred sulphur

Papilio philea Johansson 1763:404 (type-locality "West Indies").

Callidryas philea: Worthington 1880:47; Holland 1931:289.

Phoebis philea: Klots 1951:191; dos Passos 1964:45 (No. 303).

Illinois records.—COOK COUNTY: presumably Evanston or vicinity, 18/0 or before (Riley 1870); Chicago (Humbolt Park), August 10, 1937, Sasko (VGS). We have seen the latter specimen, a male, in the Sasko collection. *P. philea* can only be regarded as casual in Illinois. In view of the foregoing records, it may be expected anywhere in the state, although probability would favor its occurrence in the extreme southern counties.

Eurema mexicana (Boisduval)
Mexican sulphur

Terias mexicana Boisduval 1836:655 (type-locality "Mexico").

Eurema mexicana: Holland 1931:301; Klots 1951:196; dos Passos 1964:47 (No. 312).

Illinois records.—CHAMPAIGN COUNTY: Champaign, October 18–19, 1911, Frison (Frison 1919). COOK COUNTY: Chicago, October 9, 1904, Beer (INHS); Riverside, October 13, 1910, Mares (INHS) (Fig. 2). DU PAGE COUNTY: Ingalton, October 13, 1911, Mares (INHS). JERSEY COUNTY: Elsah (campus of Principia College), fall 1940, C. L. Remington (CLR). KANE COUNTY: Elgin, September 18, 1925, Bristol (AKW).

This is a species of rare appearance in Illinois in autumn, probably as the result of migratory movements. Frison (1919) described such an occurrence at Champaign, Champaign County, when 14 specimens were taken and many more seen "flying in flocks." A specimen of *mexicana* in the INHS collection taken by Frison at Champaign, dated August 18, 1911, is believed to be one of those discussed in his paper, but with an error in labeling, as he stated that none had been observed prior to the October 1911 migration. The specimen

taken by Mares at Ingalt, Du Page County, on October 13 of the same year may have been a member of the same migration. Apparently such occurrences of *mexicana* in Illinois are sporadic and irregular.

There are also two records of this butterfly from Hessville, Lake County, Indiana, both at the same time of year as most of those from Illinois: October 16, 1904, and October 7, 1917, Wyatt (FMNH).

Eurema lisa (Boisduval & Le Conte)
Little sulphur

Xanthidia lisa Boisduval & Le Conte 1829:53 (type-locality "United States").

Terias lisa: Worthington 1880:47.

Eurema lisa: Holland 1931:302; Klots 1951:198; dos Passos 1964:47 (No. 315).

Illinois records.—Map 43.

The little sulphur is found throughout Illinois and is common. Light yellow to white females are frequently found. Earliest and latest dates on record are April 24 and October 23, and the species is most numerous from late July through early September.

Eurema nicippe (Cramer)
Sleepy orange

Papilio nicippe Cramer 1780(3):31 (type-locality "Virginia").

Terias nicippe: Worthington 1880:47.

Eurema nicippe: Holland 1931:301; Klots 1951:197; dos Passos 1964:47 (No. 319).

Illinois records.—Map 44.

We have records of *nicippe* from throughout Illinois except the extreme northwestern counties, where, however, it probably also occurs. It is rare in the Chicago area, where there is only one recent record. Elsewhere in northern Illinois it is intensely local but often abundant where it is found. It is probably commoner and more widespread in the southern half of the state; Holland (1931) spoke of its abundance there. In northern Livingston County, just south of Streator along the Vermilion River, it occupies a locality only a few acres in extent, where it has fluctuated in numbers from extreme abundance (1943–1954) through a decline (1955–1958) and period of apparent absence (1959–1962) to reappearance in 1963 and a gradual increase since then. Similar restricted habitats probably occur elsewhere in northern Illinois, where the host plant wild senna (*Cassia*) occurs. Its decline at the Streator locality was probably attributable to the rarity of its host; the plant was not seen during the period the butterfly was not present.

Of the thousands of *nicippe* we have seen and captured, only one has been of the rare yellow form *flava*, a male taken at the above locality south of Streator in Livingston County, September 10, 1963, Irwin (INHS). There is another form with the underside reddish instead of the normal yellow, which is unknown to us from the state. A few dwarfs of both sexes have been taken.

There are probably three broods, with the third emerging in mid-August and flying through September (Streator) being the largest. The earliest and latest records are April 15 (Evanston, Cook County) and early November (Elsah, Jersey County).

Nathalis iole Boisduval
Dainty sulphur

Nathalis iole Boisduval 1836:589 (type-locality "Mexico"): Worthington 1880:47; Holland 1931:283; Klots 1951:199; dos Passos 1964:48 (No. 320).

Illinois records.—Map 45.

This tiny pierid is found throughout Illinois. It varies in numbers from season to season; in some years, such as 1931 and 1944, it was very abundant and in other years it has been completely absent. It is rare in Cook County, where the only records are as follows: Chicago, October 4, 1931, 10 specimens, Wyatt and Lustig (FMNH); Chicago, November 13, 1931, Weed (FMNH); locality and date not specified, two specimens, Leuschner (RL). Frison (INHS) took 51 specimens at Havana, Mason County, October 7, 1931. The earliest date on record is July 4 and the latest is November 13. Most records are from mid-August through mid-October.

Anthocharis midea (Hübner)
Falcate orange tip

Mancipium vorax midea Hübner "1806" [1809]: Plate 142 (type-locality restricted to "Wilmington Island, near Savannah, Georgia" by dos Passos & Klots 1969:6 by designation of neotype).

Anthocharis genutia: Worthington 1880:47; Klots 1951:181.

Euchloë genutia: Holland 1931:287.

Anthocharis midea: dos Passos 1964:49 (No. 325).

Illinois records.—Map 46.

Apparently locally common to abundant in spring in southern Illinois, *A. midea* is rare or absent north of the approximate latitude of East St. Louis. The northernmost record was in Putnam County, May 7, 1939, Glenn (MOG). Nielsen took 14 ♂♂ and 12 ♀♀ at Wolf Lake Swamp, Union County, April 24, 1961, and reported that he saw "a thousand or more" (GN). The species was reported as common in open woods, mid-March to mid-May, at Elsah, Jersey County (CLR). It is single-brooded and appears from mid-March through May 14.

Cowan (1969) pointed out that the generic name is properly spelled as we have indicated. The Illinois population may be referable to the recently described subspecies *annickae* dos Passos and Klots (*loc. cit.*).

Euchloë olympia (Edwards)
Olympia

Anthocharis olympia Edwards "1871" [1872]:266 (type-locality "Coalburgh, West Virginia; Dallas, Texas"); Worthington 1880:47.

Euchloë olympia: Holland 1931:285; Klots 1951:182; dos Passos 1964:50 (No. 329).

Illinois records.—BUREAU COUNTY: probably Ohio Township, G. M. Dodge (Edwards 1884). COOK COUNTY: Chicago, May 13, 1917, Wyatt (FMNH). JERSEY COUNTY: Elsah, "local and rare" (CLR). LAKE COUNTY: Waukegan Dunes (Illinois Beach State Park) (Fig. 2), well established, common to abundant; many records, May 10 through May 28.

E. olympia probably occurs locally elsewhere in Illi-

nois but may be overlooked. It strongly resembles *Pieris rapae* in flight; for this reason, a sight record from Peru, La Salle County, cannot be accepted. It is single-brooded, with a short flight period.

RIODINIDAE

Calephelis muticum McAlpine Swamp metalmark

Calephelis muticum McAlpine 1937:43 (type-locality "Willis, Washtenaw County, Michigan").

Lephelisca muticum: Klots 1951:123; dos Passos 1964: 51 (No. 343).

Illinois records.—KANE COUNTY: Elgin, July 12, 1930, July 19, 1930, Herz (FMNH); Elgin, July 12, 1939, (INHS) (Fig. 2); Elgin, July 31, 1920, July 19, 1931, Bristol (AKW).

Scudder (1889:790) recorded *Calephelis borealis* from the "Township of Ohio" in Bureau County, G. M. Dodge. The record probably refers to *muticum*, which was undistinguished from *borealis* at that time, but Scudder's date of May 7 is inconsistent with the known flight periods of both *muticum* and *borealis*. Records by Worthington (1880) and Holland (1931) of *borealis* from Illinois are probably traceable to the same source. There is one brood, flying in late July as above. Bristol (personal communication) reported the larvae on swamp thistle in June.

Specimens from the "Chicago, Illinois . . . area" taken by Wyatt are mentioned in the original description. Nothing further is known of these specimens; the locality citation may refer to Elgin, which lies within the greater metropolitan area.

The generic name *Calephelis* has recently been validated, and *Lephelisca* suppressed, by the International Commission on Zoological Nomenclature (McAlpine 1971).

LYCAENIDAE

Harkenclenus titus (Fabricius) Coral hairstreak

Hesperia titus Fabricius 1793:297 (type-locality "in Anglia").

Thecla titus: Worthington 1880:48; Holland 1931:242.

Strymon titus: Klots 1951:134.

Harkenclenus titus: dos Passos 1970:28 (No. 355).

Illinois records.—Map 47.

It is likely that *titus* occurs throughout Illinois. It is rather common. *H. titus* is single-brooded, with dates of capture between June 2 and August 22.

Satyrium liparops strigosa (Harris) Striped hairstreak

Thecla strigosa Harris 1862a:101 (type-locality "Blue Hill, Massachusetts"); Worthington 1880:48.

Thecla liparops: Holland 1931:235.

Strymon liparops strigosus: Klots 1951:138.

Satyrium liparops strigosa: dos Passos 1970:29 (No. 361b).

Illinois records.—Map 48.

S. liparops strigosa is widespread in Illinois, but apparently local and usually occurring only as single individuals. Occasionally one finds it in greater numbers, as in the forest preserves near Willow Springs, Cook County. Even at such times and places, however, it never reaches the abundance of some of its congeners. As an example of the nature of its occurrence, in August, 1966, Irwin took one specimen of *strigosa* during each of four visits to the above locality, on the 5th, 6th, 9th, and 12th. There is one brood, with dates of capture from June 10 through August 12, but the insect is seldom encountered after the end of July.

Satyrium calanus falacer (Godart) Banded hairstreak

Polyommatus falacer Godart "1819" [1824]:633 (type-locality "vicinity of Philadelphia, North America").
Thecla calanus: Worthington 1880:48; Holland 1931: 234.

Strymon falacer: Klots 1951:137.

Satyrium calanus falacer: dos Passos 1970:29 (No. 363b).

Illinois records.—Map 49.

Recorded from throughout the state, this and *H. titus* are our most common and widespread hairstreaks. *S. calanus* favors much the same habitat as *S. edwardsii* and is frequently found in association with it. This hairstreak may be confused with *edwardsii* and also with *S. caryaevorus*, from which it may not always be distinguished by superficial characters. *S. calanus* is apparently also single-brooded but has a longer flight season than *edwardsii*. We have records from May 24 through August 9.

Lafontaine (1969, 1970) has recently described *Satyrium boreale*, a new hairstreak very close to *falacer* but apparently founded upon good superficial as well as genitalic differences. Inasmuch as this description appeared during an advanced stage of the preparation of the present list, it was not feasible to re-examine all Illinois *falacer* to determine the possible occurrence of the new species in the state. Lafontaine (*loc. cit.*) recorded it from Michigan, Ohio, and Pennsylvania, and its presence in Illinois is a distinct possibility.

Satyrium caryaevorus (McDunnough) Hickory hairstreak

Strymon caryaevorus McDunnough 1942:1 (type-locality "Merivale, Ontario"); Klots 1951:137.

Satyrium caryaevorus: dos Passos 1970:29 (No. 364).

Illinois records.—ADAMS COUNTY: Quincy, July 1899, Poling, determined by Orley R. Taylor, Jr. (USNM). JACKSON COUNTY: Carbondale, June 9, 1963, determined by J. C. Downey (JCD).

Downey (1966) listed *caryaevorus* only from Cook County. Subsequent genitalic study of the material on which this record was based has proven it to be *S. calanus falacer*. The above records, not listed by Downey (*loc. cit.*), are the only authenticated ones of *caryaevorus* from Illinois, but it may be expected to occur anywhere in the state. *S. caryaevorus* is often virtually indistinguishable from *falacer* by superficial characters, so that genitalic examination is essential for correct de-

termination. The species is single-brooded, temporally and spatially associated with the other commoner species of the genus. As the name implies, it is a hickory feeder.

Satyrium edwardsii (Saunders)
Edwards' hairstreak

Thecla edwardsii Saunders 1869:98 (type-locality restricted to "Queenstown, Ontario" by Michener & dos Passos 1942:4 by designation of neotype); Worthington 1880:48.

Thecla edwardsi: Holland 1931:234.

Strymon edwardsii: Klots 1951:136.

Satyrium edwardsii: dos Passos 1970:29 (No. 365).

Illinois records.—Map 50.

S. edwardsii is locally common to abundant in association with the host plant, oak (*Quercus*). Confusion with *S. calanus falacer* is possible. This is a single-brooded, midsummer butterfly, with earliest and latest dates of observation June 12 and August 1.

In Illinois, *edwardsii* appears to be limited chiefly to the northern half of the state, principally the northeastern portion. It has been recorded only once from Streator, La Salle County, during 30 years of collecting there, and the work of Downey and his associates in southern Illinois did not disclose its presence. Thomas Taylor found it abundant at Mason State Forest, Mason County, where the adults were present on butterfly-weed (*Asclepias tuberosa*).

Satyrium acadica (Edwards)
Acadian hairstreak

Thecla acadica Edwards 1862a:55 (type-locality "London, [Ontario]"); Worthington 1880:48; Holland 1931:237.

Strymon acadica: Klots 1951:136.

Satyrium acadica: dos Passos 1970:29 (No. 368).

Illinois records.—Map 51.

Except for an unconfirmed record from Alton in Madison County, all records of *acadica* are from the northeastern counties. It is frequent to common locally, where the host plant, willow (*Salix*) occurs. There is probably one brood; the species has been taken from June 14 through August 22.

Eumaeus atala Poey
Atala

Eumenia atala Poey 1832(1): Plate *Eumenia* + text 3 p. (type-locality "Havana, Cuba").

Eumaeus atala: Holland 1931:223; Klots 1951:132; dos Passos 1970:30 (No. 370).

French (1900:395) recorded this species from Carbondale, Jackson County. Since it seems inconceivable that he could have confused this distinctive species with any other, we do not doubt the accuracy of the record. However, we rely on the usual explanation of such occurrences: that the insect, in some stage of development, may have been transported to Illinois, perhaps on the Illinois Central Railroad, which has a direct line between Carbondale and southern Florida. The butterfly is not a regular part of the Illinois fauna.

Calycopis cecrops (Fabricius)
Red banded hairstreak

Hesperia cecrops Fabricius 1793:270 (type-locality "West Indies").

Thecla poeas: Worthington 1880:48.

Thecla cecrops: Holland 1931:239.

Strymon cecrops: Klots 1951:133.

Calycopis cecrops: dos Passos 1970:30 (No. 379).

Illinois records.—Map 52.

The Cook County record is apparently a casual stray. In southern Illinois, *cecrops* is rare but occurs consistently and likely has local populations.

Callophrys polios (Cook & Watson)
Hoary elfin

Incisalia polios Cook & Watson 1907:202 (type-locality "Lakewood, New Jersey"); Klots 1951:147.

Thecla polios: Holland 1931:227.

Callophrys polios: dos Passos 1970:31 (No. 382).

Illinois records.—COOK COUNTY: Chicago, May 7, 1911, Wyatt (FMNH). LAKE COUNTY: Waukegan Dunes (Illinois Beach State Park) (Fig. 2), many specimens, dates, collectors, and sources.

C. polios is well established and often common to abundant at Illinois Beach State Park in association with its host, bearberry (*Arctostaphylos uva-ursi*). It flies at about the same time as *Euchloe olympia*, the other butterfly virtually endemic to that locality in Illinois but appears somewhat earlier. On May 12, 1951, Leuschner found it "numerous almost beyond comprehension" there (RL). It probably does not reach this level of abundance in every season but does occur consistently and is usually common. The flight is close to the ground, and the butterfly often rests on the food plant. It is single-brooded. The earliest and latest dates of capture are April 25 and May 28, but the flight season is short and in any one year probably does not exceed 2 weeks within this general period.

Callophrys irus (Godart)
Frosted elfin

Polyommatus irus Godart "1819" [1824]:674 (type-locality "America?").

Thecla irus: Worthington 1880:48; Holland 1931:226.

Incisalia irus: Klots 1951:148.

Callophrys irus: dos Passos 1970:31 (No. 383).

Illinois records.—LAKE COUNTY: Beach, May 10, 1922, Liljebblad, determined by J. C. Downey (INHS).

The male and female specimens of the above record, the only positively known specimens of *irus* from Illinois, were damaged in a fire at the University of Northern Iowa in March, 1970, while being studied by Downey. A single-brooded, rare, and local species of early spring, *irus* may easily be confused with *I. henrici*. It should be found elsewhere in Illinois. We have records from nearby Lake County, Indiana.

Callophrys henrici (Grote & Robinson)
Henry's elfin

Thecla henrici Grote & Robinson 1867b:174 (type-local-

ity "Philadelphia, [Pennsylvania]"); Holland 1931: 226.

Incalisia henrici: Klots 1951:147.

Callophrys henrici: dos Passos 1970:31 (No. 384).

Illinois records.—Map 53.

C. henrici is extremely local in Illinois, but apparently frequent to common where it does occur. C. L. Remington found it "unusually common" at Elsay, Jersey County (CLR); Glenn has taken it regularly in Putnam County (MOG) (Fig. 2); and Ellis has found it numerous near Danville, Vermilion County, flying about red bud (*Cercis canadensis*) (TE). There is one brood, appearing March 30 through May 9.

The species should be sought around red bud trees in early spring when the trees are in full color. Adults may be observed pirouetting around the treetops, resting on the blossoms, and ovipositing on the young leaves.

Callophrys niphon (Hübner) Pine elfin

Lycus niphon Hübner "1818" [1823]: Plate 527 (type-locality "Florida").

Thecla niphon: Worthington 1880:48; Holland 1931: 227.

Incalisia niphon: Klots 1951:149.

Callophrys niphon: dos Passos 1970:31 (No. 388).

Illinois records.—JACKSON COUNTY: Giant City, May 5, 1957 (SIU); Carbondale, April 21, 1958, Yates (SIU). POPE COUNTY: 2 mi. S Herod, April 12, 1968, Bouseman (JKB).

In the absence of additional records, it is difficult to determine the true distribution and abundance of *niphon* in Illinois. It is probably not common in any Illinois localities, but should be expected to occur throughout the state.

Callophrys gryneus (Hübner) Olive hairstreak

†*Papilio damon* Stoll (*nec* Denis & Schiffermuller) 1782 (4):208 (type-locality "Virginia").

Lycus gryneus Hübner "1816" [1819]:74 (new name).

Thecla smilacis: Worthington 1880:48.

Thecla gryneus: Holland 1931:231.

Mitoura gryneus: Klots 1951:141.

Callophrys gryneus: dos Passos 1970:32 (No. 394).

Illinois records.—Map 54.

The host of this hairstreak, red cedar (*Juniperus virginiana*), is found nearly throughout Illinois, but our records of the butterfly are not as generally distributed as this would indicate; the species is local and may have been overlooked in many localities. As shown by the distribution map, nearly all of our records are from localities near the Illinois or Mississippi rivers, and *gryneus* may not be present in all areas where red cedar occurs. *C. gryneus* is double-brooded. The earliest and latest dates for the first brood are April 22 and May 18; for the second, June 27 and July 19.

Thomas Taylor (personal communication) states that *gryneus* is local but common when found. It flies near the tops of the cedar trees and if disturbed it darts out from the tree and returns quickly, often to the same perch. The males are particularly inclined

to remain near the treetops. Taylor found the species common at Mason State Forest, Mason County, and at Jubilee College State Memorial, Peoria County, and Downey considers the species common in southern Illinois.

Atlides halesus (Cramer) Great purple hairstreak

Papilio halesus Cramer 1777(2):3 (type-locality "Virginia").

Thecla halesus: Holland 1931:224.

Atlides halesus: Klots 1951:133; dos Passos 1970:33 (No. 408).

Illinois records.—UNION COUNTY: Pine Hills, September 17, 1966, Persons (INHS).

This hairstreak was attributed to Illinois by Holland, Klots, and other authors, probably on the basis of old published records which we were unable to locate; the above is the only positive Illinois record known to us. The specimen was taken while sweeping for other insects and was severely damaged. *A. halesus* is probably only a rare casual in the extreme south. Shapiro (1966) says *halesus* is not resident north of the range of live oak (*Quercus virginiana*), which lies far to the south of Illinois.

Euristrymon ontario (Edwards) Northern hairstreak

Thecla ontario Edwards "1868" [1869]:209 (type-locality "Port Stanley, Ontario"); Holland 1931:235.

Strymon ontario: Klots 1951:135.

Euristrymon ontario: dos Passos 1970:34 (No. 412).

Illinois records.—JACKSON COUNTY: Carbondale, May 22, 1964, May 14, 1965, Downey (JCD). JERSEY COUNTY: Elsay, May 30, 1941, May 30, 1942, C. L. Remington (CLR).

E. ontario is rare in Illinois but may be expected anywhere in the state. It should not be limited, as implied by Downey (1966) on the basis of the few records, to the southern portion of the state.

Panhiades m-album (Boisduval & Le Conte) White M hairstreak

Thecla m-album Boisduval & Le Conte 1833:86 (type-locality "Georgia"); Worthington 1880:48; Holland 1931:229.

Strymon m-album: Klots 1951:133.

Panhiades m-album: dos Passos 1970:34 (No. 414).

Illinois records.—Map 55.

This hairstreak (Fig. 2) is widespread but rare and erratic in Illinois.

Strymon melinus humuli (Harris) Gray hairstreak

Thecla humuli Harris 1841:215 (type-locality "Massachusetts"); Worthington 1880:48.

Thecla melinus: Holland 1931:235.

Strymon melinus: Klots 1951:134; dos Passos 1970:34 (No. 417).

Illinois records.—Map 56.

Although *melinus* occurs throughout Illinois and is abundant in the southern portion of the state, it is uncommon to rare northward. There are few records from Cook County. At Streator, La Salle County, only seven specimens have been taken from 1941 through 1969 (RRI). *S. melinus* is apparently double-brooded, with earliest and latest record dates of April 21 and October 2.

Comparison of Illinois *melinus* with material from other states indicates the need for much study of this rather variable species to determine the validity of the subspecies within the taxon. Pending such investigation we assign all Illinois populations to the subspecies *humuli* (Harris).

***Lycaena thoe* (Guérin-Ménéville)**
Bronze copper

Polyommatus thoe Guérin-Ménéville 1831: Plate 81 (type-locality "North America").

Chrysophanus thoe: Worthington 1880:48; Holland 1931:248.

Lycaena thoe: Klots 1951:152; dos Passos 1964:60 (No. 433).

Illinois records.—Map 57.

The bronze copper is generally distributed throughout Illinois, and is locally frequent, sometimes common. Although generally regarded as a wet-ground species, we have often found it in drier environments, even on occasion within the limits of cities. The allotype female of the aberration *wyatti* Gunder, in which the dark spots of the fore wings are elongated and coalesce, was taken at Chicago, Cook County, September 15, 1907, by A. K. Wyatt. There are two broods. Extreme dates of capture of *thoe* in Illinois are May 17 and November 3. The second brood, appearing in August, seems to be slightly larger in numbers than the first. It should be sought near its food plant, curly dock (*Rumex crispus* L.).

***Lycaena xanthoides dione* (Scudder)**
Great copper

Chrysophanus dione Scudder 1868b:401 (type-locality "Denison and New Jefferson, Iowa"); Worthington 1880:48; Holland 1931:248.

Lycaena xanthoides dione: Klots 1951:154; dos Passos 1964:60 (No. 435b).

Illinois records.—Map 58.

This butterfly (Fig. 2) is common in the northern portion of Illinois but not recorded from the southern third of the state, where it may not occur. Although the species is listed by Worthington and there is a record from Normal, McLean County, in 1873 (INHS), most Illinois records are relatively recent, and there is evidence that *dione* is increasing in numbers and distribution in Illinois. Wyatt regarded it as a newcomer to the Chicago area (AKW). We did not find it at Streator, La Salle County, until 1954, when a very restricted colony was discovered along the Santa Fe railroad tracks just east of the city. Since then, it has spread into the city itself. *L. x. dione* is single-brooded. The earliest date of capture is June 9, and the latest July 30, but the main flight season is from the third week of June through the middle of July.

***Lycaena helloides* (Boisduval)**
Purplish copper

Polyommatus helloides Boisduval 1852:291 (type-locality "San Francisco, California").

Chrysophanus helloides: Holland 1931:249.

Lycaena helloides: Klots 1951:153; dos Passos 1964:61 (No. 440).

Illinois records.—Map 59.

Although all of our records are from the northeastern counties, *L. helloides* undoubtedly occurs throughout at least the northern third of the state. It is unlikely that there is a distributional break in northwestern Illinois; its apparent absence probably reflects the general lack of adequate collecting coverage in the area. *L. helloides* is extremely local but is often common to abundant where found. It occurs frequently in association with *L. thoe*. The species was abundant at Goose Lake Prairie, Grundy County, on July 18, 1970. There were several exceedingly localized colonies, each only a few hundred square yards in extent, in which *helloides* abounded together with *L. thoe*. These colonies were separated by areas in which no *helloides* were to be seen, although *thoe* was present everywhere. There is a well-established colony at Burnham, Cook County. The southernmost records in Illinois are from Streator, La Salle County, and Beaverville, Iroquois County. At the former locality, only a single example of *helloides* has been taken (October 1, 1950, Irwin, INHS), but Irwin Leeuw (personal communication) found it common at Beaverville in late July, 1970.

The earliest and latest dates for the species in Illinois are May 19 and October 21, but the most records are from late July through September. The butterfly is double-brooded and the second brood, emerging near the end of August, is somewhat the larger in numbers.

***Lycaena phlaeas americana* Harris**
American copper

Lycaena americana Harris 1862b:273 (type-locality "Massachusetts").

Chrysophanus americana: Worthington 1880:48.

Chrysophanus hypophlaeas: Holland 1931:251.

Lycaena phlaeas americana: Klots 1951:151; dos Passos 1964:61 (No. 443a).

Illinois records.—Map 60.

This copper is locally frequent, sometimes common, and is generally distributed throughout Illinois. Individual variants, including the aberration *fasciata* (Strecker), are often encountered. The species has been taken from April 27 through October 19.

Individuals tend to be local, and colonies may be found in the same relative spot year after year. They feed on curly dock (*Rumex crispus* L.) often in competition with *L. thoe*.

***Leptotes marina* (Reakirt)**
Marine blue

Lycaena marina Reakirt 1868:87 (type-locality "Orizaba and near Vera Cruz, Mexico"); Holland 1931:272.

Leptotes marinus: Klots 1951:158.

Leptotes marina: dos Passos 1964:62 (No. 449).

Illinois records.—COOK COUNTY: Forest View, near

Lyons, August 18, 1933, Mares (INHS) (Fig. 2). MERCER COUNTY: Hamlet, September 5, 1953, Conway (Conway 1956).

This species is probably only a rare casual in Illinois.

Hemiargus isola (Reakirt)
Reakirt's blue

Lycaena isola Reakirt 1866b:332 (type-locality "near Vera Cruz, Mexico"); Holland 1931:271.

Hemiargus isola: Klots 1951:159.

Hemiargus isola: dos Passos 1964:63 (No. 453).

Illinois records.—Map 61.

C. L. Remington (1942) discussed *isola* in the Midwest with special reference to Illinois. He indicated that *isola* is a breeding resident of the states east of the Mississippi in which it is found. Although it is apparently rare in these states, this rarity may be illusory rather than actual, since *isola* is widely overlooked where it does occur because of its close resemblance to *Everes comyntas* in the field. Collectors should keep this species in mind, and examine as many apparent "*comyntas*" as possible to locate it.

Lycaeides melissa samuelis Nabokov
Melissa blue, Karner blue

Lycaeides melissa samuelis Nabokov 1943:97 (type-locality "Albany, New York"); Klots 1951:165; dos Passos 1964:64 (No. 455e).

Lycaena scudderii: Worthington 1880:48.

Lycaena scudderii: Holland 1931:263.

The only known Illinois specimens of this species are a male and female in the INHS collection, from the Andreas Bolter collection, labeled only "N. Ill." (Fig. 2). The species was attributed to Illinois by Klots (1951). Nabokov (1949) said that *samuelis* may occur on the "western side of the southern end of Lake Michigan." This may refer to the Waukegan Dunes (Illinois Beach State Park), an area apparently well suited to the occurrence of the species. The Dunes have, however, been very well collected for many years, and we know of no *samuelis* from there in any collection. The host, lupine (*Lupinus perennis*), occurs in "sandy soil, local, Northern Ill." according to Jones & Fuller (1955). If *samuelis* still occurs at all in the state, it must be in very small, intensely localized colonies where the food plant occurs. Such a colony still exists near Hessville, Indiana, occupying an area only a few hundred square yards in size, beyond which *samuelis* very seldom strays. Shapiro (1966) regarded this as the most local butterfly of the northeastern states. Downey (1966) also discussed the occurrence of *samuelis* in Illinois. This is another species which may have become extinct in Illinois since the time of Worthington and Bolter, as a possible result of ecological changes.

Everes comyntas (Godart)
Eastern tailed blue

Polyommatus comyntas Godart "1819" [1824]:660 (type-locality "North America").

Lycaena comyntas: Worthington 1880:48; Holland 1931:269.

Everes comyntas: Klots 1951:163; dos Passos 1964:66 (No. 469).

Illinois records.—Map 62.

This is one of the commonest butterflies of Illinois. It is abundant and generally distributed throughout the state. The name *meinersi* Field applies to the spring form of the species, in which females possess much blue dorsally. We have records of *comyntas* from nearly every county, more than for any other butterfly species. The earliest date of capture is April 21, and it has been taken as late as November 29 (Williamson County).

The species is multiple-brooded, and adults often show a degree of seasonal variation. For example, spring males are usually paler than summer forms, and females show moderate to extensive blue scaling dorsally. Summer females are dark brown dorsally with little or no blue scaling.

Glaucopsyche lygdamus couperi Grote
Silvery blue

Glaucopsyche couperi Grote 1874:185 (type-locality "Anticosti Island").

Lycaena lygdamus: Worthington 1880:48.

Lycaena lygdamus: Holland 1931:262.

Glaucopsyche lygdamus couperi: Klots 1951:168; dos Passos 1964:68 (No. 479c).

Illinois records.—Map 63.

Apparently limited to extreme northeastern Illinois, *couperi* (Fig. 2) has been locally common in the past but is now believed to be confined to only a few localities. The principal colonies were at Palos Park, Cook County, and near Elgin, Kane County. We believe the species to be extinct at Palos Park, due to construction in the very restricted area where it occurred; the last known captures there were by Leuschner in 1951 (RL). It apparently still survives near Elgin, where Bristol has taken it as recently as May 2, 1963 (JRH). The only other recent Illinois record is from near Chain-o-Lakes Park, Lake County, May 23, 1954, Perkins (OAP). All other records are relatively old. There is one brood, and the species has been taken from April 13 through May 30.

Holland (1931) thought that *lygdamus* and *couperi* were separate species, with the latter having a more boreal distribution, and *lygdamus* applying to our population. Bower (1911) reported that the Palos Park populations utilized two species of *Lathyrus* as a larval food plant. Adults were on the wing in early May.

Celastrina argiolus pseudargiolus
(Boisduval & Le Conte)
Spring azure

Argus pseudargiolus Boisduval & Le Conte 1833:118 (type-locality "United States").

Lycaena pseudargiolus: Worthington 1880:48; Holland 1931:256.

Lycaenopsis argiolus pseudargiolus: Klots 1951:169.

Celastrina argiolus pseudargiolus: dos Passos 1964:69 (No. 481b).

Illinois records.—Map 64.

This species is common and generally distributed throughout Illinois. It has exceedingly complex seasonal variation and brood relationships. Spring individuals are smaller than those in the summer and tend to be confined to woods. Illinois spring material appears to

represent the form *violacea* (Edwards). A single individual representing or approaching *marginata* (Edwards) is in the INHS collection, labeled only "N. Ill." The larger members of the summer brood tend to range more widely into open country and appear to be *neglecta* (Edwards). F. M. Brown regarded specimens taken at Streator, La Salle County, March 28, 1946, April 28, 1954, and June 15, 1954, Irwin (INHS) as intermediates between *violacea* and *neglecta*. The relationships between the various forms of this species are much more complex than the above very generalized statements imply. Shapiro (1966) gave an account of the species as it exists in the Delaware Valley of Pennsylvania; it is likely that similar relationships between the forms of the species prevail in Illinois. All Illinois material appears to be of the subspecies *pseudargiolus*. We have seen nothing approaching *C. a. lucia* (Kirby) from the state, nor do we regard its occurrence here as probable, although it was listed as a separate species by French (1879). Extreme dates of Illinois records are March 28 and September 5.

In the Pine Hills, Union County, the immature stages feed on New Jersey tea, *Ceanothus americanus* L. var. *pitcheri* Torr.

LIPHYRIDAE

Feniseca tarquinius (Fabricius)

Harvester

Hesperia tarquinius Fabricius 1793:319 (type-locality "West Indies").

Feniseca tarquinius: Worthington 1880:48; Holland 1931:245; Klots 1951:150; dos Passos 1964:59 (No. 429).

Illinois records.—Map 65.

The harvester is probably generally distributed in Illinois. The lack of records from many areas probably reflects lack of collecting, or overlooking of the species, rather than its absence. Although it is usually scarce and sporadic in appearance, only one or two adults at a time ordinarily being observed, records indicate that it may occasionally appear in greater numbers—"many" at Northbrook, Cook County, September 7 through September 18, 1967 (Heitzman 1968) and "several" at Elsayh, Jersey County, July 14, 1943, Starrett (CLR). The flight is slow, and peculiarly wandering with many gyrations. Harvesters have been recorded from April 14 through November.

In placing this species in the family Liphyridae we follow Clench (1955).

The larvae of *tarquinius* are carnivorous on various species of woolly aphids and represent the only North American butterfly with obligate animal-eating habits. The aphid hosts show up readily on their host plants, mainly alder (*Alnus*) and beech (*Fagus*).

LIBYTHEIDAE

Libytheana bachmannii (Kirtland)

Snout butterfly

Libythea bachmannii Kirtland 1851:189 (type-locality "Mahoning County, Ohio").

Libythea bachmannii: Worthington 1880:48; Holland 1931:210.

Libytheana bachmannii: Klots 1951:121.

Libytheana bachmannii: dos Passos 1964:70 (No. 482).

Illinois records.—Map 66.

The status of this distinctive butterfly in Illinois is parallel to that of the preceding species. It is probably statewide in occurrence, although records are lacking from the northwestern counties. *L. bachmannii* is sporadic and generally uncommon but occasionally appears in large numbers in southern Illinois. According to Klots (1951) it is multivoltine. Date records range from May 8 through September 17.

NYMPHALIDAE

Anaea andria Scudder

Goatweed butterfly

Anaea andria Scudder 1875:248 (type-locality "Mississippi Valley westward to Great Plains; Texas"); Holland 1931:173; Klots 1951:117; dos Passos 1964:70 (No. 484).

Paphia audria: Worthington 1880:48 (*lapsus calami*).

Illinois records.—Map 67.

We have no records of this butterfly from the northwestern counties, and it may not be present there. Elsewhere there are only scattered records. The species is local and rare northward, becoming commoner southward and abundant in southern Illinois. At Streator, La Salle County, we found it one of the rarest of all regularly occurring butterflies. There was a small colony within the city limits which was destroyed about 1944; the species has been taken only twice since then. At Elsayh, Jersey County, however, Remington regarded it as "one of our commonest nymphalid butterflies" (CLR). These extremes illustrate the dramatic increase in abundance of *andria* from north to south in the state. There are two broods, the first in mid-July and the second, in greater numbers, appearing in mid-August. The second brood hibernates and reappears in the spring, flying until the end of June. The earliest and latest records for this species in Illinois are from April 5 through November.

Asterocampa celtis (Boisduval & Le Conte)

Hackberry butterfly

Apatura celtis Boisduval & Le Conte 1833:210 (type-locality "Georgia"); Worthington 1880:48.

Asterocampa celtis: Holland 1931:168; Klots 1951:120; dos Passos 1964:71 (No. 492).

Illinois records.—Map 68.

The hackberry butterfly is generally distributed throughout Illinois and is locally common in association with its host, hackberry (*Celtis*). *A. celtis* is double-brooded. The extreme dates of capture are April 4 and September 24, and the period of greatest abundance is in August. Individuals show a marked tendency to return to the same perch when sunning and will dart out at any insect flying past. They are almost pugnacious at times and may return to the shoulders or net of the collector if they once alight out of curiosity.

Asterocampa clyton (Boisduval & Le Conte)
Tawny emperor

Apatura clyton Boisduval & Le Conte 1833:208 (type-locality "southern United States"); Worthington 1880:48.

Asterocampa clyton: Holland 1931:169; Klots 1951:119; dos Passos 1964:71 (No. 494).

Illinois records.—Map 69.

This species occurs throughout Illinois. It is local, usually associated with *A. celtis* and having the same host plant, and is far less common than *celtis*. *A. clyton* tends to fly and rest higher in the trees than does *celtis* and may thus be overlooked. Dimorphism exists in both sexes; some specimens having light hind wings with prominent spots (typical *clyton*), others having the hind wings heavily suffused with black (*proserpina*). *A. clyton* is probably single-brooded in Illinois. The earliest and latest dates of appearance are June 18 and August 30.

Limenitis arthemis arthemis (Drury)
White admiral, banded purple

Papilio arthemis Drury 1773(2):17 (type-locality "New York").

Limenitis arthemis: Worthington 1880:48; Klots 1951:115; dos Passos 1964:74 (No. 516).

Basilarchia arthemis: Holland 1931:164.

Platt & Brower (1968), on the basis of genetic studies and genitalic characters, established that *Limenitis arthemis* and *L. astyanax*, long considered separate species, are actually conspecific. In the narrow belt of territory where the ranges of the northern *artemis* and the southern *astyanax* meet, there appear various intergrades between the two subspecies. Northern Illinois lies within this zone, and several such intergrades have been taken there. Various names have been proposed for these intergrades, principally *proserpina* Edwards and *albofasciata* Newcomb, but we prefer to discuss the Illinois intergrades in terms of the categories of intergradation erected by Platt & Brower (*loc. cit.*) on the basis of the degree of expression of the white band. Such intergrades are rarely met within northern Illinois, but the few that we have examined represent almost all categories in intergradation between *artemis* and *astyanax*.

A specimen taken at Chicago, Cook County, no date, Selinger (FMNH) is indistinguishable from typical *artemis* except for the absence of red spots on the dorsal hind wing, and the presence of two rows of blue-green iridescent patches; the white bands are complete and fully developed. Another taken at Oak Park, Cook County, July 29, 1946, Solem (FMNH) is similar, except that the bands, while complete, are slightly narrower. This agrees closely with Platt & Brower's Category 2. A similar example was captured in a forest preserve near Willow Springs, Cook County, August 23, 1966, Brady (TGB). Category 3 is represented by a specimen taken at Streator, La Salle County, August 19, 1946, Irwin (INHS) (Fig. 3). Another from Chicago, Cook County, June 15, 1902, Gerhard (FMNH) appears to fall within Category 4. These are the only Illinois intergrades we have examined. Others have been reported to us during this study or recorded in

the literature, but in the absence of specimens it is impossible to determine the degree of intergradation which they represent. We have not seen entirely typical *artemis* from Illinois and doubt that it occurs, since the state lies somewhat south of its normal range. French (1879) listed *proserpina* as a separate species, but Worthington (1880) considered it a variety of *artemis*. Blatchley (1891) recorded *artemis* from Lake County, Indiana, taken by Worthington, and Masters & Masters (1969) listed it from Lake and Porter counties, Indiana. All these records may be based on *artemis*-like intergrades, but the possibility of the occurrence of the nominate subspecies in extreme northern Illinois as a casual cannot be entirely ruled out.

Limenitis arthemis astyanax (Fabricius)
Red spotted purple

Papilio astyanax Fabricius 1775:447 (type-locality "America").

Limenitis ursula: Worthington 1880:48.

Basilarchia astyanax: Holland 1931:164.

Limenitis arthemis astyanax: Klots 1951:116.

Limenitis astyanax: dos Passos 1964:74 (No. 517).

Illinois records.—Map 70.

This, the southern subspecies of *artemis*, is common and statewide in distribution. Extreme dates of capture in Illinois are April 25 and September 9.

Limenitis archippus (Cramer)
Viceroy, mimic

Papilio archippus Cramer 1776(1):24 (type-locality "Jamaica").

Limenitis dissippus: Worthington 1880:48.

Basilarchia archippus: Holland 1931:165.

Limenitis archippus: Klots 1951:114; dos Passos 1964:75 (No. 518).

Illinois records.—Map 71.

The viceroy is a common and familiar butterfly found throughout Illinois. The earliest and latest dates of observation for this species are May 9 and September 20, and it is most numerous in late July and August.

The larvae feed on willow (*Salix*) and poplar (*Populus*), and adults are usually seen in open meadows and roadsides, most commonly where the host plants occur.

Vanessa atalanta rubria (Fruhstorfer)
Red admiral

Pyrameis atalanta rubria Fruhstorfer 1909:94 (type-locality restricted to "Mexico" by Field 1971:17 by designation of lectotype).

Pyrameis atalanta: Worthington 1880:48.

Vanessa atalanta: Holland 1931:153; Klots 1951:107; dos Passos 1964:77 (No. 527).

Illinois records.—Map 72.

Another common butterfly statewide in distribution, the red admiral is one of the earliest nymphalids to appear in the spring. There are at least two broods, and the long flight season suggests the possibility of an additional brood. Extreme dates of capture are March 27 and November 4. Field (1971) showed that the

North American population of this Holarctic butterfly is properly referred to the subspecies *rubria* (Fruhstorfer).

***Cynthia virginiensis* (Drury)**
American painted lady

Papilio cardui virginiensis Drury 1773(1):10 (type-locality restricted to "Virginia" by Field 1971:49).

Pyrameis huntera: Worthington 1880:48.

Vanessa virginiensis: Holland 1931:154; Klots 1951:108; dos Passos 1964:77 (No. 528).

Illinois records.—Map 73.

This insect, formerly known as Hunter's butterfly, occurs throughout Illinois and is frequent to common. Like *V. atalanta*, it is characteristic of spring when overwintered individuals appear, but it flies throughout the season until autumn. Although Klots (1951) stated that *virginiensis* is subject to the fluctuations in numbers which are characteristic of the genus, Shapiro (1966) disagreed with this statement. Our observations of the species in Illinois lead us to concur with the latter author. Probably there are three broods in Illinois. The earliest date of capture is April 13 and the latest is October 2. In the generic placement of this species and the next we follow Field (1971).

***Cynthia cardui* (Linnaeus)**
Painted lady, cosmopolite

Papilio cardui Linnaeus 1758:475 (type-locality restricted to "Sweden" by Verity & Querci 1924:42).

Pyrameis cardui: Worthington 1880:48.

Vanessa cardui: Holland 1931:154; Klots 1951:107; dos Passos 1964:77 (No. 529).

Illinois records.—Map 74.

The painted lady, generally considered the most widely distributed butterfly in the world, has been recorded from all parts of Illinois. It is, however, subject to great variation in abundance from year to year, in some seasons being common to abundant, and in others extremely scarce or virtually absent. The species is strongly migratory, and it is believed that breeding populations are reinforced by immigration during periods of abundance. The controlling factors of this fluctuation are not known with certainty. As in other species of *Cynthia*, there is also seasonal variation in size and color, the "wet" forms being large and brightly colored and "dry" forms being smaller and duller. Exceedingly aberrant individuals also occur from time to time, but none is known from Illinois. Records of capture range from April 7 through October 5.

***Precis coenia* (Hübner)**
Buckeye

Junonia coenia Hübner "1806" [1822]: Plate 245 (type-locality restricted to "Cuba" by Comstock 1944:453); Holland 1931:156; dos Passos 1964:78 (No. 531).

Junonia lavinia: Worthington 1880:48.

Precis lavinia coenia: Klots 1951:108.

Illinois records.—Map 75.

Although Klots (1951) stated that there is a lack of complete understanding of the relationships of the various forms of this species, the student of Illinois butterflies need not concern himself with this problem, for

all Illinois material appears to be homogeneous and to represent the nominate *coenia*. However, the seasonal variation that characterizes the species, *e. g.* "wet" and "dry" forms, does exist. We believe that *P. coenia* occurs throughout Illinois, and probably breeds throughout the state as well, but the resident population is thought to be annually reinforced, especially northward, by immigration from the south. The species appears to be less common northward. *P. coenia* is evidently double-brooded, and the second (mid-August) brood is larger in numbers than the first. It has been taken from April 24 through October 29 but is most numerous in late July through September. Adults are wary insects, exceedingly difficult to approach. We follow Tilden ("1970" [1971]) in uniting the genera *Precis* and *Junonia*.

Nymphalis vau-album j-album
(Boisduval & Le Conte)
Compton tortoise shell

Vanessa j-album Boisduval & Le Conte 1833:185 (type-locality "New York, Philadelphia, and New Harmony, Indiana").

Graphia j-album: Worthington 1880:48.

Aglais j-album: Holland 1931:152.

Nymphalis j-album: Klots 1951:105.

Nymphalis vau-album j-album: dos Passos 1964:78 (No. 533a).

Illinois records.—Map 76.

Recorded only from Cook, Lake, and Kane counties in extreme northeastern Illinois, this distinctive butterfly occurs there consistently but usually rarely, probably at the southern limits of its range in the United States. In some seasons, however, *e. g.* 1893 (Snyder 1896) and 1949 (P. S. Remington 1949) it appears in greater numbers than usual. The species is notably periodic, and it is probable that these seasons of comparative numbers coincide with its years of abundance farther north in the main portion of its range. It probably does not breed in our area. The species has been recorded on March 27 (probably an overwintered individual) and from July 15 through October 22.

***Nymphalis californica* (Boisduval)**
California tortoise shell

Vanessa californica Boisduval 1852:306 (type-locality "California").

Aglais californica: Holland 1931:152.

Nymphalis californica: Klots 1951:278; dos Passos 1964:78 (No. 534).

Illinois records.—COOK COUNTY: Chicago, at light inside building on Illinois Institute of Technology campus, August 20, 1952, L. S. Phillips (FMNH) (Phillips 1961, 1966).

Obviously casual, the specimen was probably transported here by artificial means in some developmental stage. However, the species has also been found in Michigan (Moore 1960), Iowa (Phillips 1966), Pennsylvania (Clench 1954), and New York (Klots 1951).

***Nymphalis milberti* (Godart)**
Milbert's tortoise shell

Vanessa milberti Godart 1819:307 (type-locality re-

stricted to "Philadelphia, Pennsylvania" by dos Passos 1938:72; Worthington 1880:48.

Aglais milberti: Holland 1931:153.

Nymphalis milberti: Klots 1951:106; dos Passos 1964:78 (No. 535).

Illinois records.—Map 77.

Like *N. v.-a. j-album*, *milberti* is a species of variable numbers from year to year. In normal seasons it is rare or absent in northern Illinois, but in years of abundance it may be found in some numbers. One such year was 1967, when it was taken in several localities, especially at Freeport, Stephenson County in August and September (RAA), and also at Streator, La Salle County, where it had not previously been found. Also abundant in 1949 in the Chicago area (P. S. Remington 1949). *N. milberti* is found much more frequently than *N. v.-a. j-album* and extends farther south in Illinois. It has been taken from June 11 through November 11, but the majority of records are between late August and early October.

Nymphalis antiopa (Linnaeus) Mourning cloak

Papilio antiopa Linnaeus 1758:476 (type-locality restricted to "Sweden" by Verity & Querri 1924:43).

Vanessa antiopa: Worthington 1880:48.

Aglais antiopa: Holland 1931:153.

Nymphalis antiopa: Klots 1951:106; dos Passos 1964:79 (No. 536).

Illinois records.—Map 78.

The mourning cloak is generally distributed in Illinois and is common. Shapiro (1966) stated that it is subject to the same periodicity as its congeners, but our observations of the species in Illinois seem to indicate that this fluctuation in numbers, if present at all, is much less noticeable in this butterfly than in its relatives. The species hibernates as an adult, emerging early in the spring and flying throughout the season. The insect has one of the longest seasons of any of the Illinois butterflies, appearing as early as March 3 and as late as November 20.

Polygonia interrogationis (Fabricius) Question mark

Papilio interrogationis Fabricius 1798:424 (type-locality "North America").

Grapta interrogationis: Worthington 1880:48.

Polygonia interrogationis: Holland 1931:149; Klots 1951:102; dos Passos 1964:79 (No. 537).

Illinois records.—Map 79.

The question mark is the largest, commonest, and most familiar member of the genus *Polygonia* and is statewide in distribution. It is seasonally dimorphic; we have found the lighter winter form *fabricii* (= typical *interrogationis*) a little less common than the dark summer form *umbrosa*. Earliest and latest dates of capture in Illinois are April 13 and November 3.

Polygonia comma (Harris) Hop merchant, comma

Vanessa comma Harris 1841:221 (type-locality "Massachusetts").

Grapta comma: Worthington 1880:48.

Polygonia comma: Holland 1931:149; Klots 1951:103; dos Passos 1964:79 (No. 538).

Illinois records.—Map 80.

The comma is, like the question mark, found throughout Illinois but is less common than that species. It exhibits similar seasonal dimorphism. Overwintered adults frequently appear in March and are among the earliest butterflies on the wing in early spring. Records range from March 17 to November 7.

Polygonia faunus (Edwards) Green comma

Grapta faunus Edwards 1862b:222 (type-locality restricted to "Hunter, [Greene County,] New York" by Brown 1967:338 by designation of lectotype); Worthington 1880:48.

Polygonia faunus: Holland 1931:150; Klots 1951:104; dos Passos 1964:79 (No. 540).

Illinois records.—CARROLL COUNTY: Palisades State Park, July 20, 1963, Laibly (DL).

We examined the specimen on which the above record is based. Laibly reported that two more were taken at the same locality in 1964, but these were not seen. From this record, Laibly's statement, and the presence of the species in Worthington's list, it may be inferred that *faunus* is a species of consistent but rare occurrence in extreme northern (probably only northwestern) Illinois.

Polygonia progne (Cramer) Gray comma

Papilio progne Cramer 1776(1):9 (type-locality "Jamaica and New York").

Grapta progne: Worthington 1880:48.

Polygonia progne: Holland 1931:151; Klots 1951:104; dos Passos 1964:80 (No. 546).

Illinois records.—Map 81.

This butterfly is local and uncommon in Illinois and is not recorded from the southern portion of the state, where it may not occur. The most southerly record is from Elmhurst, Jersey County, where Remington found it uncommon (CLR). It is very rare in the Chicago area, recorded from Cook County, without definite locality, by Schatz and Boughner (LS, JLB). A number, however, were taken in a forest preserve near Willow Springs, in August, 1966, by Arnold, Brady, and Irwin (RRI); it has been taken there also in subsequent years. The species is rare at Streator, La Salle County (RRI) but reported common at Danville, Vermilion County (TE), and in Perryton Township, Mercer County (PJC). Le Baron (1871) described damage to currant bushes by the larvae in Kankakee County. It has been taken in April and between June 13 and October 26.

Chlosyne nycteis (Doubleday) Silvery checkerspot

Melitaea nycteis Doubleday 1847:181 (type-locality "middle United States"); Klots 1951:98.

Phycides nycteis: Worthington 1880:47; Holland 1931:136.

Chlosyne nycteis: dos Passos 1969a:117 (No. 548).

Illinois records.—Map 82.

C. nycteis is a common, widely distributed butterfly in Illinois. It is probably double-brooded throughout the state with broods appearing approximately at mid-June and mid-August in the north and earlier southward. The earliest and latest record dates are April 23 and September 17.

Chlosyne gorgone carlota (Reakirt)
Gorgone checkerspot

Melitaea nycteis Edwards (*nec* Doubleday) 1861:161 (type-locality "Illinois; Missouri").

Eresia carlota Reakirt 1866a:141 (new name).

Phyciodes carlota: Worthington 1880:47.

Phyciodes gorgone: Holland 1931:139.

Melitaea gorgone carlota: Klots 1951:95.

Chlosyne gorgone carlota: dos Passos 1969a:117 (No. 549b).

Illinois records.—Map 83.

Although long known from Illinois, this checkerspot (Fig. 2) has undergone a dramatic population explosion in the state within the past few years. Previously it appears to have been uncommon to rare. This increase in numbers and distribution began in the early 1960's. In 1963, Taylor found it common at Mason State Forest, Mason County, between June 16 and June 23 (TT). It was first taken at Streator, La Salle County, on July 22, 1964, by Gary McCoy (GMcC). The following two seasons it abounded everywhere in that area. It was reported as common at Perryton Township, Mercer County (PJC). A considerable number were observed by Irwin at Cahokia, St. Clair County, on June 13-14, 1970. All records of *carlota* in Illinois in our files date from 1963 and later except one from Lacon, Marshall County, September 13, 1925, R. M. Barnes (ISM), and Elsah, Jersey County, May 9, 1942, C. L. Remington (CLR). It has been taken between May 8 and September 13.

Chlosyne harrisii (Scudder)
Harris' checkerspot

Melitaea harrisii Scudder 1864:167 (type-locality "Norway, Maine; Pittsfield, New Hampshire; Princeton, Massachusetts"); Klots 1951:94.

Phyciodes harrisii: Worthington 1880:47.

Melitaea harrisii: Holland 1931:126.

Chlosyne harrisii: dos Passos 1969a:117 (No. 550).

Illinois records.—KANE COUNTY: Elgin, June 21, 1931, Bristol (INHS) (Fig. 2). VERMILION COUNTY: Danville, August 20, 1960, Ellis (TE).

We examined both of the above specimens. *C. harrisii* should be of more frequent occurrence in Illinois than the few authentic records indicate. It may be overlooked because of its superficial resemblance to *C. nycteis*. The species was credited to Illinois by both Holland and Klots.

Phyciodes texana (Edwards)
Texan crescent

Eresia texana Edwards 1863b:81 (type-locality restrict-

ed to "Neu Braunfels, Comal County, Texas" by Brown 1966b:421).

Anthanassa texana: Holland 1931:141.

Phyciodes texana: Klots 1951:101; dos Passos 1969a:119 (No. 563).

Illinois records.—JERSEY COUNTY: Elsah (campus of Principia College), positive sight record of a male, October 25, 1940, C. L. Remington (CLR).

The specimen was probably a windblown stray. The species has also been taken at Cedar Hill, Missouri, about 45 miles south of Elsah (CLR).

Phyciodes tharos (Drury)
Pearl crescent

Danaus tharos Drury 1773(1):43 (type-locality "New York").

Phyciodes tharos: Worthington 1880:47; Holland 1931:135; Klots 1951:100; dos Passos 1969a:119 (No. 566).

Illinois records.—Map 84.

One of our commonest butterflies, the diminutive pearl crescent abounds throughout the state from late spring through autumn. The seasonal variation characteristic of *tharos* occurs in Illinois, and a number of the aberrations which the species tends to produce, probably caused by cold weather, have been taken. Extreme dates on record are April 20 and October 19.

Phyciodes batesii (Reakirt)
Tawny crescent

Eresia batesii Reakirt "1865" [1866]:226 (type-locality "Winchester, Virginia; Gloucester, New Jersey").

Phyciodes batesii: Holland 1931:136.

Phyciodes batesii: Klots 1951:100; dos Passos 1969a:120 (No. 567).

Illinois records.—LA SALLE COUNTY: Streator, June 28, 1965, Irwin (INHS) (Fig. 2).

We submitted this specimen to F. M. Brown for examination and he wrote us as follows: "I think it is probably *batesii*. It is not really typical of either *batesii* or *tharos*. The black marks on the fore wing (underside) are intermediate and the margin is *tharos*. The under hind wing is strictly *batesii*. The upperside of the fore wing is definitely *tharos*, the hind wing intermediate. The only clear evidence is the under hind wing. The locality is outside the usual range for *batesii*, being a little too far south. The date is OK (May-June)." We include *batesii* in the Illinois list solely on the basis of this apparently intermediate specimen; further evidence of its occurrence in the state is needed.

Euphydryas phaeton phaeton (Drury)
Baltimore

Danaus phaeton Drury 1773(1):42 (type-locality "New York").

Melitaea phaeton: Worthington 1880:47.

Melitaea phaetona: Holland 1931:115.

Euphydryas phaeton phaeton: Klots 1951:93; dos Passos 1969a:122 (No. 592).

Illinois records.—Map 85.

Comparatively few specimens of this butterfly are

known from Illinois. It probably exists in widely scattered, strongly localized colonies throughout its range. From the limited material which has been available for study, we have learned that there are two subspecies of *phaeton* in Illinois. The nominate subspecies appears to be limited to the northern half of the state; all specimens which we have seen from Ogle, Kane, and Lake counties are clearly typical *phaeton*. Southward, the subspecies *E. p. ozarkae* Masters occurs, and there is an abrupt clinal separation between the two populations. A specimen from Peoria, Peoria County, June 6, 1959, Taylor (INHS) seems to be somewhat intermediate but closer to *E. p. phaeton*. The butterfly is single-brooded, and it has been taken in Illinois between June 6 and July 4.

Our distribution map depicts Illinois records of both subspecies of *phaeton*, as well as records based on specimens which were not studied, and which were therefore not determinable to subspecies, although from their geographic location in the state this may be inferred.

Euphydryas phaeton ozarkae Masters

Euphydryas phaeton ozarkae Masters 1968:87 (type-locality "Lynch Hollow, Camden County, Missouri").

Illinois records.—Map 85.

This recently described subspecies occurs in the southern half of Illinois. It is readily separable from nominate *E. p. phaeton* by its larger size and reduction in the red coloring. The marginal red spots are smaller, and those in the fore-wing cell are reduced or absent; the red is paler and more yellowish than in *E. p. phaeton*. Masters (*loc. cit.*) indicates that there are striking differences in the biology of *E. p. phaeton* and *E. p. ozarkae*; the latter is associated with *Aureolaria* rather than *Chelone glabra*, the host of nominate *phaeton*. It flies on high, dry hillsides rather than in marshy areas; the flight is faster and stronger, and the males tend to stray farther from the host plant than do those of *E. p. phaeton*.

Material which we have examined from Macoupin, Jackson, and Union counties may be assigned to this taxon. A female from Carlinville, Macoupin County, with a fore wing length of 33 mm, was compared with a paratype of *E. p. ozarkae* and found to agree well with it, whereas a male taken in Giant City State Park, Jackson County (Fig. 3), conforms to this subspecies in all respects and lacks all trace of red in the fore wing cell.

Dates of capture of *E. p. ozarkae* in Illinois are between May 30 and June 13, coinciding with the flight period described by Masters (*loc. cit.*).

Boloria selene myrina (Cramer)

Silver bordered fritillary

Papilio myrina Cramer 1777(2):141 (type-locality "New York").

Argynnis myrina: Worthington 1880:47.

Brenthis myrina: Holland 1931:105.

Boloria selene myrina: Klots 1951:89; dos Passos 1964:89 (No. 598b).

Illinois records.—Map 86.

We have records of this species only from the northern half of Illinois. Although Klots (1951) referred to

its presence in southern Illinois, we doubt its occurrence there. It appears to have increased in distribution and numbers in recent years. It was first taken at Streator, La Salle County, in 1968 and was locally abundant there in 1968–1969. It was also abundant at Goose Lake Prairie, Grundy County, in 1968–1970. Probably three broods occur in Illinois. The earliest date of capture is May 12 and the latest is September 20.

Boloria bellona (Fabricius)

Meadow fritillary

Papilio bellona Fabricius (*nec* Cramer) 1775:517 (type-locality "North America").

Argynnis bellona: Worthington 1880:47.

Brenthis bellona: Holland 1931:111.

Boloria toddi ammiralis: Klots 1951:92; dos Passos 1964:89 (No. 599b).

Illinois records.—Map 87.

This fritillary is restricted primarily to northeastern Illinois. Although locally common, it does not appear to be as generally distributed as *myrina*. There are many records of the species from Cook County, but none are recent. We have records from Goose Lake Township, Grundy County, and Streator, La Salle County, in association with the more numerous *selene*. It is locally abundant near Danville, Vermilion County, but *selene* has not been recorded from there. This species is a denizen of wet meadows, the habitat also favored by *selene*. It is probably triple-brooded. It has been recorded from May 1 through September 14.

The name *bellona* (Fabricius) was validated by the International Commission on Zoological Nomenclature in Opinion 516 of January 12, 1958.

Speyeria idalia (Drury)

Regal fritillary

Papilio idalia Drury 1773(1):25 (type-locality restricted to "New York City, New York County, New York" by dos Passos & Grey 1947:9).

Argynnis idalia: Worthington 1880:47; Holland 1931:84.

Speyeria idalia: Klots 1951:86; dos Passos 1964:91 (No. 611).

Illinois records.—Map 88.

This species is exceedingly local but widely distributed and often common where found. It is apparently limited primarily to northern Illinois. Its numbers are subject to a certain amount of fluctuation from year to year. In some areas it occurs very rarely, as at Streator, La Salle County, where two have been taken and a third observed between 1941 and 1971. As in most species of *Speyeria* in Illinois, males tend to appear and disappear earlier in the season than do females. We have records of capture between June 5 and September 23.

Speyeria atlantis (Edwards)

Atlantis fritillary

Argynnis atlantis Edwards 1862a:54 (type-locality restricted to "Hunter, [Greene County,] New York" by dos Passos 1935:86); Worthington 1880:47; Holland 1931:90.

Speyeria atlantis: Klots 1951:86; dos Passos 1964:94 (No. 618).

Illinois records.—"Northern Illinois," Gerhard (FMNH). COOK COUNTY: Arlington Heights, June 26, 1930, A. L. McElhose (FMNH).

Other reported records could not be verified and are not accepted because of possible confusion with *S. aphrodite*. These specimens were probably casual; the species does not normally range as far south as Illinois.

***Speyeria diana* (Cramer)**
Diana

Papilio diana Cramer 1777(2):4 (type-locality restricted to "Jamestown, James City County, Virginia" by dos Passos & Grey 1947:6).

Argynnis diana: Worthington 1880:47; Holland 1931:84.

Speyeria diana: Klots 1951:86; dos Passos 1964:95 (No. 621).

Illinois records.—"Southern Illinois," no date, French (FMNH); 1890, "B. F." (USNM). CLAY COUNTY: Snyder (1900). UNION COUNTY: Cobden 1869, Longley (USNM). VERMILION COUNTY: SE of Danville, August 20, 1960, Ellis (TE).

We have seen all of the above *diana* from Illinois except the Clay County record in the literature. The status of *diana* in Illinois at the present time is uncertain. Apparently it was formerly of regular occurrence in the southern third of the state, but at present it must be extremely rare and local, or more probably extinct. Thorough collecting in southern Illinois in recent years has failed to turn up this species, and it may well be that ecological changes have extirpated it. Clark & Clark (1951) mentioned the deforestation of parts of Virginia as a cause of its decline in much of that state, and it seems logical that this may have been a factor in southern Illinois as well.

The only recent Illinois record is from the northern half of the state, which seems peculiar. One may hazard a guess that the Danville specimen, a female, may have followed the nearby Wabash River from further south, as *diana* has been recorded from Evansville, Indiana (Blatchley 1891).

There are many references in the older literature to Illinois *diana*. Edwards (1864) referred to a specimen from southern Illinois in the collection of B. D. Walsh as one of the few then known. Snyder (1900) said that "its northern limit in Illinois is Clay County." Skinner (1896) and Clark & Clark (1951) stated that specimens of *diana* from southern Illinois are larger than those found farther east.

The state distribution map in the files of the Illinois Natural History Survey shows *diana* from "Southern Illinois, 1880," but there are no Illinois specimens in the collection.

***Speyeria cybele* (Fabricius)**
Great spangled fritillary

Papilio cybele Fabricius 1775:516 (type-locality restricted to "New York City, New York County, New York" by dos Passos & Grey 1947:6).

Argynnis cybele: Worthington 1880:47; Holland 1931:86.

Speyeria cybele: Klots 1951:87; dos Passos 1964:95 (No. 622).

Illinois records.—Map 89.

S. cybele is common throughout Illinois. Klots (1951) explained that there is a single, extended brood with more or less continual emergence of the adults during its long season. As is characteristic of the genus, the males appear earlier than do the females. Extreme dates of capture in the state are April 14 and September 9.

***Speyeria aphrodite* (Fabricius)**
Aphrodite

Papilio aphrodite Fabricius 1787:62 (type-locality restricted to "New York City, New York County, New York" by dos Passos & Grey 1947:8).

Argynnis aphrodite: Worthington 1880:47; Holland 1931:88.

Speyeria aphrodite: Klots 1951:87; dos Passos 1964:96 (No. 623).

Argynnis alcestis Edwards "1876" [1877]:289 (type-locality restricted to "Galena, Jo Daviess County, Illinois" by dos Passos & Grey 1947:8); Worthington 1880:47; Holland 1931:88.

Speyeria aphrodite alcestis: Klots 1951:88; dos Passos 1964:96 (No. 623c).

Illinois records.—Map 90.

S. aphrodite is apparently limited to the northern half of Illinois. It is much less common and more local than *cybele* and has a shorter flight season. We do not consider that *alcestis* is a subspecies of *aphrodite*. It flies in company with typical *aphrodite* consistently, not only in Illinois, but in northern Indiana and southern Michigan. It is therefore either a color variety of *aphrodite* or a separate species. We have records of *aphrodite* from June 15 through September 2. French (1879) listed *alcestis* as a separate species.

***Euptoieta claudia* (Cramer)**
Variegated fritillary

Papilio claudia Cramer 1776(1):109 (type-locality "Jamaica").

Euptoieta claudia: Worthington 1880:47; Holland 1931:80; Klots 1951:84; dos Passos 1964:96 (No. 624).

Illinois records.—Map 91.

This essentially southern species is statewide in occurrence. It is somewhat irregular and less numerous northward. There are at least two broods, and they have a long flight season. The earliest and latest dates are April 24 and November 12, and most records are from late July through September.

***Agraulis vanillae nigrior* Michener**
Gulf fritillary

Agraulis vanillae nigrior Michener 1942:7 (type-locality "Upper Matecumbe Key, Florida"); Klots 1951:82; dos Passos 1964:97 (No. 630a).

Agraulis vanillae: Worthington 1880:47.

Dione vanillae: Holland 1931:79.

SATYRIDAE

Illinois records.—Map 92.

Turner (1963) described a colony of *vanillae* which survived for three winters in west-central Missouri. The species may therefore occasionally breed in southern Illinois at approximately the same latitude. The finding of larvae at Alton, Madison County, supports this belief (P. S. Remington 1951). McNeese reported seeing several *vanillae* at Centerville, St. Clair County (personal communication); he took a newly emerged male on September 2, 1966 (INHS) (Fig. 3). Two species of the host plant, passionflower (*Passiflora*) occur in southern Illinois—*P. incarnata* as far north as St. Clair, Wayne, and Wabash counties, and *P. lutea* throughout the southern half of the state as far north as Champaign and Vermilion counties (Jones & Fuller 1955). The Kane County record, and possibly the Cass and Champaign County records, are probably of strays. Illinois *vanillae* are assigned to the subspecies *nigrior* Michener on the authority of Klots (1951).

DANAIDAE

Danaus plexippus (Linnaeus)

Monarch, milkweed butterfly

Papilio plexippus Linnaeus 1758:471 (type-locality restricted to "Pennsylvania" by the International Commission on Zoological Nomenclature, Opinion 282, October 1, 1954).

Danaus archippus: Worthington 1880:47.

Danaus plexippus: Holland 1931:68.

Danaus plexippus: Klots 1951:77; dos Passos 1964:98 (No. 631).

Illinois records.—Map 93.

The monarch is familiar to nearly everyone. It is usually common to abundant but sometimes variable in numbers from year to year. The well-known migratory pattern characteristic of the butterfly is frequently observed in Illinois in the autumn. We refer all Illinois *plexippus* to the nominate subspecies on the advice of Klots (1951); the record by Clark (1941) of *D. p. melaniippe* (Hübner) from Decatur, Macon County, should probably be regarded as an individual variant approaching the appearance of *melaniippe*. The species has been recorded from April 20 through November 13.

Danaus gilippus strigosus Bates

Queen

Danaus strigosa Bates 1864:32 (type-locality "Guatemala").

Danaus benesice strigosa: Holland 1931:69.

Danaus gilippus strigosus: Klots 1951:78; dos Passos 1964:98 (No. 633b).

Illinois records.—COOK COUNTY: Palos Park, in field, September 9, 1928, Henderson (AKW).

Wyatt informed us that he had seen this specimen and that it is an authentic record. Although undoubtedly a casual stray, not forming a part of the Illinois butterfly fauna, the species has also been taken in Ohio (Gilbert 1960).

Lethe portlandia anthedon (Clark)

Pearly eye

Enodia portlandia anthedon Clark 1936a:255 (type-locality "Lava, Sullivan County, New York").

Debis portlandia: Worthington 1880:48.

Enodia portlandia: Holland 1931:177.

Lethe portlandia anthedon: Klots 1951:66; dos Passos 1964:99 (No. 636c).

Illinois records.—Map 94.

This butterfly is extremely local, strongly limited to woodland environments, and often common where found. Exceedingly swift and wary, it is often difficult to capture.

All Illinois material which we have studied, including that from the southernmost portion of the state, represents *L. p. anthedon*. The nominate subspecies had been expected to occur in extreme southern Illinois, but no Illinois specimens thus far known appear to be assignable to that taxon. *L. p. portlandia* is associated with cane (*Arundinaria*), which occurs in the southern third of Illinois; *L. p. anthedon* evidently utilizes other grasses which are generally distributed throughout Illinois. Extreme dates of capture are April 7 and September 14, though the validity of the former date, a record from Elk Grove, Cook County, appears questionable. The next earliest date is May 24. The species is probably double-brooded in Illinois, appearing in numbers in early June and again about mid-August.

Lethe creola (Skinner)

Creole pearly eye

Debis creola Skinner 1897:236 (type-locality "Opelousas, Louisiana").

Enodia creola: Holland 1931:177.

Lethe creola: Klots 1951:67; dos Passos 1964:99 (No. 637).

Illinois records.—FRANKLIN COUNTY: Benton, June 20, 1963 (SIU). JACKSON COUNTY: Murphysboro, August 4, 1963 (SIU). POPE COUNTY: Lusk Creek, near Eddyville, August 12, 1967, Richardson (JCD). SALINE COUNTY: Stonefort, July 3, 1954, July 4, 1958, August 1, 1959, August 10, 1959, August 30, 1954 (SIU). UNION COUNTY: Pine Hills, September 1, 1966, Downey (INHS) (Fig. 3).

Most butterfly manuals include Illinois in the range of *creola*, but apparently on the basis of a misidentified specimen of *L. anthedon* reported by Clark (1935, 1936a) from Palos Park, Cook County (Irwin 1970). The finding of true *creola* in southern Illinois, where it is established, allows the state record to be retained. It is associated with cane (*Arundinaria*), and restricted to southern Illinois where the plant occurs.

Lethe eurydice (Johansson)

Eyed brown

Papilio eurydice Johansson 1763:406 (type-locality restricted to "Morris Arboretum, Philadelphia County, Pennsylvania" by Cardé, Shapiro, & Clench 1970:74 by designation of neotype).

Neonympha canthus: Worthington 1880:48.
Satyroides eurydice: Holland 1931:178.
Lethe eurydice: Klots 1951:68; dos Passos 1964:99 (No. 638).

Illinois records.—Map 95.

Until very recently, this species and the following, *Lethe appalachia* R. L. Chermock, were regarded as a single entity, with the latter taxon a subspecies of the former. However, Cardé et al. (*loc. cit.*) discovered that they are actually distinct, widely sympatric, sibling species. Although the same conclusion was reached independently and almost simultaneously by dos Passos (1969b), the results of his investigation, including his taxonomic assignments of the entities involved, differ somewhat from those of the former authors.

Shapiro studied all material in the Field Museum and Natural History Survey collections. He found that both species exist in the state. *L. eurydice*, however, is much more widespread than *L. appalachia*; the former is locally common in northeastern Illinois, whereas *appalachia* has thus far been recorded only from Cook County. Only records based upon the material examined by Shapiro have been included herein. Records of "eurydice" from a number of other localities in Illinois were obtained during this study, but they have been ignored because it was not possible to check the specimens on which they were founded to determine their true identity.

Foremost among the biological differences between the two species, which initially led to the discovery of their distinctness, is their definite restriction to divergent habitats. *L. eurydice* occurs in open sedge marshes and meadows, occasionally in dry grassy areas, whereas *L. appalachia* inhabits wooded areas and shrub swamps (Cardé, et al., *loc. cit.*; Shapiro, personal communication). None of the Illinois material which was re-examined was habitat associated, and thus this useful additional confirmation of identity is lacking. Future collections of *eurydice* and *appalachia* should be carefully labeled as to habitat.

Morphological differences between *eurydice* and *appalachia* are not great. The genitalia differ somewhat, and Cardé et al. (*loc. cit.*) described and figured them. However, color and pattern characters are almost always sufficient for the separation of the two species. One of the most constant of these is the shape of the postmedian lines on the undersides of both wings. In *eurydice*, these lines are jagged and irregular with sharp points, especially near the anal angle of the secondaries, whereas in *appalachia* they are straighter and less jagged, sinuate rather than irregular. The dorsal ground color of *eurydice* is pale brown, the ventral somewhat yellowish; in *appalachia* the dorsal ground color is darker, grayish or mousy brown, with that of the underside tinged with purplish or lilac iridescence. In both nominate *eurydice* and in *appalachia*, there is considerable contrast between the limb and the basal and discal areas of the dorsal primaries; in *L. eurydice fumosa*, unrecorded from Illinois, there may be less such contrast, giving these wings a more uniform ground color, which is usually darker than in *L. eurydice eurydice*, especially in males.

L. eurydice is single-brooded in Illinois. The dates of capture range from June 14 to August 1.

***Lethe appalachia* R. L. Chermock**

Lethe eurydice appalachia R. L. Chermock 1947:32 (type-locality "Conestee Falls, near Brevard, North Carolina"); Klots 1951:68; dos Passos 1964:99 (No. 638d).

Lethe fumosa appalachia: dos Passos 1969b:121.

Illinois records.—COOK COUNTY: River Grove, July 4, 1950, July 16, 1950, Kistner (FMNH); Edgebrook [Chicago], July 4, 1913, Wyatt (FMNH); Elmwood Park, July 8, 1934, Herz (FMNH); Schiller Park, July 13, 1940, Camras (FMNH); Palos Park, July 10, 1948, Wren (INHS); Glenview, July 14, 1918, Mares (INHS); Chicago, July 6, 1913, Gunder (AMNH).

The recent elevation of this taxon to full specific rank is discussed above, and the species is characterized in relation to *L. eurydice*. All of the Illinois records quoted above are based upon material studied by Shapiro, none of which was habitat associated.

In addition to the pattern characters described under *L. eurydice*, and those summarized by Cardé, Shapiro, & Glench (1970), we have noticed that there is occasionally a tendency toward obsolescence of one or more of the ocelli of the upper side of the fore wings in *appalachia*, which does not seem to occur in *eurydice*.

Localities suitable for the occurrence of *appalachia* exist in northeastern Illinois elsewhere than in Cook County and ought to be investigated for its possible presence.

***Euptychia gemma* (Hübner)**

Gemmed satyr

Neonympha gemma Hübner "1818" [1818]: Plate 493 (type-locality "Georgia"); Worthington 1880:48.

Euptychia gemma: Holland 1931:179; Klots 1951:70; dos Passos 1964:100 (No. 639).

Illinois records.—Map 96.

This Lower Austral butterfly (Fig. 3) is an established resident of the extreme southern counties of Illinois. It is local but common where it occurs. We have records of the species between April 24 and October 5.

***Euptychia hermes sosybius* (Fabricius)**

Carolina satyr

Papilio sosybius Fabricius 1793:219 (type-locality not stated).

Neonympha sosybius: Worthington 1880:48.

Euptychia sosybia: Holland 1931:180.

Euptychia hermes sosybia: Klots 1951:69.

Euptychia hermes sosybius: dos Passos 1964:100 (No. 645b).

Illinois records.—"Illinois," 1♂1♀, no further data (CM, ex Marloff collection).

We suspect that *E. h. sosybius* occupies the same general range in Illinois as does *E. gemma*. It is probably not common and may be overlooked because of its resemblance to the abundant *E. cymela* on the wing.

***Euptychia cymela* (Cramer)**

Little wood satyr

‡*Papilio eurytus* Fabricius (*nec* Clerck, *nec* Linnaeus)

1775:487 (type-locality "Jamaica").

Papilio cymela Cramer 1777(2):55 (type-locality "Cape of Good Hope").

Neonympha eurytris: Worthington 1880:48.

Euptychia euryta: Holland 1931:180.

Euptychia cymela: Klots 1951:69; dos Passos 1964:100 (No. 646.)

Illinois records.—Map 97.

This little satyrid is very common in and near woods and is statewide in distribution. There is a single brood, with dates of capture from April 3 to August 23. In northern Illinois, the butterfly generally emerges about the last week in May and is common until early July. The August date quoted above is very late for the species.

Cercyonis pegala olympus (Edwards)

Wood nymph, grayling

Satyrus olympus Edwards 1880a:31 (type-locality restricted to "Chicago, Illinois" by Brown 1964:378).

Satyrus alope olympus: Worthington 1880:48.

Cercyonis alope nephele: Holland 1931:189.

Cercyonis pegala nephele: Klots 1951:72.

Cercyonis pegala olympus: dos Passos 1964:102 (No. 656d).

Illinois records.—Map 98.

Because Chicago, Cook County, Illinois, is the type-locality of *C. p. olympus* and following the advice of F. M. Brown, we employ this name for the Chicago area population of this species and for that of Illinois, as a whole. Nearly all Illinois *pegala* have the fore wing above dark, with little or no indication of a yellow patch or band (Fig. 3). Occasional individuals occur, however, in which this yellow band on the fore wings is nearly as well developed as in *C. p. alope*. These are found in association with the dark form, which usually predominates. C. L. Remington, however, indicated that the yellow-banded form was predominant at Elsah, Jersey County (CLR). The relationships between the various clinal forms of this species are as yet imperfectly known, and extensive breeding experiments will be required to clarify them.

C. p. olympus is separable only by larval characters from *C. p. nephele* (Kirby), the name usually applied to non-yellow-banded populations from eastern North America (see Brown, 1965, 1966a). Worthington (1880) listed the insect as *Satyrus alope* Boisduval (*sic*), with *olympus* as a variety of *alope*. This implies that both yellow- and non-yellow-banded populations were included. Edwards (1880a:113) discussed at some length the occurrence of the various forms of this species in Illinois, including the basis for Worthington's inclusion of yellow-banded *alope* in his list. Emmel (1969) offered a good recent study of *pegala*.

C. p. olympus is common and widely distributed throughout Illinois. It is most abundant in July and August in open situations as well as in woodlands. It is single-brooded, with the earliest date June 9 and the latest September 12. Two very early dates from the Chicago area, March 28 and May 10, are difficult to explain and may be erroneous.

The *alope*-like yellow-banded individuals have been recorded from the following Illinois localities, from all of which *olympus* has also been recorded: COOK COUN-

TY: Chicago, September 12, 1947, Kistner (FMNH). FAYETTE COUNTY: Ramsey, July 15, 1948, Phillips (LSP). IROQUOIS COUNTY: NE of Beaverville, August 3, 1970, Leeuw (INHS). JERSEY COUNTY: Elsah (CLR). LIVINGSTON COUNTY: S of Streator, July 16, 1966, Irwin (INHS). MERCER COUNTY: Perryton Township, July 1, 1952, Conway (INHS) (Fig. 3). PEORIA COUNTY: Peoria, 1957, August 13, 1960, Taylor (TT). RANDOLPH COUNTY: Prairie du Rocher, June 27, 1956, Sanderson (INHS). SANGAMON COUNTY: August 12, 1939, unusually well-marked specimen, Wright (ISM). The yellow-banded phase is thus seen to occur in nearly all parts of the state.

BUTTERFLIES OF

POSSIBLE OCCURENCE IN ILLINOIS

In addition to those butterflies actually recorded from Illinois, the following species are considered as "possibles" for future inclusion in the state fauna. Some have already been credited to the state, but sufficient confusion exists about proper identity that we relegate them to this probable list rather than to either positive records or the erroneous records as given in the concluding section. Most of the species cited occur reasonably close to our borders, or this state is located within their known range of distribution.

In this section we omit citations of the original descriptions, type localities, and references to Holland (1931) and dos Passos (1964, 1969a, 1970), giving only those to Worthington (1880) if any, and Klots (1951). We omit date citations to these works in the text for the sake of convenience and brevity.

HESPERIDAE

Oligoria maculata (Edwards)

Twin spot skipper

Oligoria maculata: Klots 1951:260.

O. maculata ranges from Florida to Georgia and Alabama, straying to New York, Massachusetts, and Texas, according to Klots, and may therefore occur at least casually in southern Illinois.

Atrytone arogos (Boisduval & Le Conte)

Arogos skipper

Pamphila vitellius: Worthington 1880:49.

Atrytone arogos: Klots 1951:253.

This species may occur in the state, possibly as subspecies *iowa* (Scudder). The range as given by Klots is "Florida and Gulf States, n. to New Jersey, Minnesota, Iowa, and Nebraska," with *A. a. iowa* occupying the northwestern portion of this area. This is the only species listed by Worthington for which occurrence in Illinois has not subsequently been either confirmed or adjudged improbable. French (1879) said that "P. Vitellius is reported from Iowa, but I do not know of it being found in Illinois."

Polites vibex (Geyer)
Whirlabout

Polites vibex: Klots 1951:247.

This skipper may occur northward at least as far as southern Illinois. Klots gave Connecticut and Arkansas as the northern limits of its range. It is generally distributed and quite common in Mississippi (Mather & Mather 1958).

Hesperia metea Scudder
Cobweb skipper

Hesperia metea: Klots 1951:238.

Illinois lies well within the range of this skipper but we have no records from the state. We see no reason why it should not occur in Illinois.

Hesperia attalus (Edwards)
Dotted skipper

Hesperia attalus: Klots 1951:239.

The range as given by Klots was "Florida and Texas, n. to Massachusetts, Ohio, Wisconsin, and Nebraska." It may be expected to occur in Illinois; if it does, it has probably been overlooked or confused with other *Hesperia*.

Oarisma garita (Reakirt)
Garita skipper

Thymelicus garita: Worthington 1880:48.

Oarisma garita: Klots 1951:231.

As previously explained in connection with *Oarisma powesheik*, we believe that the listing of *garita* by French (1879) and Worthington (*loc. cit.*) must have been based on confusion with the former species.

Erynnis lucilius (Scudder & Burgess)
Columbine dusky wing

Erynnis lucilius: Klots 1951:227.

E. lucilius almost certainly occurs at least in northern Illinois, despite the lack of positive records. It is inseparable from *E. baptisiae*, by morphological characters, so that host plant association is essential for its recognition. None of the material labeled *lucilius* which we examined in the Field Museum and Illinois Natural History Survey collections was so associated. In view of this deficiency, we do not feel justified in accepting the records. Although Burns (1964) stated that he had examined an undoubted *lucilius* from the "vicinity of Chicago, Illinois," data for this specimen were unavailable. The term "vicinity of Chicago" has sometimes been used to include closely adjacent northwestern Indiana.

Burns (1964) indicated that *E. lucilius* and *E. baptisiae* are predominantly allopatric, with the former having a northern and the latter a southern distribution with only a narrow belt of territory where they exist in sympatry. For this reason, it is to be expected that *E. lucilius* will be confined to northern Illinois, since *baptisiae* is believed to occur throughout the state. *E. lucilius* feeds upon *Aquilegia* (columbine), and any *Erynnis* found

ovipositing upon or reared from this plant should be very carefully host associated and the fact reported.

Erynnis persius (Scudder)
Persius dusky wing

Erynnis persius: Klots 1951:226.

This species may occur at least rarely in the state, a belief shared by Burns (personal communication). *E. persius* itself is separable from the other two members of its species group (*E. lucilius* and *E. baptisiae*) by fairly recognizable morphological characters of the adult, and in addition is oligophagous in comparison with the highly restrictive host specificity of the other two species. The records of "*persius*" by French (1879) and Worthington (1880) are almost certainly based upon confusion with the other members of the group, probably *E. baptisiae*. Burns (1964) stated that *E. persius* is strictly univoltine (May-July) in the eastern portions of its range.

Thorybes confusus Bell
Confused cloudy wing

Thorybes confusus: Klots 1951:213.

Klots gave the range of *confusus* as "Florida to Texas, n. to Kansas, Missouri, and Maryland." It may occur in southern Illinois. The record by Cushing (1970) of *confusus* from Madison County was based on misidentified material.

Urbanus proteus (Linnaeus)
Long tailed skipper

Urbanus proteus: Klots 1951:207.

Klots indicated that the northward distribution of this species in the Mississippi Valley is uncertain; since it has been recorded from several northward localities as a casual, it may occur in southern Illinois.

PAPILIONIDAE

Papilio palamedes Drury
Palamedes swallowtail

Papilio palamedes: Klots 1951:178.

This species may rarely stray northward as far as extreme southern Illinois. Klots said, "In Mississippi Valley uncommon, n. to Missouri (rare)." Mather & Mather (1958) considered it "rare" in northern Mississippi.

PIERIDAE

Pieris virginienis Edwards
West Virginia white

Pieris virginienis: Worthington 1880:47; Klots 1951:201.

Although the species was listed by Worthington, we

doubt that it has ever occurred in Illinois and believe that Worthington confused *P. napi oleracea*, or possibly even spring specimens of *P. rapae* with this species.

Phoebis agarithe (Boisduval)
Large orange sulphur

Phoebis agarithe: Klots 1951:191.

This butterfly was listed by Klots as straying north to Illinois.

Kricogonia lyside (Godart)
Lyside

Kricogonia lyside: Klots 1951:194.

The statement for the preceding species applies to this one as well.

RIODINIDAE

Calephelis borealis (Grote & Robinson)
Northern metalmark

Charis borealis: Worthington 1880:48.

Lephelisca borealis: Klots 1951:123.

We believe that Worthington's record of *Charis borealis* referred to *C. muticum*, then unrecognized as a separate species, but true *C. borealis* may also occur in Illinois. We have taken it in some numbers as far west as Howard County, Indiana, and it has been reported also from Montgomery County, Indiana, even closer to Illinois. McAlpine (1971) recorded it from Missouri.

LYCAENIDAE

Phaestrymon alcestis (Edwards)
Alcestis hairstreak

Strymon alcestis: Klots 1951:135.

A report of this species from Carbondale, Jackson County, obtained during this project could not be verified. Its occurrence as a casual as far east as Illinois, however, seems possible.

Satyrium boreale (Lafontaine)

This species was recently described (Lafontaine 1969, 1970 [Two dates because name was validated in error and was redescribed.]). It was not practical to re-examine all Illinois *falacer* to check the possible presence of the new species among them, but in view of its reported occurrence in Michigan, Ohio, and Pennsylvania, it may be found in Illinois as well. The most conspicuous superficial distinction between *boreale* and *falacer* is the reduction of the subterminal line on the underside of both wings in *boreale*. On the primaries, this usually consists only of two spots between veins M_3 and Cu_2 ; on the secondaries, it is reduced or absent

above vein M_3 . There are apparently good genitalic distinctions also (Lafontaine 1970:84-85).

Callophrys augustinus (Westwood)
Brown elfin

Incisalia augustinus: Klots 1951:146.

The range of this species as given by Klots was "Newfoundland w. to Manitoba, s. to Virginia, West Virginia, Illinois, and Michigan." It probably occurs locally in the state. It was listed by French (1879), but Worthington (1880) doubted its presence in Illinois.

Lycaena epixanthe (Boisduval & Le Conte)
Bog copper

Lycaena epixanthe: Klots 1951:152.

Klots included northern Indiana and "(?) Iowa" in the range of *epixanthe*. Blatchley (1891) recorded it as "rare" in Lake County, Indiana. However, Masters & Masters (1969) rejected this record, suggesting that Blatchley's records may have been of *L. helloides*, which he did not list. According to Klots, *epixanthe* is strongly restricted to "acid bogs where the food plant, Cranberry, grows." Jones & Fuller (1955) recorded cranberry (*Oxycoccus*) from bogs in McHenry, Lake, Cook, and Will counties. The well-known Volo bog in Lake County is an acid tamarack bog, and the occurrence of *epixanthe* there seems theoretically possible. *L. epixanthe* was listed by French (1879), but Worthington (1880) doubted its occurrence in Illinois.

Plebeius saepiolus (Boisduval)
Saepiolus blue

Plebeius saepiolus: Klots 1951:167.

Klots gave the range of *saepiolus* as "all of southern Canada, s. into Iowa, Minnesota, Michigan, and Maine" and stated that the species is extending its range. He suggested that it may continue to do so southward, in which case it might in time reach as far south as northern Illinois.

NYMHALIDAE

Limenitis archippus floridensis Strecker

Limenitis archippus floridensis: Klots 1951:115.

This butterfly was listed by Blatchley (1891) from "Illinois," without authority or further information. Possibly an unusually dark individual variant of this clinal species was so determined.

Phyciodes phaon (Edwards)
Phaon crescent

Phyciodes phaon: Klots 1951:99.

P. phaon was recorded by P. S. Remington (1956) as having been taken in St. Louis County, Missouri, and he told us (personal communication) that he saw no reason why it should not occur in Illinois. Klots gave its

range as "Florida to Texas, n. to Georgia and Kansas; s. into Mexico."

Heliconius charitonius (Linnaeus)
Zebra

Heliconius charitonius: Klots 1951:82.

Although it would appear highly unlikely that this subtropical species might occur in Illinois, Dr. L. J. Paulissen informed us (personal communication) that he had heard of the capture of a specimen on the campus of Purdue University, Lafayette, Indiana. Klots listed it as "straying n. to Kansas."

Dryas julia (Fabricius)
Julia

Dryas julia: Klots 1951:82.

Of this likewise subtropical form, Paulissen (personal communication) said, "A fair possibility for Illinois. There are Arkansas and Missouri records."

ERRONEOUS RECORDS

Some species which have been attributed to the Illinois fauna in error are discussed elsewhere in this paper. In addition to those, the following apparently erroneous records merit brief discussion.

In the Illinois Natural History Survey collection are two specimens of *Lycaena heteronea* Boisduval labeled "Centralia, Illinois, July 4 and July 29, 1893," and three examples of *Speyeria mormonia eurynome* (Edwards) with labels reading "N. Evanston, Ill. A. J. S." and dates of July 27 and July 28, 1893, and August 3, 1896. All these specimens are from A. J. Snyder of Evanston. He is known to have collected both in southern Illinois and in the western states at these periods, and it is almost certain that he took these specimens in the West and inadvertently mixed them with Illinois material or mislabeled them. We exclude these species from the Illinois list.

French (1879) listed *Grapta satyrus* and *G. gracilis* from Illinois. The basis for his inclusion of these species is unknown, but we doubt their presence in this state. The records may have been founded on misidentified material, or, less probably, on casual strays; Illinois seems too far from the range of these Canadian Zone species for them to be accepted without question.

LITERATURE CITED

In the citations of original descriptions, the true date of publication is cited in every case. If the date falls within the period of publication of a work which appeared over an extended period of time, the publication referred to is that whose publication dates encompass the date quoted. In the case of the three works of Jacob Hübner, which appeared nearly simultaneously, this procedure is obviously inapplicable; here, we have given first the initial year of the reference in quotation marks, followed by the true date of publication of the name in brackets. Where a work appeared in more than one

volume, the pagination of which recommenced with "1" with each volume instead of being consecutive, we have given the volume number in parentheses following the year of description, e.g. "Cramer 1777(2):4."

Some of the names proposed by Cramer, Stoll, and Drury must be dated from the appearance of the indices to their works. For the sake of brevity in these cases, we have given the page references to the text descriptions, but have dated the names from the indices.

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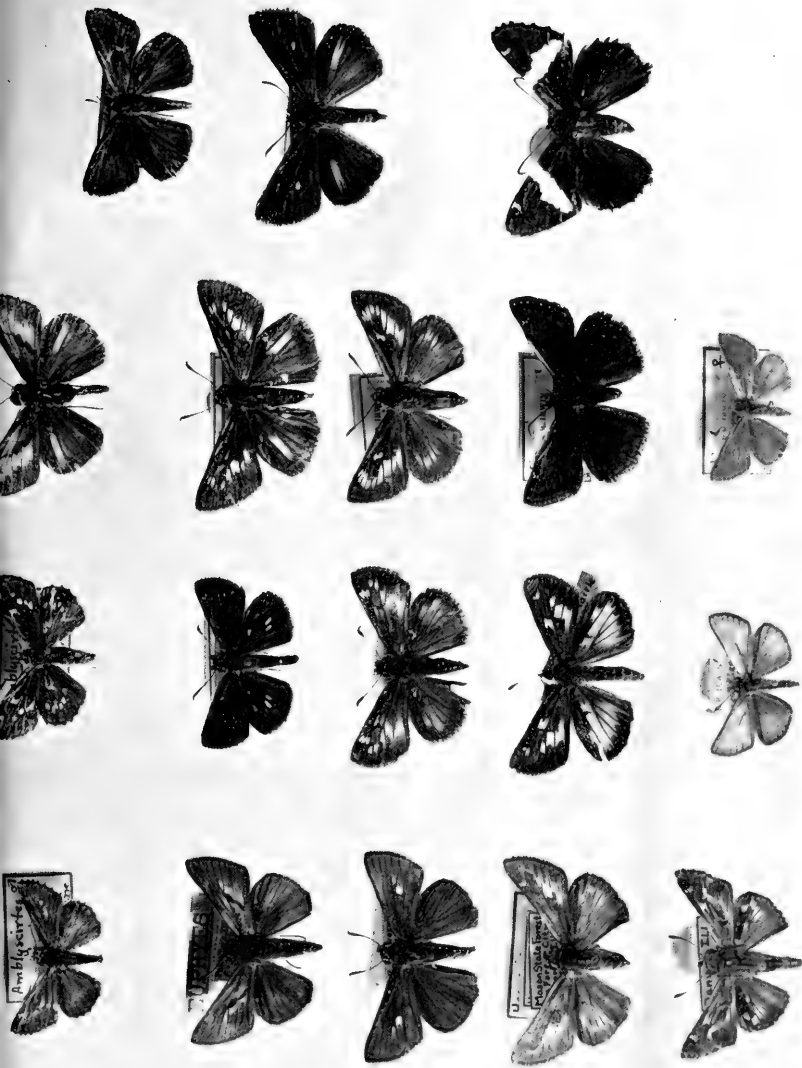


Fig. 1.—Column 1 (top to bottom): *Amblyscirtes aesculapius* ♂, Pine Hills, September 1, 1966; *Euphyes bimaculata* ♂, Palos Park, June 22, 1913; *Euphyes bimaculata* ♀, NE Beaverlille, Iroquois Co., June 28, 1966; *Hesperia ottoe* ♀, Mason State Forest near Forest City, Mason Co., July 19, 1963; *Hesperia leonardus* ♂, Danville, August 24, 1968.
 Column 2 (top to bottom): *Amblyscirtes carolina* ♀, Pine Hills, September 1, 1966; *Poanes massasoit* ♀, 2 mi. NE Beaverlille, Iroquois Co., June 29, 1965; *Poanes hobomok* ♀, form *pocahontas*, Palos Park, June 15, 1940; *Poanes utator* ♂, neotype, Goose Lake Prairie, Grundy Co., July 28, 1969; *Thymelicus lineola* ♂, Chicago Ridge, June 20, 1966.
 Column 3 (top to bottom): *Euphyes dion* ♂, 3 mi. NW Palos Park, July 8, 1966; *Euphyes dion* ♀, Winnetka, July 28, 1958; *Problema byssus* ♀, Streator, July 20, 1964; *Erynnis baptisiae* ♂, Willow Springs, August 5, 1966, (det. H. A. Freeman); *Natira thersiminter* ♀, Danville, August 20, 1967.
 Column 4 (top to bottom): *Euphyes dukesi* ♂, Karnak, Pulaski Co., September 2, 1924; *Euphyes dukesi* ♀, Pine Hills, August 31, 1969; *Autocoton cellus* ♀, Pine Hills, July 26, 1966.

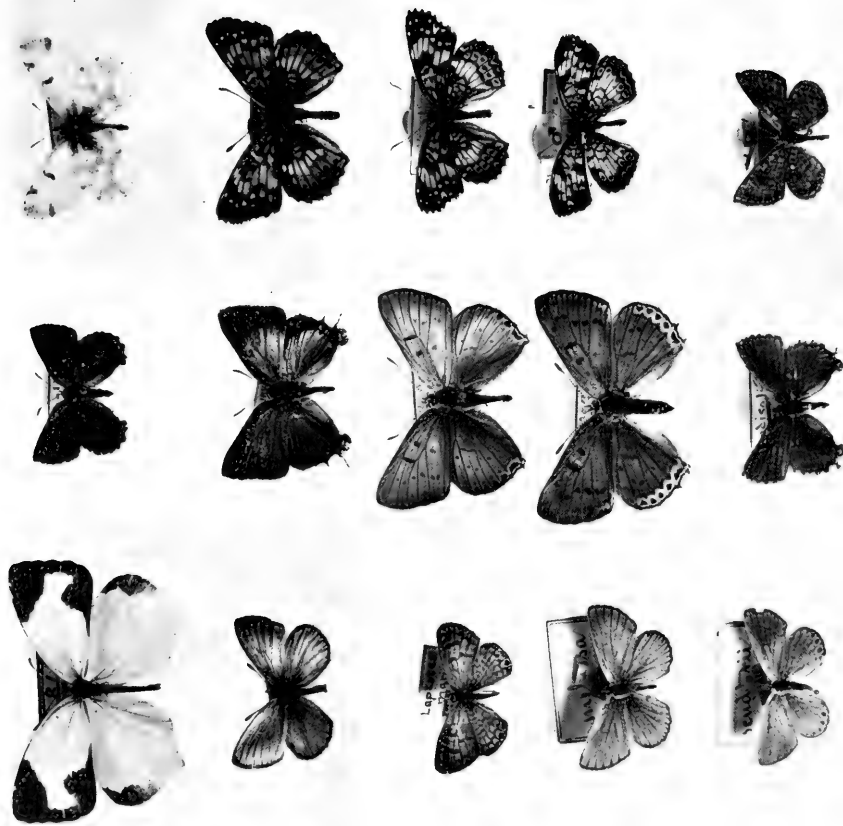


Fig. 2.—Column 1 (top to bottom): *Eurema mexicana* ♂, Riverside, October 13, 1910; *Glaucopsyche lygdamus couperi* ♂, Palos Park, May 18, 1924; *Leptotes marina* ♀, Forest View, August 18, 1933; *Lycacides melissa samuelis* ♂, "N. Ill." (Bolter collection); *Lycacides melissa samuelis* ♀, "N. Ill." (Bolter collection).
 Column 2 (top to bottom): *Callophrys polios* ♀, Illinois Beach State Park, Waukegan, May 18, 1966; *Pantiliades m-album* ♂, Pontiac, July 1879; *Lycacena xanthoides dione* ♂, Streator, June 27, 1966; *Lycacena xanthoides dione* ♀, ex larva, Chicago, June 27, 1951; *Callophrys henrici* ♀, Futnam Co., April 13, 1958.
 Column 3 (top to bottom): *Euchloe olympia* ♂, Illinois Beach State Park, Waukegan, May 18, 1965; *Chlosyne harrisii* ♂, Elgin, June 21, 1931; *Chlosyne gorgone carlota* ♂, Streator, June 28, 1965; *Catephelis matricum* ♂, Elgin, July 12, 1939.

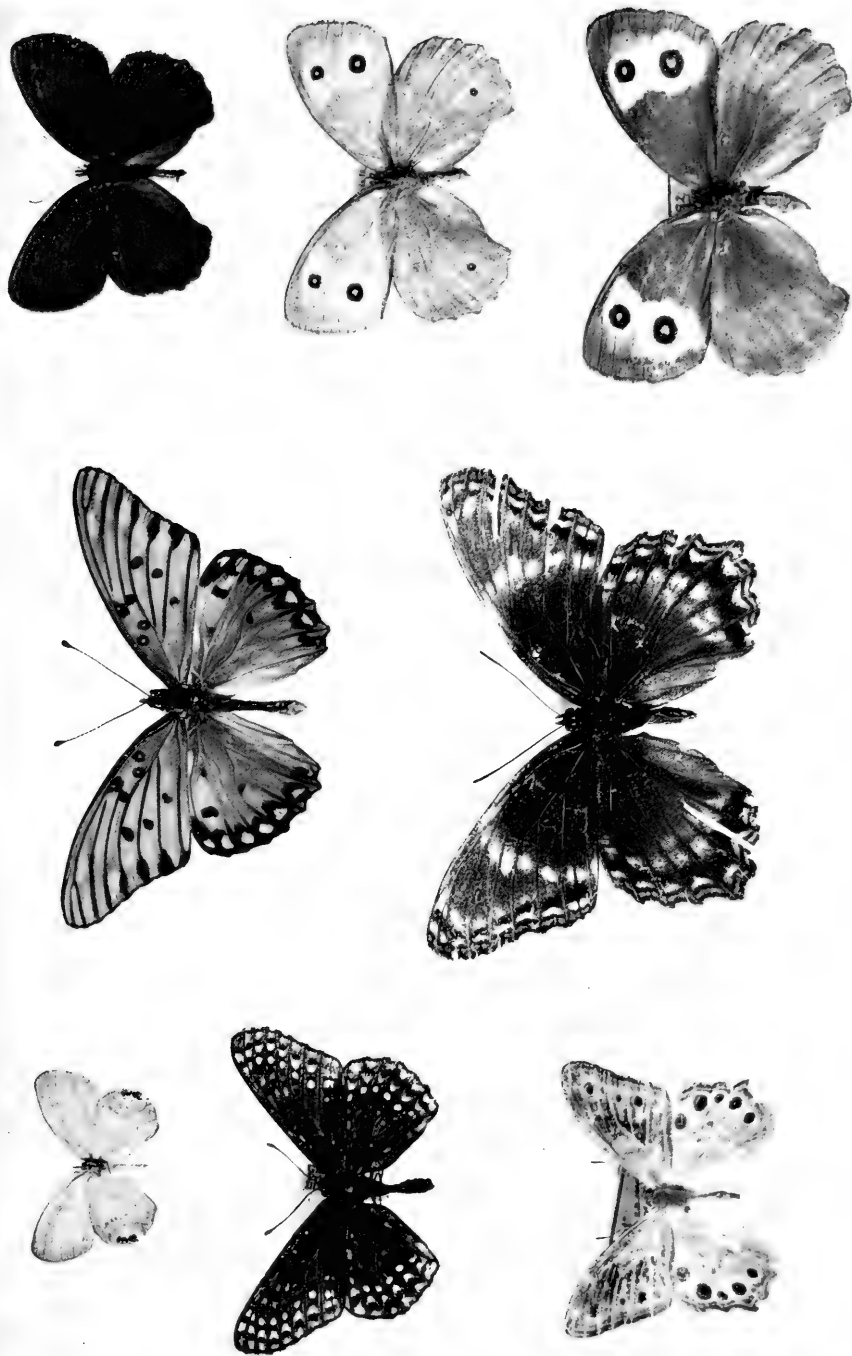
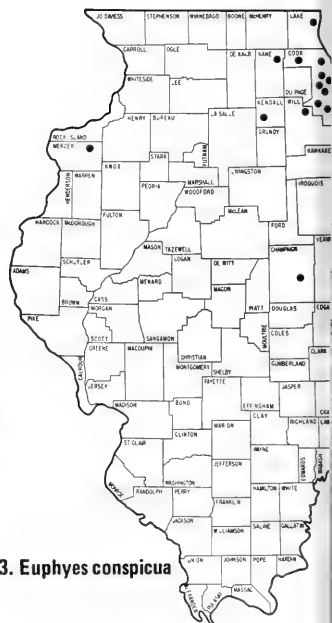
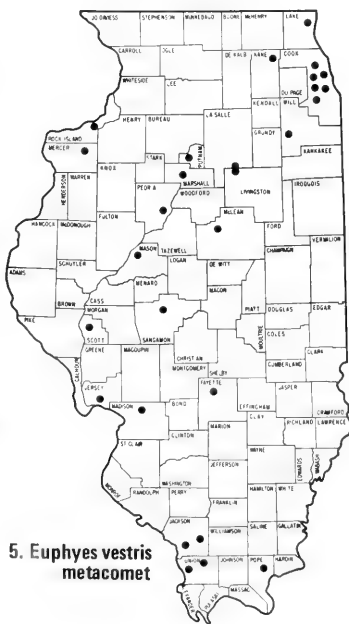
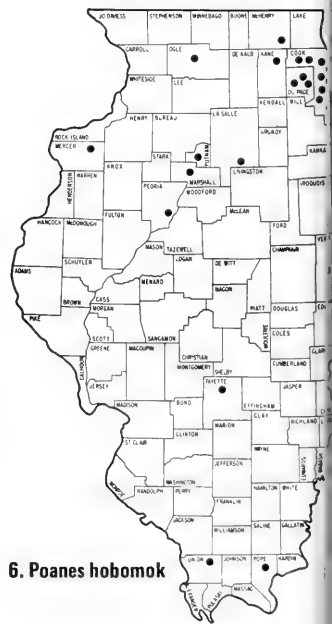
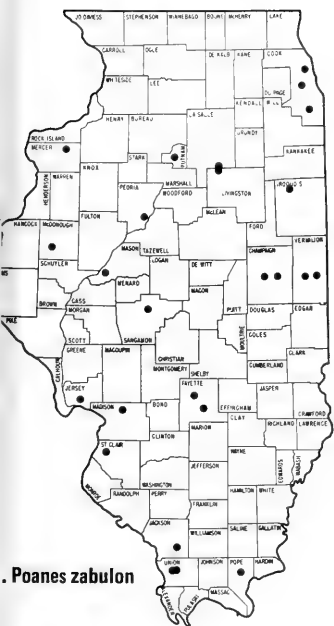
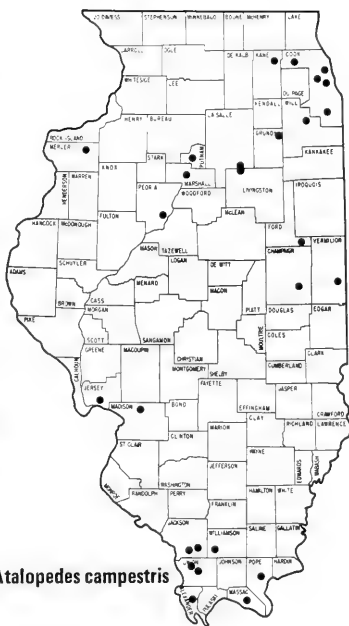
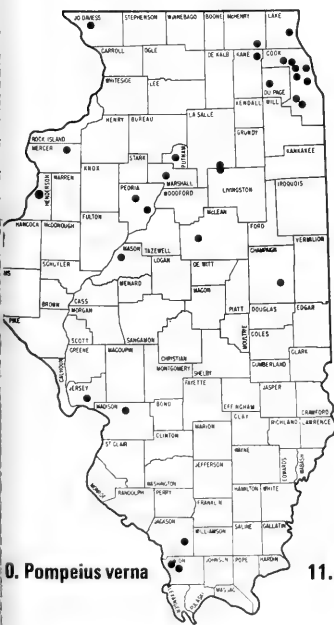
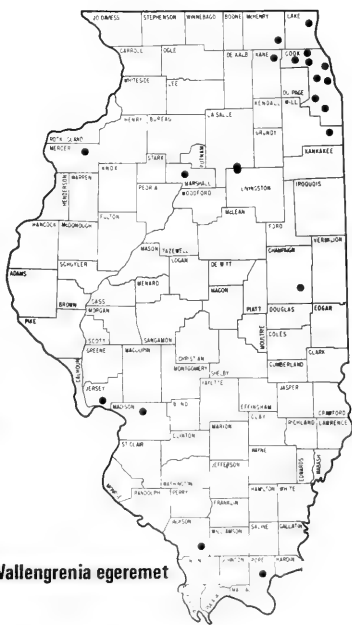
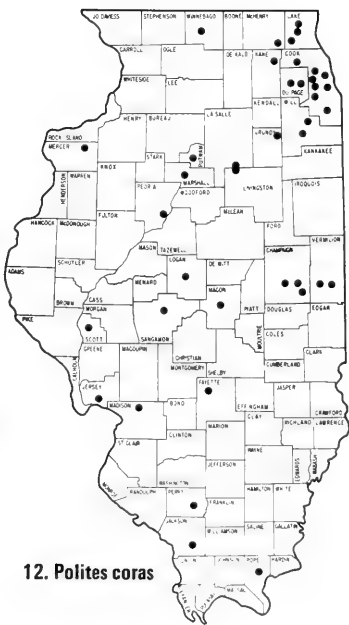
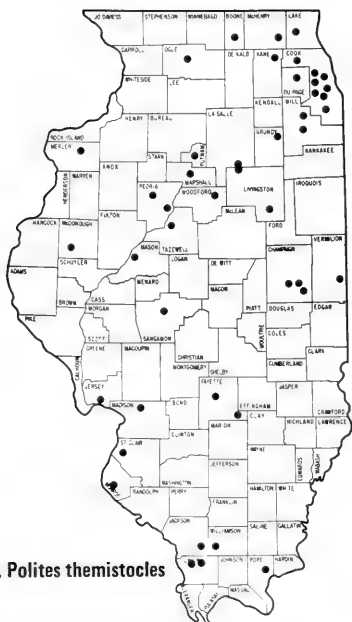
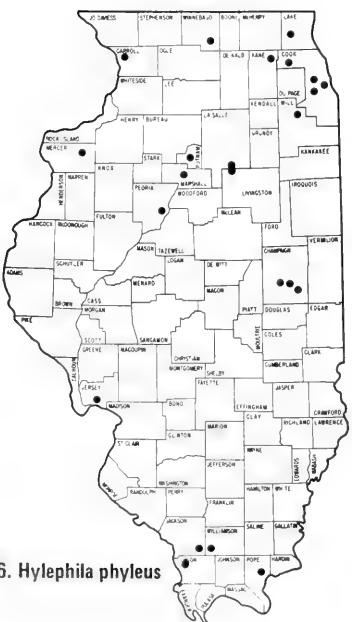
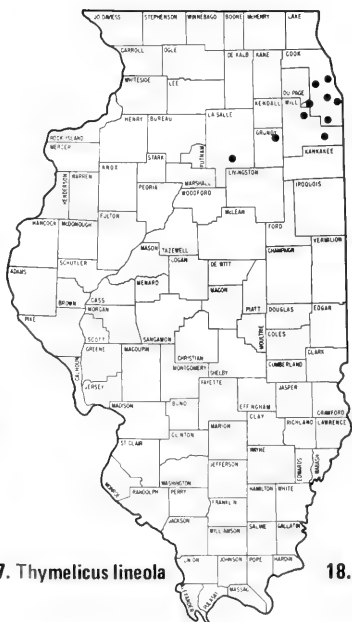
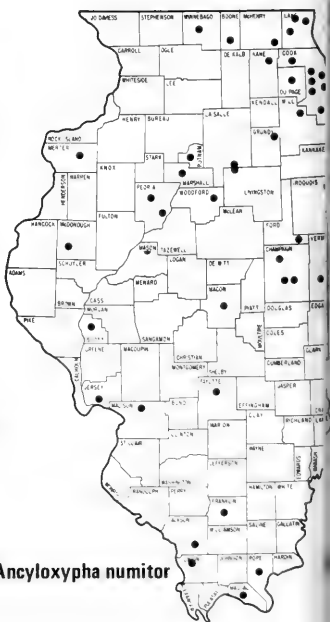
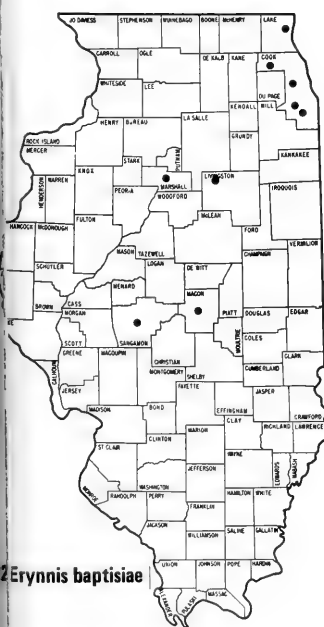
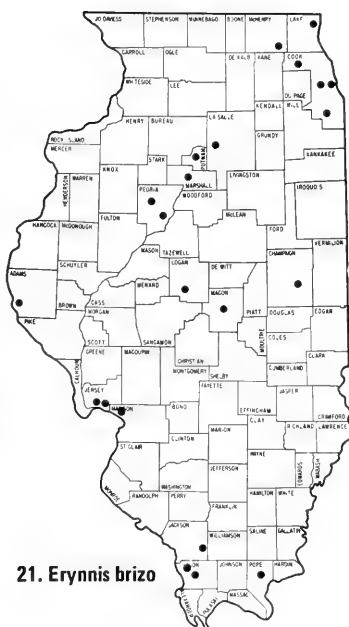
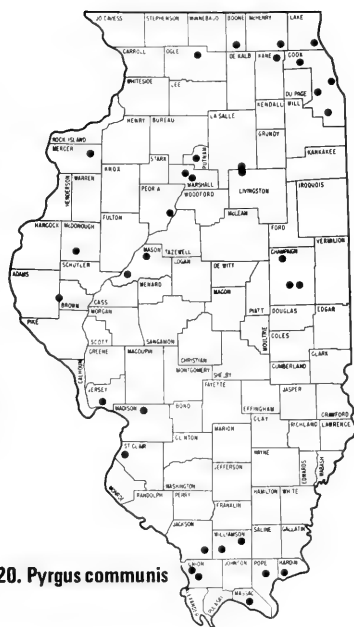
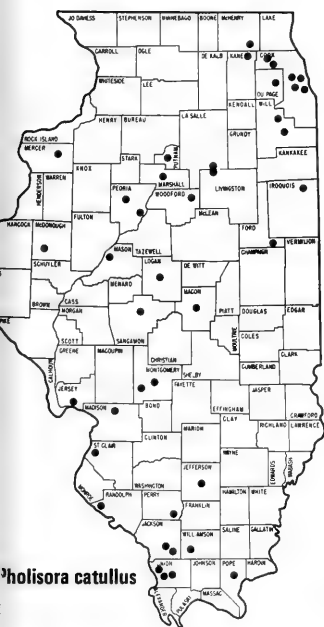


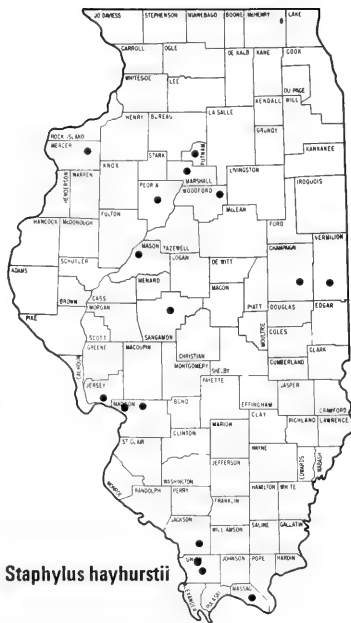
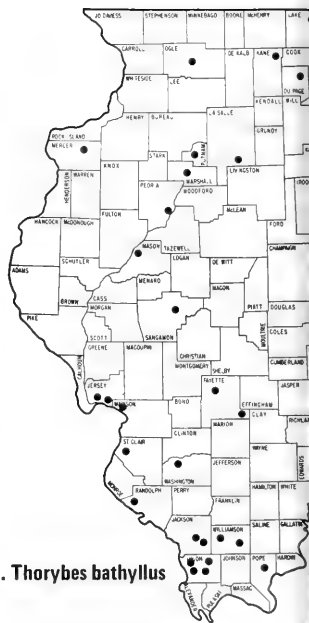
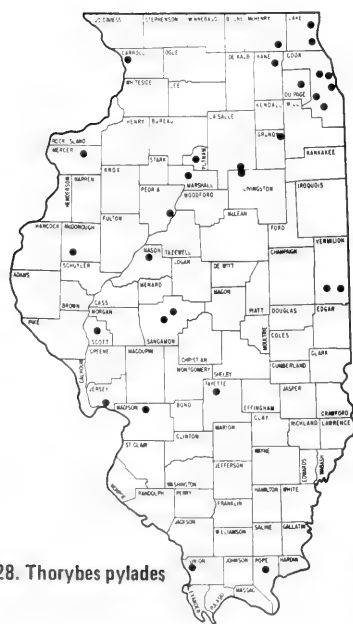
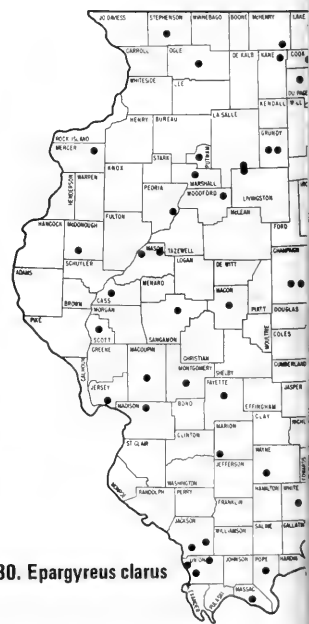
Fig. 3.—Column 1 (top to bottom): *Euphychia gemma* ♂, underside, Pine Hills, August 18, 1966; *Euphydryas phaeton ozarkae* ♂, Giant City State Park, May 30, 1965; *Letho creola* ♂, Pine Hills, September 1, 1966.
 Column 2 (top to bottom): *Agraaulis vanillae* ♂, Centreville, St. Clair Co., September 2, 1966; *Limenitis arthemis* ♀, intermediate between *L. a. arthemis* and *L. a. astyanax*, Streater, August 19, 1946.
 Column 3 (top to bottom): *Cereyonis pegala olympus* ♂, Willow Springs, June 26, 1921; *Cereyonis pegala olympus* ♀, Riverside, August 20, 1908; *Cereyonis pegala* ♀, yellow-banded phase resembling *C. p. alope*, Perryton Township, Mercer Co., July 1, 1952.

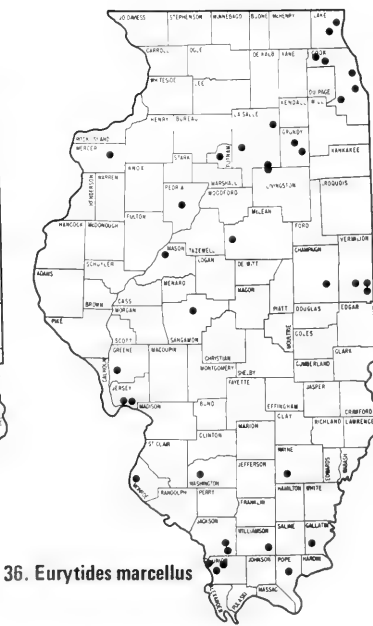
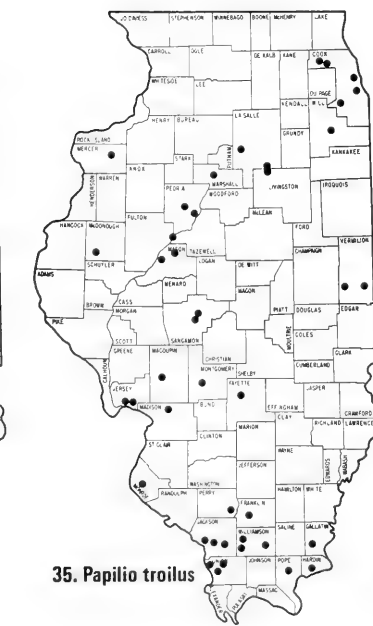
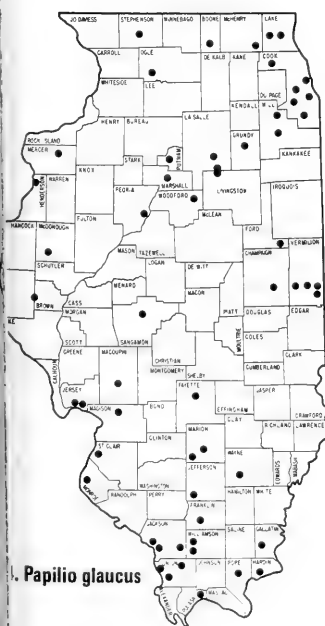
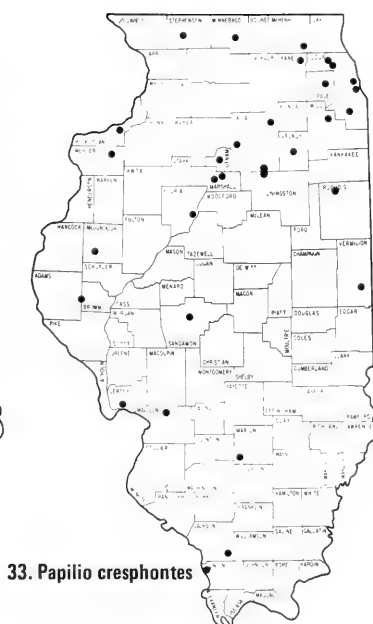
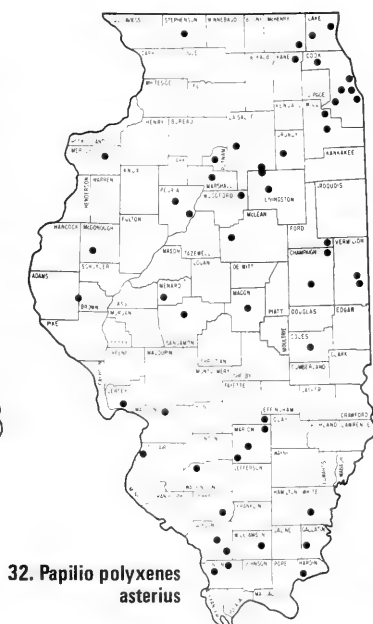
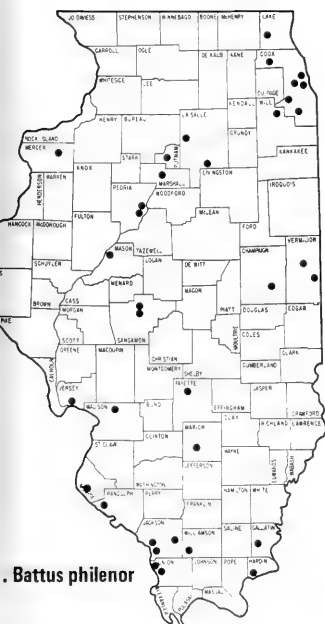
1. *Amblyscirtes samoset*2. *Amblyscirtes vialis*3. *Euphyes conspicua*4. *Euphyes bimaculata*5. *Euphyes vestris metacomet*6. *Poanes hobomok*

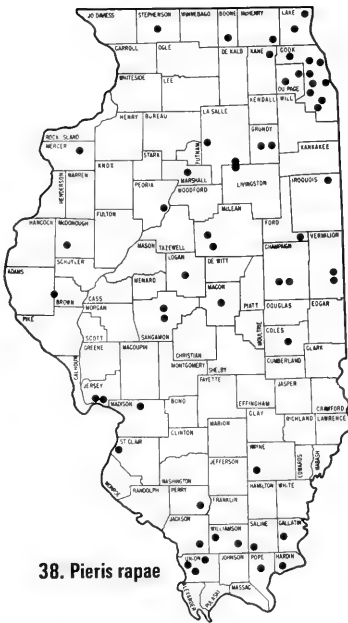
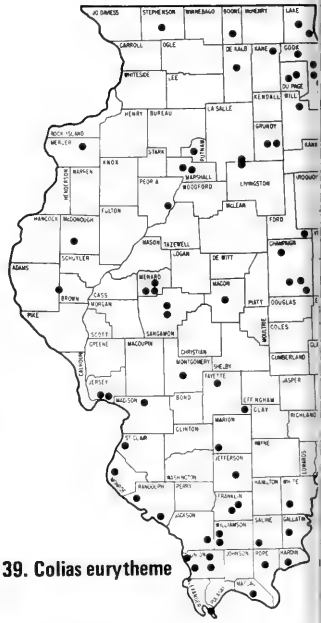
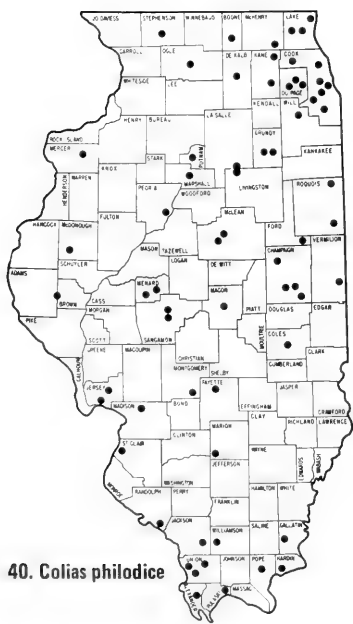
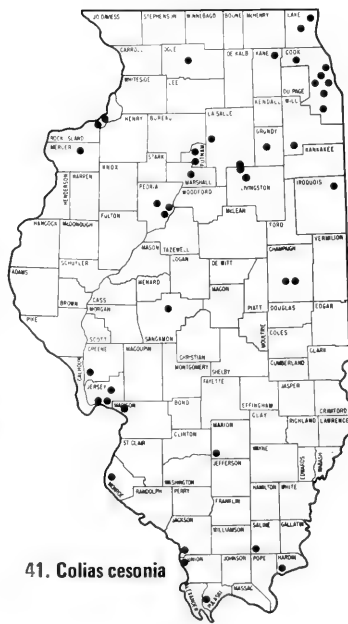
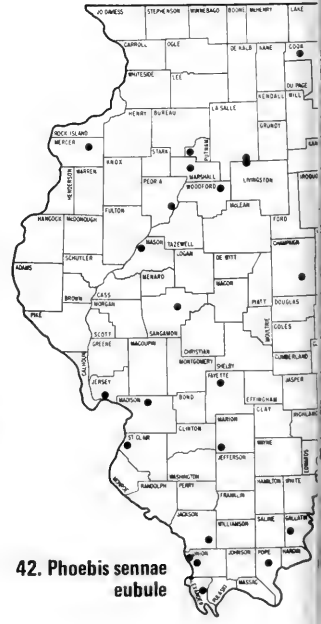
7. *Poanes zabulon*8. *Atrytone delaware*9. *Atalopedes campestris*10. *Pompeius verna*11. *Wallengrenia egeremet*12. *Polites coras*

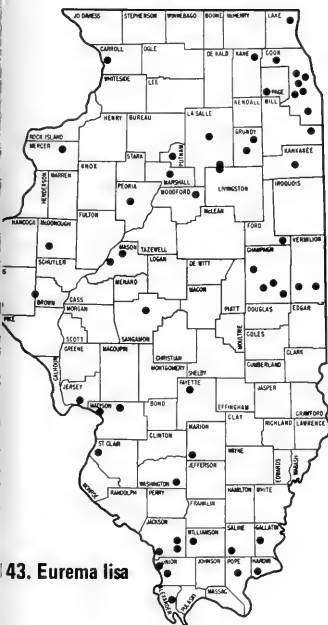
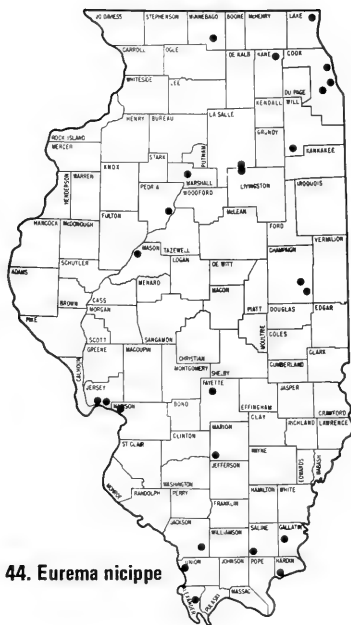
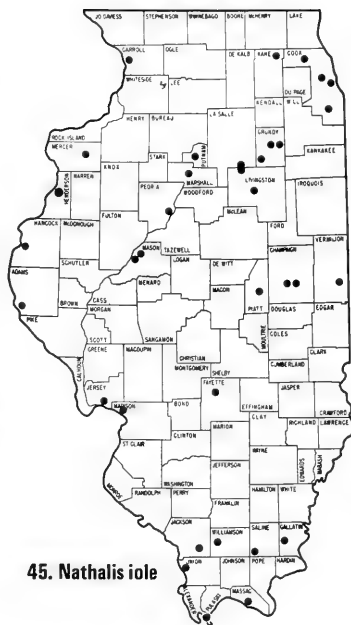
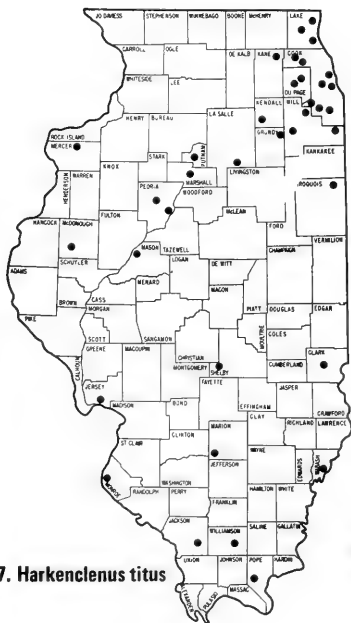
13. *Polites themistocles*14. *Polites origenes*15. *Polites mystic*16. *Hylephila phyleus*17. *Thymelicus lineola*18. *Ancyloxypha numitor*

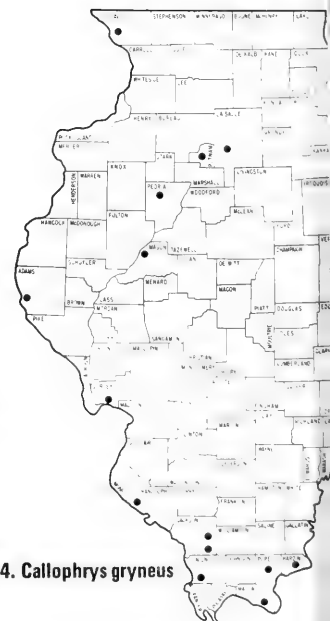
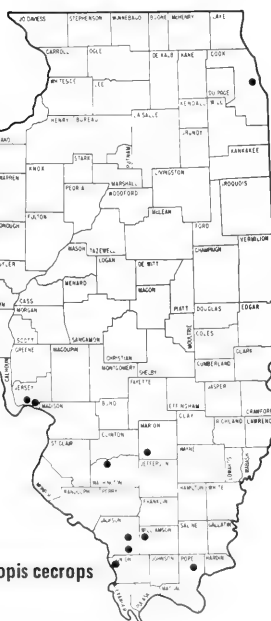
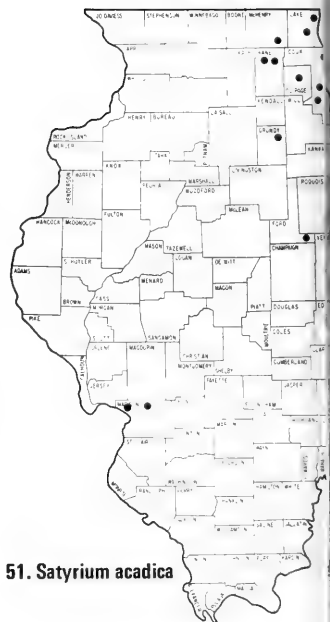
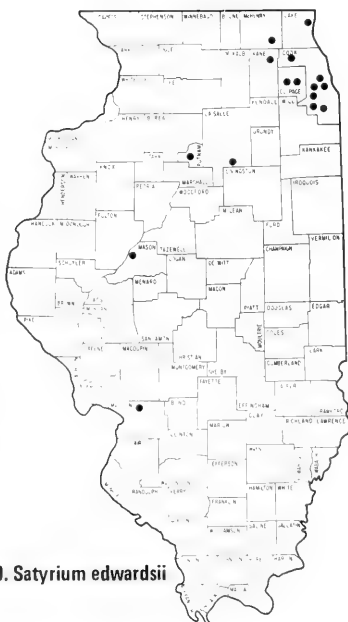
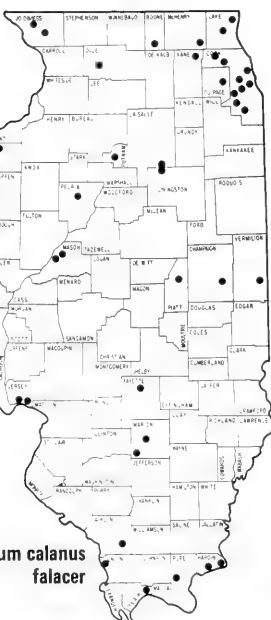


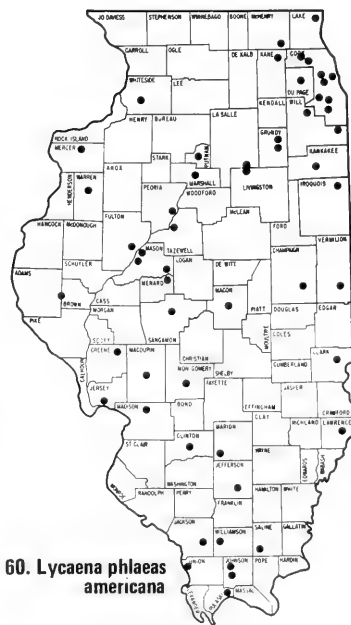
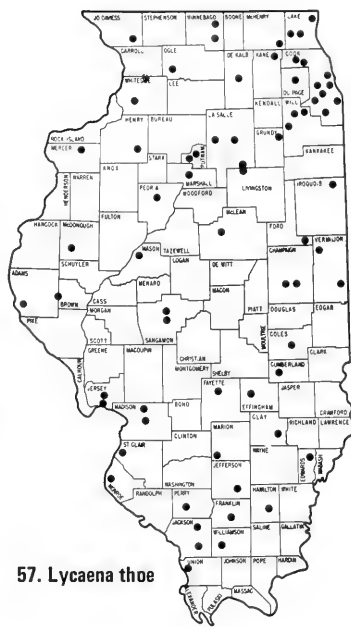
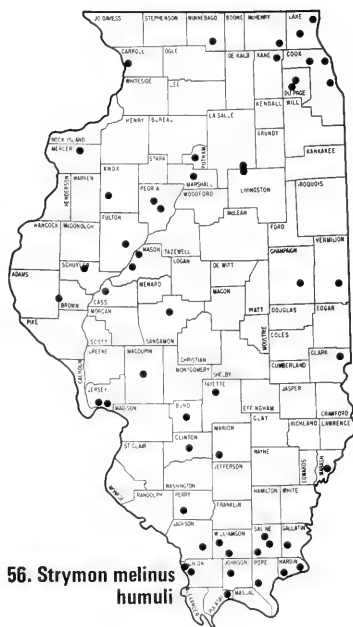
25. *Erynnis juvenalis*26. *Staphylus hayhurstii*27. *Thorybes bathyllus*28. *Thorybes pylades*29. *Acharalus lyciades*30. *Epargyreus clarus*

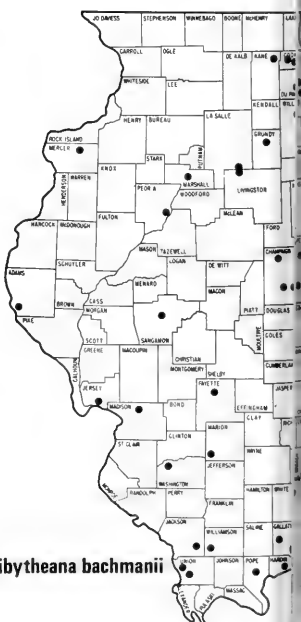
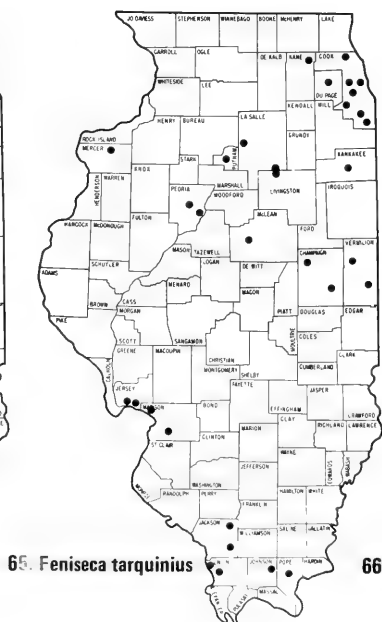
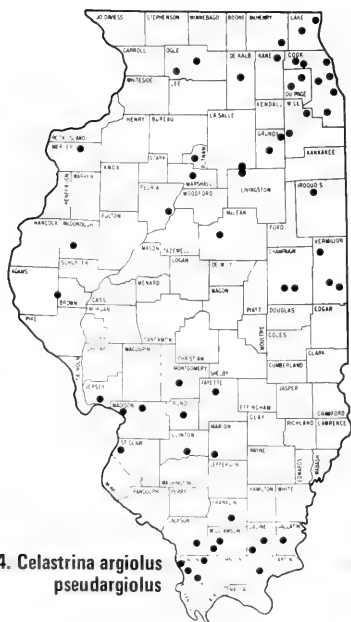
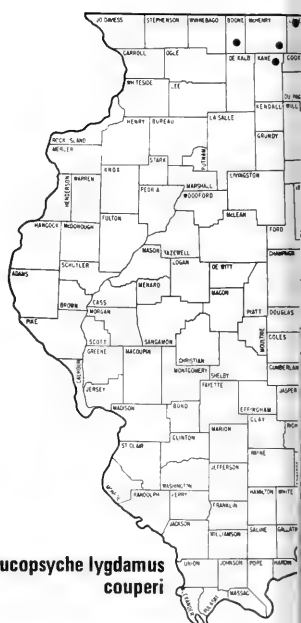
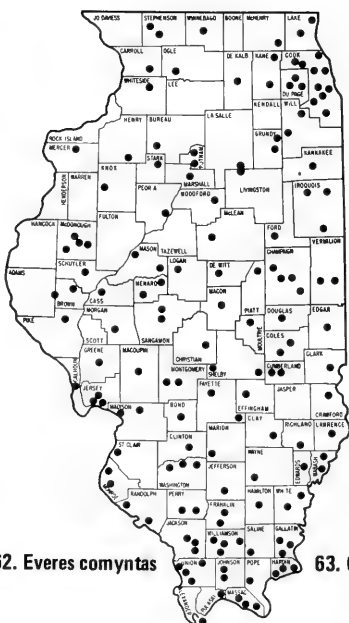


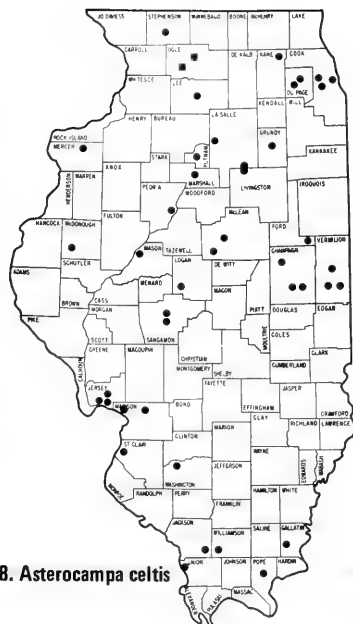
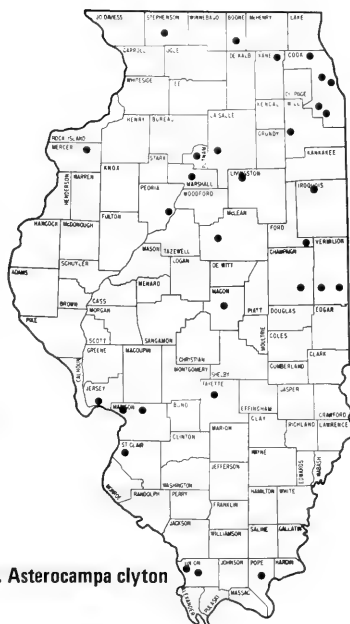
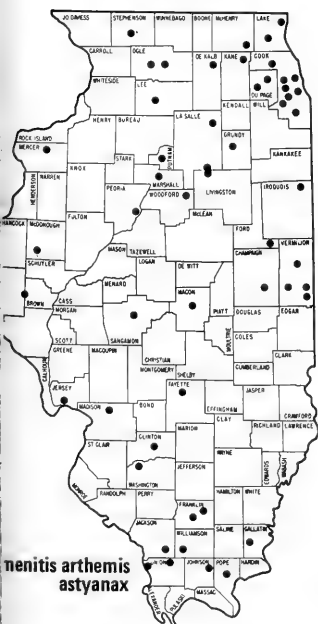
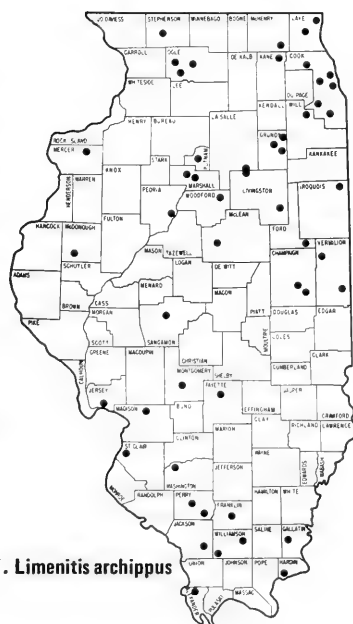
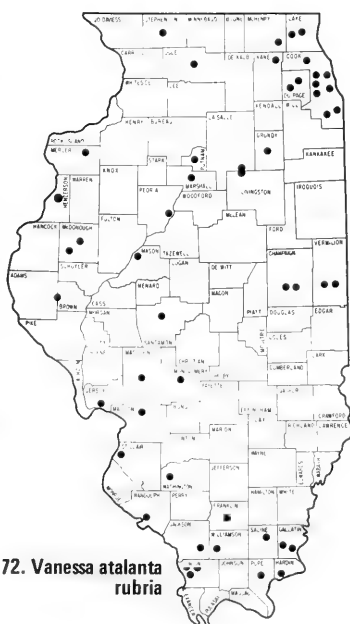
37. *Pieris protodice*38. *Pieris rapae*39. *Colias eurytheme*40. *Colias philodice*41. *Colias cesonia*42. *Phoebis senae eubule*

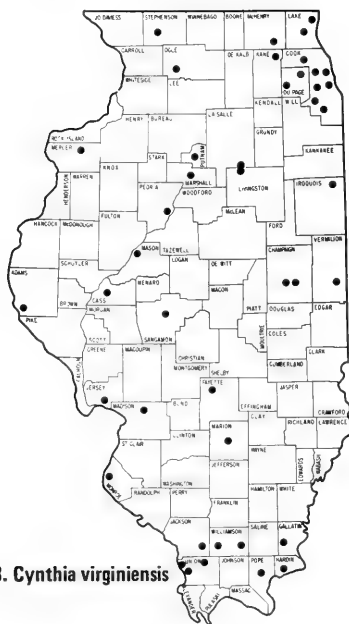
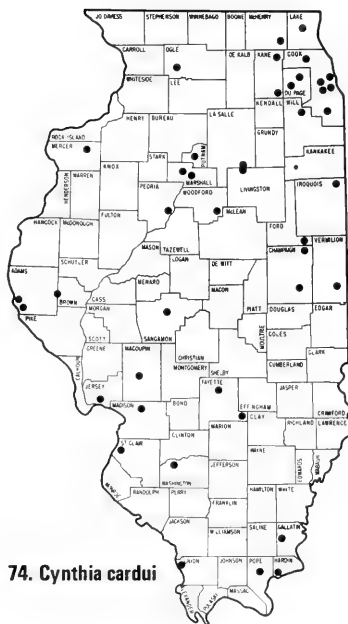
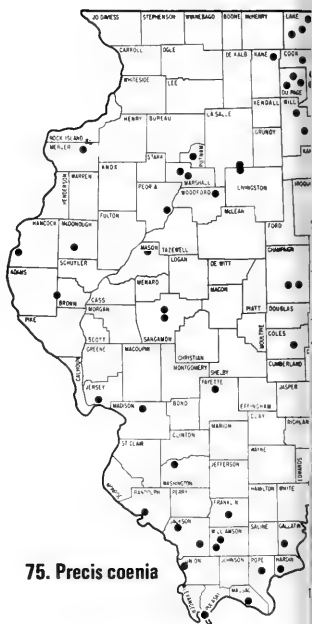
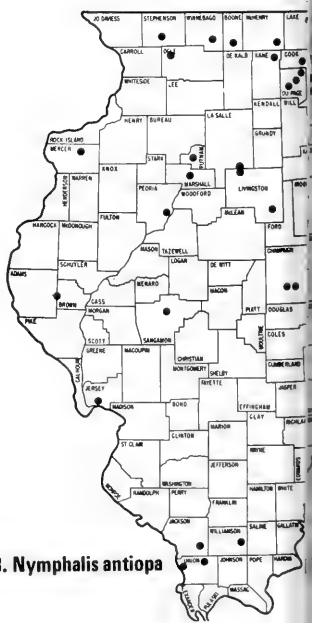
43. *Eureka lisa*44. *Eureka nicippe*45. *Nathalis iole*46. *Anthocharis midea*47. *Harknclenus titus*48. *Satyrium liparops strigosa*

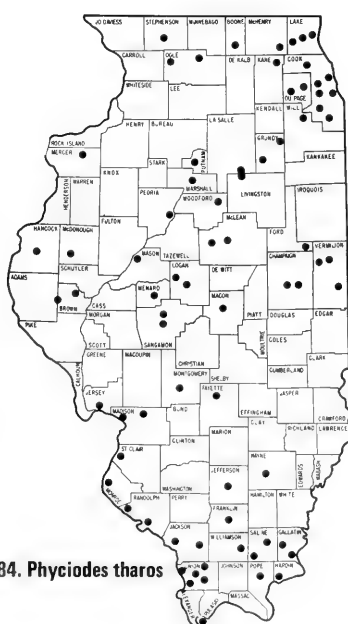
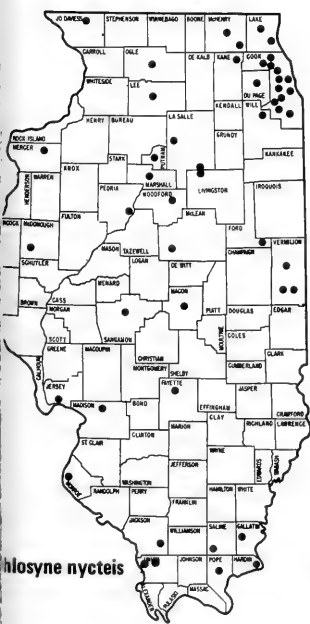
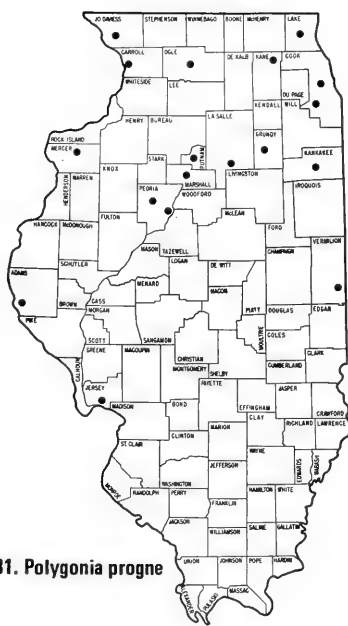
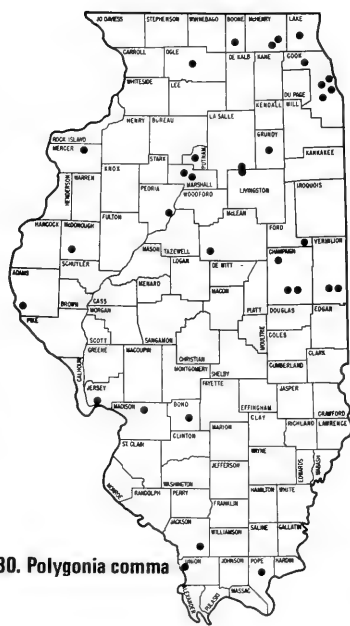
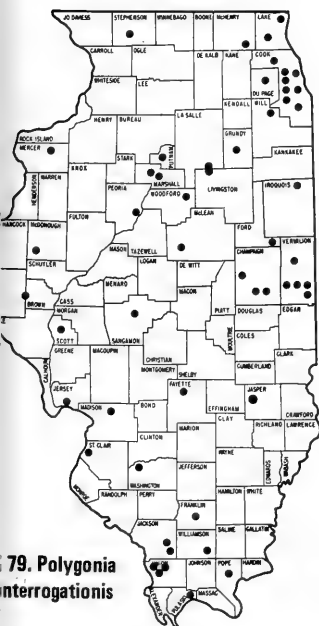


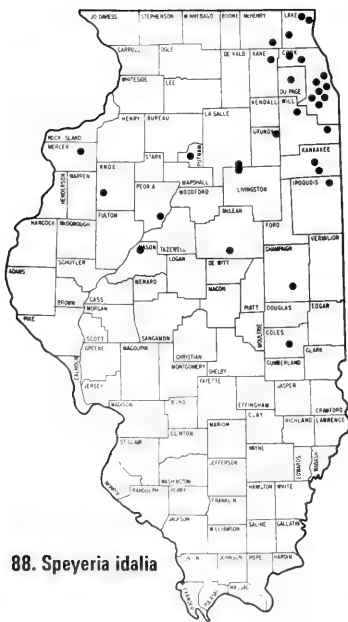
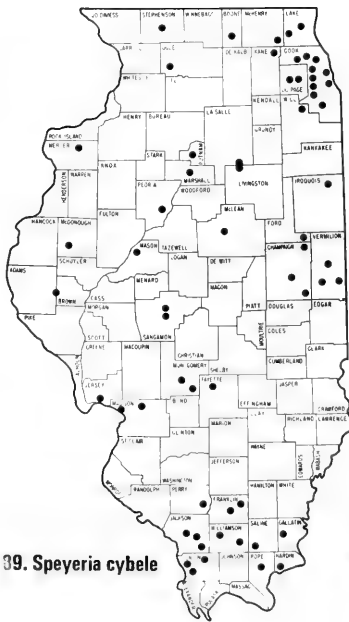
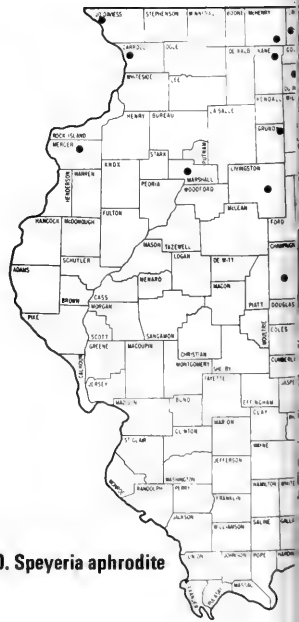


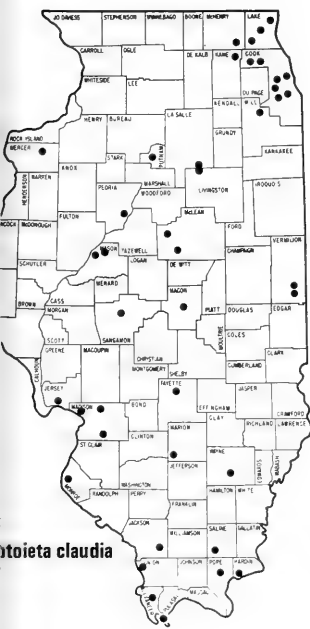
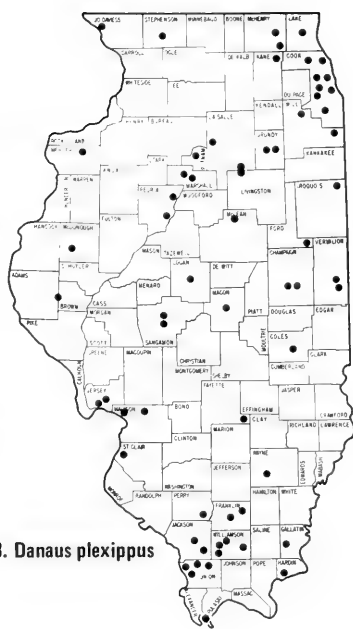
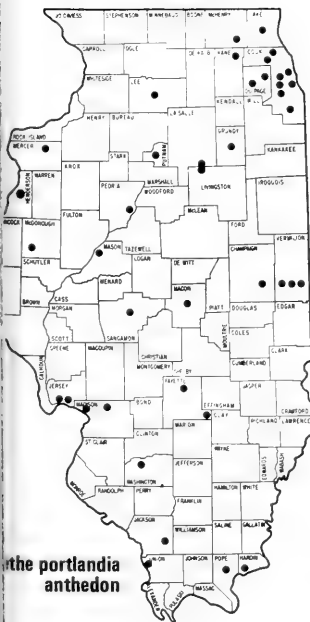
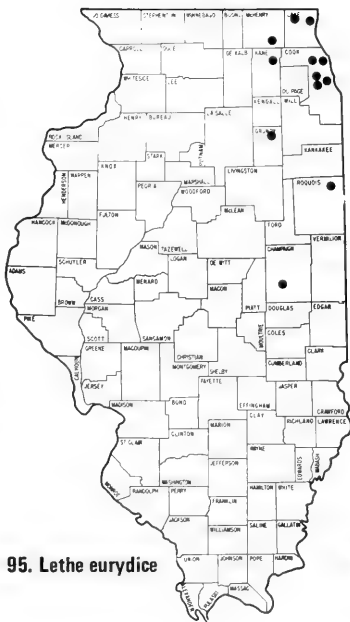


*Anaea andria*68. *Asterocampa celtis*69. *Asterocampa clyton**Limenitis arthemis astyanax*71. *Limenitis archippus*72. *Vanessa atalanta rubria*

73. *Cynthia virginiensis*74. *Cynthia cardui*75. *Precis coenia*76. *Nymphalis vaualbum j-album*77. *Nymphalis milberti*78. *Nymphalis antiopa*



85. *Euphydryas phaeton*86. *Boloria selene myrina*87. *Boloria bellona*88. *Speyeria idalia*89. *Speyeria cybele*90. *Speyeria aphrodite*

*Ageria claudia*92. *Agraulis vanillae nigrior*93. *Danaus plexippus**the portlandia anthonid*95. *Lethe eurydice*96. *Euptychia gemma*

