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ANNOTATED LIST OF THE BUTTERFLIES OF INDIANA, 1971

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The entomologists at Purdue University, while having adequate funds available, necessarily concentrate their efforts and research on the insects considered agricultural pests. They are, however, building a world-wide collection of butterflies. At Indiana University funding for entomology is scarce and spent largely on teaching efforts. Thus the field of Rhopalocera has been wide open and challenging for the serious collector in Indiana, as was appreciated by the authors who received much encouragement and help from members of the Lepidopterists' Society. Although Indiana has had two major annotated state lists of Rhopalocera (Blatchley, 1891 and Montgomery, 1931), and more recently a list of the butterflies of Perry County (Masters and Masters, 1969), nearly forty years have passed without the publication of a comprehensive state-wide list of the butterflies (Papilionoidea) and skippers (Hesperioidea).

The State of Indiana, customarily considered a flat agricultural area, in reality combines a number of different and interesting zoogeographic regions with natural habitats for a diversified flora and fauna. In short

these are the northeastern lakes and bogs, the northeastern and central plains, the southeastern lowlands and flats, the south central hills, the Ohio-Wabash river lowlands, the intrusion of the prairie and the Kankakee sand area from Illinois, and the northwestern snow belt extending south and west of Lake Michigan and including the typical lake dune country. Thus Indiana provides a rich and varied collecting area for entomologists.

The authors, unknown to each other until 1968 and then only by correspondence, carried out intensive collecting in the north and central counties of Indiana at different periods which did not overlap. Both were challenged by the lack of up-to-date records and possibilities. They independently projected an annotated list of the Rhopalocera of the state with equal emphasis on the Papilionoidea and the more difficult Hesperioidea neglected either entirely or in part by Blatchley (1891), Montgomery (1931), and Masters and Masters (1969). This annotated list covers the officially recorded species. It combines the authors' individual efforts and draws freely on previously published papers, as well as information from collectors who have penetrated one or two counties deep from adjoining states. It also lists possible species not yet officially recorded for which the authors have diligently searched.

Shull collected sporadically in Indiana from 1932 to 1946, and regularly from 1964 to 1971. He collected intensively in Wabash and Kosciusko and frequently in Allen, Whitley, Huntington, Miami, Steuben, and LaGrange counties. His collection of more than 15,000 specimens contains 107 species. Badger collected from 1953 to 1962 intensively in Howard and Carroll counties and frequently in Fulton, Marshall, Pulaski, Marion, Brown and Lake counties. He collected 101 species with a total in excess of 10,000 specimens. The combined total of species collected is 118. Many other counties, particularly in the northern half of the state, were visited for desired species.

Portions of the state felt to have been inadequately covered are the central western prairie areas for the skippers surviving from the western prairies, the south central areas from Spring Mill State Park south including French Lick and the southwestern counties adjoining Kentucky and Ohio. The authors have only spot-checked these areas and intensive collecting in them should be rewarding. The southwestern counties have proved unrewarding, but on occasion yield southern species wandering northwards when conditions are favorable.

It is hoped that the following list will prove helpful to Indiana collectors and to others visiting and collecting in the state. A more thorough study of the indigenous and visiting species in many counties, especially in the southern parts, is greatly needed.

HESPERIIDAE

- Panoquina ocola* (Edwards) **Ocola Skipper**. Uncommon locally in northeastern counties. Collected in August in Wabash and Kosciusko counties.
- Lerodea eufala* (Edwards) **Eufala Skipper**. Scattered late summer records in Perry County (Masters and Masters, 1969). Recorded in September, Kosciusko County.
- Amblyscirtes vialis* (Edwards) **Roadside Skipper**. Common in the southern half of the state, but rare or absent in the northern counties. From mid-May to early September.
- Atrytonopsis hianna* (Scudder) **Dusted Skipper**. Rare in Lake and LaGrange counties in June. Not taken in southern parts.
- Euphyes dion dion* (Edwards) **Dion Skipper**. Uncommon in the bogs of LaGrange, Wabash, Kosciusko, Fulton, and Marshall counties in late June and July.
- Euphyes dukesi* (Lindsey) **Dukes' Skipper**. Collected by Homer F. Price, July 24, 1962, Steuben County and by Shull, July 27, 1970, Wabash County.
- Euphyes conspicua* (Edwards) **Black Dash**. Uncommon to common in LaGrange, Steuben, Wabash, Marshall, Carroll, and Kosciusko counties in July.
- Euphyes bimacula* (Grote & Robinson) **Two Spotted Skipper**. Uncommon in boggy or marshy meadows, from late June to early September, in LaGrange, Wabash, Kosciusko, and Fulton counties.
- Euphyes vestris metacomet* (Harris) **Dun Skipper**. Common throughout the state, June to September.
- Poanes massasoit* (Scudder) **Mulberry Wing**. Uncommon to common in July in the northeastern bogs of LaGrange, Steuben, Wabash, and Kosciusko counties. Also found in Fulton and Marshall counties.
- Poanes hobomok* (Harris) **Hobomok Skipper**. Common in the northern half of the state from May to late August or early September. Diamorphic forms of the female *pocahontas* were found in Marshall, Howard, Cass, Marion, Fulton, and Kosciusko counties.
- Poanes zabulon* (Boisduval & LeConte) **Zabulon Skipper**. Apparently more common in the southern half of the state; however, it has been collected in Marshall, Howard, Cass, Marion, Fulton, and Kosciusko counties. May to September.
- Poanes viator* (Edwards) **Broad Winged Skipper**. Uncommon in the northeastern counties. July in Steuben and Wabash counties.
- Atryone delaware delaware* (Edwards) **Delaware Skipper**. Common throughout the state from late June to September.
- Atalopedes campestris* (Boisduval) **Sachem**. Common from late July to September in the northeastern counties. Scarce in late summer in Perry County, an extreme southern county (Masters and Masters, 1969).
- Pompeius verna verna* (Edwards) **Little Glassy Wing**. Common throughout the northern areas in June and July. September for Perry County.
- Wallengrenia otho egeremet* (Scudder) **Broken Dash**. Very common everywhere from June to mid-September.
- Polites coras* (Cramer) **Peck's Skipper**. Abundant over most of the state. May 24 to early October.
- Polites themistocles* (Latreille) **Tawny Edged Skipper**. Very common throughout the state. May 21 to October.
- Polites origines origines* (Fabricius) **Cross Line Skipper**. Fairly common some years in Kosciusko, Wabash, Howard, and Marion counties. From May 25 to early October.
- Politis mystic* (Scudder) **Long Dash**. Uncommon in LaGrange, Kosciusko, Wabash, Marshall, and Fulton counties in June.
- Hesperia metea* (Scudder) **Cobweb Skipper**. Found sparingly in southern Indiana in May.

- Hesperia sassacus* (Harris) **Indian Skipper**. Fairly common some years from late April to mid-June in Wabash and Kosciusko counties.
- Hesperia leonardus* (Harris) **Leonardus Skipper**. Usually uncommon in the northern half of the state, from July to September. Fewer records from southern counties.
- Hylephila phyleus* (Drury) **Fieri Skipper**. Uncommon throughout the state. From August 7 to September 21 in Wabash and Howard counties.
- Thymelicus lineola* (Ochsenheimer) **European Skipper**. Uncommon in June and July in Fulton, Wabash, and Kosciusko counties (Shull, 1968; Badger, unpublished, 1962). In recent years its numbers have increased and it should be looked for in other counties.
- Oarisma powesheik* (Parker) **Powesheik Skipper**. Uncommon locally in mid-June and July in the northwestern portions. Recorded in Lake County.
- Ancyloxypha numitor* (Fabricius) **Least Skipper**. Common from late May to early October in the northern half of the state. Sparse in southern counties.
- Lerema accius* (Abbott & Smith) **Clouded Skipper**. Status in the state is rather uncertain. Blatchley took it in Monroe County on July 3, 1886. New authentic records are needed to keep this species on the Indiana check list.
- Nastra therminier* (Latreille) **Swarthy Skipper**. Uncommon and local throughout most of the state. Masters and Masters (1969) found it not uncommon in Perry County in certain fields. Sometimes common in Brown County, but rare in Kosciusko County.
- Pholisora catullus* (Fabricius) **Common Sooty Wing**. Common throughout the state, from May 24 to September.
- Pyrgus communis communis* (Grote) **Checkered Skipper**. Common everywhere from August to early November.
- Erynnis icelus* (Scudder & Burgess) **Dreamy Dusky Wing**. Common in the northern half of the state in May and June. Not found in the southern counties.
- Erynnis brizo brizo* (Boisduval & LeConte) **Sleepy Dusky Wing**. Common from late April to June in the northern half; uncommon southward.
- Erynnis persius* (Scudder) **Persius Dusky Wing**. Collected by Badger, early May in the Dunes State Park, Lake County. Identified by Dr. J. M. Burns.
- Erynnis lucilius* (Scudder & Burgess) **Columbine Dusky Wing**. Not uncommon from late May to mid-June in LaGrange County. Blatchley (1891) found it in Putman and Lake counties.
- Erynnis baptisiae* (Forbes) **Wild Indigo Dusky Wing**. Shull collected a single specimen ♀ August 27, 1970 in Kosciusko County. Identified by Mr. H. A. Freeman.
- Erynnis zarucco* (Lucas) **Zarucco Dusky Wing**. One record from Crawfordsville by Fred T. Hall (1936).
- Erynnis martialis* (Scudder) **Mottled Dusky Wing**. Found locally throughout the state in June and July.
- Erynnis juvenalis juvenalis* (Fabricius) **Juvenal's Dusky Wing**. Common throughout the state from early May to June 5.
- Staphylus mazans hayhurstii* (Edwards) **Southern Sooty Wing**. Uncommon in Allen, Kosciusko, Wabash, Marshall, Fulton, Howard, and Marion counties. Found in May, June, and July.
- Thorybes bathyllus* (Smith) **Southern Cloudy Wing**. Fairly common throughout the state from mid-May to July.
- Thorybes pylades* (Scudder) **Northern Cloudy Wing**. Common throughout the state from mid-May to July.
- Achalarus lyciades* (Geyer) **Hoary Edge**. Uncommon in the northern counties in June and July. More common in Brown County and in the southern half of the state.
- Autochton cellus* (Boisduval & LeConte) **Golden Banded Skipper**. Single specimen collected by Shull, June 7, 1971, Brown County State Park.
- Epargyreus clarus clarus* (Cramer) **Silver Spotted Skipper**. Common in the northern half of the state from May to September. Uncommon in the southern counties.

PAPILIONIDAE

- Battus philenor philenor* (Linnaeus) **Pipe Vine Swallowtail**. Common throughout the state. May 1 to October 13 (late date).
- Papilio polyxenes asterius* (Stoll) **Black Swallowtail**. Most common swallowtail throughout the state. April 27 to October 20.
- Papilio cressphontes* (Cramer) **Giant Swallowtail**. Fairly common some years in the northern half of the state, usually in August. Found in June rarely and August in Kosciusko and Wabash counties. Masters and Masters (1969) refers to the Perry County subspecies as *pennsylvanicus* Chermock & Chermock (?).
- Papilio glaucus glaucus* (Linnaeus) **Tiger Swallowtail**. Common throughout the state from April 2 to October 2. In northern Indiana the yellow females are less numerous than the black females.
- Papilio troilus troilus* (Linnaeus) **Spicebush Swallowtail**. Common throughout the state. May 1 to October 13.
- Graphium marcellus* (Cramer) **Zebra Swallowtail**. Fairly common throughout the state from April to October 22.

PIERIDAE

- Pieris protodice protodice* (Boisduval & LeConte) **Checkered White**. Widespread but not abundant throughout the state. April to October.
- Pieris napi oleracea* (Harris) **Mustard White**. Blatchley (1891) found it in Kosciusko County during the summer of 1890. On July 12, 1971 one specimen was collected in Mongo, LaGrange County by Shull.
- Pieris rapae* (Linnaeus) **European Cabbage Butterfly**. Very common throughout the state from late March to early November. In 1969 it had five broods in Kosciusko County (Shull's records). On June 17, 1969 a rare yellow female *rapae* was collected in Kosciusko County.
- Colias eurytheme eurytheme* (Boisduval) **Orange Sulphur; Alfalfa Butterfly**. Common throughout the state. May to November. On September 5, 1969 a typical orange ♀ *eurytheme* was in copula with a typical yellow ♂ *philodice* in an alfalfa field in Kosciusko County. This species and the next have many varied summer and winter forms.
- Colias philodice philodice* (Godart) **Common or Clouded Sulphur**. Very common in the whole state from mid-April to early November.
- Colias (Zerene) cesonia* (Stoll) **Dog Face**. Rare in the northern half of the state in September. Occasional records from the southern parts in September and October.
- Phoebis sennae eubule* (Linnaeus) **Cloudless Sulphur**. An uncommon local migrant into the southern counties. Rare in the north in the fall. Collected in Montgomery, Carroll, and Howard counties.
- Phoebis philea* (Johansson) **Orange Barred Sulphur**. Blatchley (1891) recorded a single specimen from Jefferson County collected by Mr. G. C. Hubbard. The only other record is by Cooper (1938) who raised an imago from a larva found in Shelby County. Klots (1951) includes Indiana in its range.
- Eurema lisa* (Boisduval & LeConte) **Little Sulphur**. Usually common throughout the state from June to October; however, some years it may be absent or uncommon.
- Eurema nicippe* (Cramer) **Sleepy Orange**. Uncommon in the northern half of the state from August to November. More common in late summer in the southern counties.
- Nathalis iole* (Boisduval) **Dainty Sulphur**. Locally common in many areas from late summer to the end of November.
- Anthocaris midaea* (Hübner) **Falcate Orange Tip**. Not uncommon in central and southern Indiana from late April to early May. Some years it is rare or absent.
- Euchloe olympia olympia* (Edwards) **Olympia**. Not uncommon some years in the northern half of the state from mid-April to mid-May. Badger found it in Lake and Pulaski counties.

RIODINIDAE

- Calephelis borealis* (Grote & Robinson) **Northern Metalmark**. Locally abundant in wooded areas during July in Montgomery, Brown, Howard, Marion, and Kosciusko counties.
- Calephelis muticum* (McAlpine) **Swamp Metalmark**. Usually uncommon in the northern bogs in July and August. Occasionally common in the tamarack bog at Mongo, LaGrange County.
- Harkenclenus titus* (Fabricius) **Coral Hairstreak**. Uncommon in the northern half of the state in June and July. Masters and Masters (1969) found the subspecies *mopsus* (Hübner) in Perry County in late June.
- Satyrium liparops strigosa* (Harris) **Striped Hairstreak**. Common in northeastern Indiana, and probably throughout the state, from late June to July 10.
- Satyrium calanus falacer* (Godart) **Banded Hairstreak**. Common throughout the state from late June to mid-July. Former Indiana records by the name *calanus* (Florida Hairstreak) belong to this classification.
- Satyrium caryaevorus* (McDunnough) **Hickory Hairstreak**. Uncommon in June and July in Kosciusko and Wabash counties.
- Satyrium edwardsii* (Saunders) **Edward's Hairstreak**. Uncommon in the northern half of the state in June and July.
- Satyrium acadica acadica* (Edwards) **Acadian Hairstreak**. Uncommon to locally common in LaGrange, Kosciusko, Wabash, Marshall, Fulton, and Lake counties in late June and early July.
- Calycopis cecrops* (Fabricius) **Red Banded Hairstreak**. Although both Blatchley (1891) and Klots (1951) list this species for Indiana, it must be rare indeed as we have not found it. Masters and Masters (1969) found it scarce in late May and July in Perry County.
- Callophrys (Incisalia) polios* (Cook & Watson) **Hoary Elfin**. Found in the sand dunes of Lake County in May. Uncommon in April in some southern counties.
- Callophrys (Incisalia) irus* (Godart) **Frosted Elfin**. Taken on lupine in May in Pulaski County. According to Ehrlich and Ehrlich (1961), it is found in northwestern Indiana.
- Callophrys (Incisalia) henrici turneri* (Clench) **Henry's Elfin**. Uncommon in April and May in the southern half of the state. Collected on redbud in Howard County.
- Callophrys (Mitoura) gryneus gryneus* (Hübner) **Olive Hairstreak**. Rare and local near Red Cedar during May in Carroll County. This species is probably widespread in southern Indiana. There are records from Lake and Parke counties.
- Atilides halesus* (Cramer) **Great Purple Hairstreak**. According to Ehrlich and Ehrlich (1961), strays have been taken in northern Indiana. The presence of mistletoe in Perry County makes it a likely area. We have not collected it in Indiana, but have taken it elsewhere.
- Euristrymon ontario* (Edwards) **Northern Hairstreak**. Some years it is uncommon from mid-June to early July in Wabash and Kosciusko counties. Dogbane is its favored food flower in northern Indiana.
- Panthiades m-album* (Boisduval & LeConte) **White M Hairstreak**. Strays have been found in southern Wisconsin, Ohio, and northern Indiana (Lake County). Masters and Masters (1969) report that Lois Ann Winter found a male of this species in Perry County between May 5 and 14, 1962. Badger found a stray in Carroll County, May 1960.
- Strymon melinus melinus* (Hübner) **Gray Hairstreak**. Some years it is common and other years uncommon in the northern half of the state from June 29 to October 3. Common in southern parts from April to September.
- Feniseca tarquinius tarquinius* (Fabricius) **Harvester**. Uncommon to rare in the southern half of the state. Found between mid-May and mid-September in Howard County.

- Lycaena thoe* (Guerin-Meneville) **Bronze Copper**. Fairly common in central and northern Indiana from June to early October. Uncommon in southern counties.
- Lycaena helloides* (Boisduval) **Purplish Copper**. Uncommon in July and August in Wabash and Kosciusko counties. Occasionally found in northwestern Indiana (Lake County).
- Lycaena dorcas* (Kirby) **Dorcas Copper**. Found rarely in the bogs of LaGrange County. We have not yet found it.
- Lycaena epixanthe* (Boisduval & LeConte) **Bog Copper**. Uncommon in July in Wabash County. Klots (1951) also records it in northern Indiana. Blatchley (1891) says it is rare in Lake County.
- Lycaena phlaeas americana* (Harris) **American Copper**. Common in the northern counties from May 15 to September 24. Rare in extreme southern portions. Badger found the form *fasciata* in Howard County.
- Lycaeides melissa samuelis* (Nabokov) **Karner Blue**. Uncommon to rare in LaGrange and Wabash counties; more common in Lake County. The northeastern populations formerly known as *scudleri* (Edwards) now belong to the races of *melissa*. Found from June to August.
- Everas comyntas comyntas* (Godart) **Eastern Tailed Blue**. Common throughout the state from April to early October.
- Glaucopsyche lygdamus* (Doubleday) **Silvery Blue**. Recorded from Wabash and LaGrange counties. Usually rare in May and June.
- Celastrina argiolus* (Linnaeus) **Spring Azure**. Abundant in northeastern Indiana, where most of the specimens belong to the subspecies *pseudargiolus* (Boisduval & LeConte) and its forms. The subspecies *lucia* (Kirby) does not occur in the northern portions of the state. *Argiolus* occurs throughout the state from mid-April to mid-September. Klots (1951) gives a fine description of this group.

LIBYTHEIDAE

- Libytheana bachmanii* (Kirtland) **Snout Butterfly**. Usually common throughout the state from early April to September.

NYMPHALIDAE

- Anaea andria andria* (Scudder) **Goatweed Butterfly**. Scattered records from the central and southern parts of the state in April, July, and August. Found in July in Orange County and in August in Wabash County.
- Asterocampa celtis celtis* (Boisduval & LeConte) **Hackberry Butterfly**. Common throughout the state, June 12 to September 4.
- Asterocampa clyton clyton* (Boisduval & LeConte) **Tawny Emperor**. Common in the entire state, but less so than the above species. From mid-June to September 14.
- Limenitis arthemis astyanax* (Fabricius) **Red Spotted Purple**. According to Platt and Brower (1968) *artemis* and *astyanax* are not distinct species. Therefore the present authors have combined them. Two specimens, having indistinct white bands, were collected June 21, 1969 in Wabash County. Rather prominent white-banded forms have been taken in a few northern counties. From June 5 to October 7 throughout the state, with the *astyanax* form greatly outnumbering the *artemis* form.
- Limenitis archippus archippus* (Cramer) **Viceroy or Mimic**. Common throughout the state. Early June to October 13.
- Vanessa atalanta* (Linnaeus) **Red Admiral**. Common throughout the state from late March to September 20. One very late date is October 26.
- Vanessa virgintensis* (Drury) **American Painted Lady**. Usually common throughout the state; however, some years it is uncommon or absent. From late April to September 25.
- Vanessa cardui* (Linnaeus) **Painted Lady**. Some years it is common to abundant

- throughout the state; from March to September 20. In 1969, it was strangely absent in northern Indiana. It is a highly migratory species.
- Junonia coenia coenia* (Hübner) **Buckeye**. Usually common or fairly common and quite variable throughout the state; from May to October 13, and rarely to early November.
- Nymphalis vau-album j-album* (Boisduval & LeConte) **Compton Tortoise Shell**. Found in Porter and Lake counties. Two specimens were collected in August, 1934 in Wabash County. Rare.
- Nymphalis milberti milberti* (Godart) **Milbert's Tortoise Shell**. Very common in northern Indiana, but uncommon in the southern counties. From March to November 7. It may even hibernate as one was found on a log on December 29, 1953 in Madison County.
- Nymphalis antiopa antiopa* (Linnaeus) **Mourning Cloak**. Common throughout most of the state; less common in the south. From February to October 25.
- Polygonia interrogationis* (Fabricius) **Question Mark**. Common from March to November in the entire state.
- Polygonia comma* (Harris) **Comma** or **Hop Merchant**. Common throughout the state from March 4 to November 22; however, it may be rarely found much later on warm winter days.
- Polygonia satyrus* (Edwards) **Satyr Angle Wing**. Recorded from Kosciusko and Wabash counties from May 30 to late July. Uncommon, rare, or absent some years.
- Polygonia progne* (Cramer) **Gray Comma**. Common, uncommon, or absent some years in Wabash and Kosciusko counties. From June 20 to early November. Apparently uncommon in midsummer in several other counties.
- Chlosyne nycteis nycteis* (Doubleday) **Silvery Checkerspot**. Fairly common throughout the state from May 17 to mid-October.
- Chlosyne gorgone carlota* (Hübner) **Gorgone Checkerspot**. The only records are from Perry County by J. F. and Wilma L. Masters (1969). It should be looked for elsewhere.
- Chlosyne harrissi* (Scudder) **Harris' Checkerspot**. Our 1934 Wabash County records may be incorrect as they were not checked by an expert, but they are rarely taken from the Mongo tamarack bog in LaGrange County. Klots (1951) includes Indiana in its range.
- Phyciodes tharos tharos* (Drury) **Pearl Crescent**. Very common throughout the state from April or mid-May to October.
- Phyciodes batessi* (Reakirt) **Tawny Crescent**. Perhaps there are a few authentic records for Indiana from late May to early June, but upon close examination our *batesii* turned out to be aberrant *tharos*. As Masters and Masters (1969) suggest, this species may be widespread from Brown County northward.
- Euphydryas phaeton* (Drury) **Baltimore**. The nominate subspecies is uncommon in the northern half of the state in June and July. Specimens from Brown and other south-central counties, according to Masters and Masters (1969), may belong to the subspecies *ozarkae*, but ours from Brown County appear to be identical to the northern specimens.
- Boloria selene myrina* (Cramer) **Silver Bordered Fritillary**. Common in the far northern counties from June 15 to September. Absent in the remainder of the state.
- Boloria toddi ammiralis* (Hemming) **Meadow Fritillary**. Very common throughout the northern portions of the state from April 26 to October 1.
- Speyeria idalia* (Drury) **Regal Fritillary**. Scattered records from widely separated counties during July and August. Uncommon to rare in Wabash, Kosciusko, Marshall, and Fulton counties.
- Speyeria atlantis* (Edwards) **Atlantis Fritillary**. Blatchley (1891) and Montgomery (1931) both reported it from Vanderburgh and Lake counties. No authentic, recent records from any portion of the state have come to our attention. It should be found along the Indiana-Michigan border counties.

- Speyeria diana* (Cramer) **Diana**. Old records are from Vanderburgh County (Blatchley, 1891). According to Masters and Masters (1969), a male of this species was collected on July 15, 1962 just north of Troy in Perry County.
- Speyeria cybele cybele* (Fabricius) **Great Spangled Fritillary**. Common throughout the state. May 20 to September.
- Speyeria aphrodite* (Fabricius) **Aphrodite**. In northeastern Indiana most specimens belong to the subspecies *alcestis* (Edwards). Some years it is common from June 25 to late August. A few nominate subspecies have been collected in the extreme northern bogs. Also the aphrodite was found in Marshall, Fulton, and Howard counties.
- Euptoieta claudia claudia* (Cramer) **Variogated Fritillary**. Uncommon throughout the state, but more found in the northeastern counties of LaGrange, Kosciusko, and Wabash. From June 22 (early) to October 15.
- Agraulis vanillae* (Linnaeus) **Gulf Fritillary**. Blatchley (1891) reported it from Vanderburgh County. Lawrence James collected one in Clay County in July.

DANAIDAE

- Danaus plexippus plexippus* (Linnaeus) **Monarch**. Some years common throughout the state; normally from late April to early November, but more common in September, when occasional southward migrations take place.

SATYRIDAE

- Lethe portlandia anhedon* (Clark) **Pearly Eye**. Uncommon throughout the state. Occasional records from Howard and Carroll counties. June to August.
- Lethe creola* (Skinner) **Creole Pearly Eye**. Extremely rare in northeastern Indiana near the Michigan border. Masters and Masters (1969) report that Dr. E. M. Brackney took one on June 29, 1965 in Orange County.
- Lethe eurydice appalachia* (R. L. Chermock) **Eyed Brown**. Uncommon to common in the northeastern counties from June to August. Found in LaGrange, Steuben, Wabash, and Marshall counties. Less common in the central portions of the state.
- Euptychia gemma gemma* (Hübner) **Gemmed Satyr**. Recorded only in Perry County from late April to early October by J. H. and Wilma L. Masters.
- Euptychia mitchellii* (French) **Mitchell's Satyr**. Uncommon in July in our extreme northeastern county bogs. Collected in LaGrange County many years by Homer F. Price.
- Euptychia cymela cymela* (Cramer) **Little Wood Satyr**. Very common throughout the state from late May through July.
- Cercyonis pegala* (Fabricius) **Wood Nymph, Grayling**. Common in the northern half of the state, but absent in the southern parts. From mid-May to October 1. The subspecies *nephele* (Kirby) is occasionally found in July from Kosciusko County, but *C. p. alope* (Fabricius) is the common form in Wabash and Kosciusko counties. Other subspecies seem to be present, but they may be only aberrant forms. This species, with its many overlapping or integrated forms, needs far more study in Indiana.

HYPOTHETICAL LIST FOR INDIANA

Collectors should look for the following species in Indiana:

Hesperiidae

- Amblyscirtas samoset* (Scudder). Mississippi Valley.
- Atrytone arogos* (Boisduval & LeConte). Florida and Gulf States, north to New Jersey, Minnesota, Iowa, and Nebraska.

- Polites vibex* (Geyer). Tropics north to Connecticut, Arkansas, and a dubious Wisconsin record.
- Hesperia uncas* (Edwards). A western prairie species which sometimes enters the eastern area.
- Hesperia attalus* (Edwards). Ohio and Wisconsin.
- Pyrgus centaureae* (Rambur). New York to Colorado.
- Erynnis horatius* (Scudder & Burgess). Ohio.
- Thorybes confusus* (Bell). Missouri, Maryland. Probable ♀ June 17, 1962, Marshall County—Badger.

Pieridae

- Ascia monuste* (Linnaeus). Mississippi Valley to Kansas.
- Colias interior* (Scudder). Michigan.
- Phoebis agarithe* (Boisduval). Strays to Illinois.
- Eurema mexicana* (Boisduval). Rarely to Michigan and Wisconsin.
- Kricogenia lyside* (Godart). Strays to Illinois.

Lycaenidae

- Callophrys (Incisalia) augustinus* (Westwood). Illinois and Michigan.
- Callophrys (Incisalia) niphon* (Hübner). Michigan.
- Satyrium kingi* (Klots & Clench). Harry K. Clench has written that it seems to occupy the same habitat as *Lethe creola*.
- Lycaena xanthoides* (Boisduval). Upper Mississippi Valley, Kansas north through Nebraska, Minnesota, and Illinois.
- Plebejus saepiolus* (Boisduval). Michigan.

Riodinidae

- Lephelisca virginiensis* (Guérin-Méneville). Ohio.

Nymphalidae

- Polygonia faunus* (Edwards). Canada to South Carolina, Iowa, and Michigan.
- Boloria eunomia* (Esper). Michigan and Wisconsin.

ACKNOWLEDGMENTS

In this annotated list of Indiana butterflies, the authors have, in the main, followed the classificatory arrangement of Dr. Cyril F. dos Passos, *A Synonymic List of the Nearctic Rhopalocera* (1964), and his revisions of the Nearctic Melitaeinae (1969) and the Nearctic Lycaenidae (1970).

A Guide to the Butterflies (1951) by Dr. Alexander Klots, *The Butterfly Book* (1940) by Dr. J. W. Holland, and *How to Know the Butterflies* (1961) by Dr. and Mrs. Paul R. Ehrlich constitute the primary sources used for identification; however, a few of the more difficult species and subspecies were either confirmed or identified by the following experts: Dr. J. M. Burns of Cambridge, Mass., Mr. Harry K. Clench of the Carnegie Museum, Pittsburgh, Pa., Mr. H. A. Freeman of Garland, Texas, and Drs. Frederick H. Rindge and Alexander B. Klots of the American Museum of

Natural History, New York. To these people the authors are greatly indebted. The authors, of course, assume full responsibility for any inaccuracies which may have been reported in this study.

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THE LIFE HISTORY OF *SCHINIA INTRABILIS* (NOCTUIDAE)

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Schinia intrabilis Smith (1893, p. 331) feeds in the larval stage on the blossoms of the Arrowweed, *Pluchea sericea* (Nutt.) Cov. The arrowweed is a willow-like composite that occurs abundantly around seeps and along river banks in the deserts of southern California. During the early blossoming period of its food plant, *Schinia intrabilis* is not a rare insect in appropriate desert habitats.

According to Munz (1963), the Arrowweed is distributed from southern California eastward to Texas, but I have examined *intrabilis* only from as far east as Yuma and Ehrenberg, Arizona. The species is univoltine and the period of adult activity is co-ordinated in any area with the single annual blossoming period of the Arrowweed. Specimens in the Canadian National Collection from the deserts of southern California were taken on dates between the middle of March and the end of April.

Behaviour

Schinia intrabilis is evidently a species of exclusively or preponderantly nocturnal habits. In moist areas in which eggs and young larvae could be recovered without difficulty from Arrowweed heads, no adult activity was noted during daylight hours.

Eggs are deposited in the Arrowweed head at a stage when the sepals of the bud have drawn apart at the top sufficiently to expose the florets. Females do not and probably cannot oviposit in the tough, leathery, unopened buds. The egg is inserted among the florets from the top of the head.

Three captive females deposited a mean of 83 eggs, and the maximum

western counties is quite sparse. Many species, especially bog inhabiting ones, that are locally abundant in northwest Wisconsin are given very ineffectual treatment. *Polygonia satyrus* is omitted entirely, although being fairly common from Sawyer county northward. *Satyrium caryaevorus* is not mentioned, although the photographs of *Satyrium calanus* (page 64) appear to be erroneously identified as *caryaevorus*. *Colias interior vividior* Berger, the only butterfly with a Wisconsin type locality, receives no mention at all.

The author has not attempted to delineate Wisconsin subspecies, stating that, "Subspecific designations for some Wisconsin butterflies have been omitted awaiting study and clarification." However, with only a few species given subspecific designations, five are incorrectly cited. *Coenonympha tullia inornata* is treated as *C. inornata benjamini*; *Oeneis jutta ascerta* is treated as *O. jutta ridgingiana*; *Agraulis vanillae incarnata* is treated as *A. vanillae nigrior*; the unnamed Wisconsin population of *Lycaeides argyrognomon* is treated as *L. argyrognomon scudderii*; and *Boloria selene* is treated under *atrocostalis*, which does occur in northern Wisconsin, however southern Wisconsin populations, and very obviously the specimen figured as *atrocostalis*, are subspecies *myrina*.

This is the first publication to treat all of the butterflies of Wisconsin on a statewide basis. It is a book which has been needed for a long time and which will be in use for many years. It is unfortunate that more extensive and detailed "statewide" collecting records could not have been included.

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NOTES AND NEWS

Errata

In the paper by E. M. Shull and F. Sidney Badger, "Annotated List of the Butterflies of Indiana, 1971" (Vol. 26 (1): 13-24), the family name LYCAENIDAE was inadvertently omitted on p. 18 (between **Swamp Metalmark** and **Coral Hairstreak**). Also, on p. 17, the subspecific name of *Pieris napi* should be *oleracea* (not *oleracoa*).