

following members of the genus *Heliopetes*: *domicella* Erichson, *macaira* Reakirt, *laviana* Hewitson, and *arsalte* (L.). This includes all of the species of that genus recorded from mainland Mexico except *ericetorum* (Bdv.), which Hoffmann records from "Region noroeste hasta Guerrero," and *alana* Reakirt, which occurs over all of the southern part of Mexico.

LITERATURE CITED

- DRAUDT, M., 1924. Hesperiidae, in: Seitz, Macrolepidoptera of the world. Vol. 5. The American Rhopalocera. Stuttgart, vii, 1139 pp., 203 pl.
- EVANS, W. H., 1953. A catalogue of the American Hesperiidae indicating the classification and nomenclature adopted in the British Museum. Part III, Pyrginae. Sec. 2. London: British Museum, 246 pp., pls. 26-53.
- HOFFMANN, C. C., 1941. Catalogo sistematico y zoogeografico de los Lepidopteros Mexicanos. Segunda parte-Hesperioidea. An. Inst. Biol. Mexico, 12: 237-294.

OBSERVATIONS ON ARKANSAS RHOPALOCERA AND A LIST OF SPECIES OCCURRING IN NORTHEASTERN ARKANSAS

JOHN H. MASTERS

P.O. Box 7511, Saint Paul, Minnesota

The only recent extensive butterfly collecting in Arkansas has been by H. Avery Freeman, Kilian Roever, Richard Heitzman, Leo J. Paulisen and myself. I was the first resident collector in northeastern Arkansas and the only person to have collected butterflies extensively there. This paper summarizes collecting records and observations of over six hundred field hours in northeastern Arkansas between 1961 and 1965.

Northeastern Arkansas is defined as those counties bisected by Crowley's Ridge (Clay, Greene, Craighead, Poinsett, Cross, St. Francis, Lee and Phillips) and those eastward (Mississippi and Crittenden). This area is not generally favorable for Rhopalocera, and transient collectors are not likely to collect there. The area is highly cultivated in cotton, soybeans and rice—crops that are frequently sprayed with insecticides. Collecting is best on the hillier uncultivated sections of Crowley's Ridge and in areas along the Mississippi, Saint Francis and L'Anguille Rivers. Crowley's Ridge is the outstanding geographic feature of the region, elevations along the ridge are only 300 to 500 feet above sea level but the surrounding region is flat with elevations under 250 feet. Crowley's Ridge still contains forested areas (especially in the St. Francis State Forest) and most of the species native to the original dense hardwood forests of the region should remain there.

RHOPALOCERA OF NORTHEASTERN ARKANSAS

Abundant to Common Species:

Amblyscirtes vialis (Edwards)
Atalopedes campestris (Boisduval)
Polites themistocles (Latreille)
Pholisora catullus (Fabricius)
Erynnis juvenalis (Fabricius)
Thorybes pylades (Scudder)
Battus philenor (Linnaeus)
Papilio glaucus Linnaeus
Graphium marcellus (Cramer)
Nathalis iole Boisduval
Colias eurytheme Boisduval
Calycopis cecrops (Fabricius)
Satyrrium falacer (Godart)
Libytheana bachmanii (Kirtland)
Limenitis archippus (Cramer)
Junonia coenia (Hübner)
Phyciodes tharos (Drury)
Danaus plexippus (Linnaeus)

Uncommon to Scarce Species:

Panoquina ocola (Edwards)
Amblyscirtes aenus linda Freeman
Euphyes vestris (Boisduval)
Pompeius verna (Edwards)
Nastra lherminier (Latreille)
Erynnis persius (Scudder)
Staphylus mazans hayhurstii (Edwards)
Epargyreus clarus (Cramer)
Colias cesonia (Stoll)
Eurema nicippe (Cramer)
Chrysophanus titus mopsus (Hübner)
Celastrina argiolus (Linnaeus)
Asterocampa celtis (Boisd. & LeConte)
Vanessa cardui (Linnaeus)
Polygonia comma (Harris)
Agraulis vanillae (Linnaeus)
Euptychia gemma (Hubner)

Rare or Casual Species:

Calpodus ethlius (Stoll)
Hesperia meskei (Edwards)
Thorybes confusus Bell
Papilio cressphontes Cramer
Incisalia henrici (Grote & Robinson)
Lycaena phleas americana Harris

Asterocampa clyton (Boisd. & LeConte)
Phyciodes phaon (Edwards)
Atrytone delaware (Edwards)
Wallengrenia otho (Smith)
Hylephila phyleus (Drury)
Pyrgus communis (Grote)
Thorybes bathyllus (Smith)
Achalarus lyciades (Geyer)
Papilio polyxenes asterius Stoll
Papilio troilus Linnaeus
Pieris protodice Boisd. & LeConte
Pieris rapae (Linnaeus)
Eurema lisa Boisd. & LeConte
Strymon melinus Hubner
Everes comyntas (Godart)
Limenitis arthemis astyanax (Fabricius)
Vanessa atalanta (Linnaeus)
Polygonia interrogationis (Fabricius)
Euptoietia claudia (Cramer)
Euptychia cymela (Cramer)
Lerodea eufala (Edwards)
Amblyscirtes celia belli Freeman
Poanes zabulon (Boisd. & LeConte)
Lerema accius (Smith)
Erynnis brizo (Boisd. & LeConte)
Erynnis horatius (Scudder & Burgess)
Autochton cellus (Boisd. & LeConte)
Colias philodice Godart
Phoebis sennae eubule (Linnaeus)
Anthocaris midea Hubner
Satyrrium edwardsii (Grote & Robinson)
Anaea andria Scudder
Vanessa virginienis (Drury)
Nymphalis antiopa (Linnaeus)
Melitaea nycteis (Doubleday)
Euptychia hermes sosybius (Fabricius)
Polites coras (Cramer)
Erynnis zarucco (Lucas)
Battus polydamas (Linnaeus)
Mitoura gryneus (Hubner)
Lycaena thoe Guérin-Meneville
Hemiargus isola (Reakirt)
Polygonia progne (Cramer)
Chlosyne gorgone carlotta (Reakirt)

Sight Record:

Phoebis philea (Johansson)

Northeastern Arkansas is not as bountiful in species as are the Ozarks of northwestern Arkansas. The Ozarks reach higher elevations (1000 to 2000 feet above sea level) and are cooler, receive more precipitation, and hence, harbor boreal species such as *Speyeria cybele* (Fabricius),

Euphydryas phaeton (Drury), and *Euchloe olympia* (Edwards)—species not found in northeastern Arkansas. Many southern species such as *Eurema mexicana* (Boisduval), *Phyciodes texana* (Edwards) and *Lepototes marina* (Reakirt) enter the Ozarks from the southwest via the "Mexican Flyway" and are not recorded in northeast Arkansas.

Some species are inexplicably absent from northeastern Arkansas although abundant in surrounding areas. *Cercyonis pegala* (Fabricius) is one of these, and its absence is unfortunate because the nominate race might otherwise converge with race *texana* (Edwards) and race *alope* (Fabricius) there. *Mitoura gryneus*, *Phyciodes phaon*, *Papilio cressphontes* and a few others are uncommon here although abundant elsewhere in the state. The only species in this region and not occurring elsewhere in Arkansas is *Lycaena thoe*.

For convenience, the species are treated in three groups: abundant to common, ten to fifteen or more individuals might be encountered in a day; uncommon to scarce, two or three to a dozen would be expected; rare or casual, species only infrequently encountered.

A total of 86 species are recorded from northeastern Arkansas, not quite two-thirds of the 135 known for the entire state.

Additional comments are in order for some of the species listed as rare or casual:

Calpododes ethlius—A single specimen (15-VIII-1964) captured at Bear Creek Lake in Lee County.

Incisalia henrici—recorded from two specimens (14-IV-1963) taken at the Six Point Gun Club lodge in Lee County.

Lycaena thoe—all records are from along the Mississippi River in Mississippi County, Osceola (5-IX-1963, 25-VI-1964 and 10-VII-1964), O'Donnell Bend (20-VI-1964) and Luxora (10-IX-1964).

Lycaena phleas americana—a single specimen was captured (2-VII-1963) at Crowley's Ridge State Park in Greene County.

Hemiargus isola—migrated into the area in September 1963 and was found many places in Mississippi, Greene and Craighead counties.

Polygonia progne—was present in numbers along the Mississippi River in Mississippi County during 1962 and was also taken in Lee and Phillips counties that year.

Phoebis philea—The sight record was a single specimen at Osceola, Mississippi County during late June, 1963.

The most interesting records regard *Battus polydamas* which may be establishing itself in the state. The only record for northeastern Arkansas is a "rubbed" male that I captured (10-VII-1965) along the L'Anguille River near its intersection with U.S. 70 in St. Francis County, but there are additional observations for the northcentral part of the state. I collected a male *polydamas*, the first record for Arkansas, feeding on honeysuckle at the White River Ferry-site near Norfolk in Baxter county (16-V-1964). Later in the same day a worn female *polydamas* was observed ovipositing on pipevine (*Aristolochia serpentaria* Linnaeus) which was growing on an open hilltop overlooking the Norfolk Damsite. I collected several dozen ova and young larvae and transported them to Osceola for rearing. I had two potted pipevine plants at home, but the voracious appetites of the larvae was not taken into consideration as they decimated them in two days. It was essential for me to drive four hundred miles on the evening of May 19th in order to gather more food plant at the original site and many additional ova and larvae were gathered along with three large ice water jugs stuffed with pipevine leaves.

Experimentation led to the discovery that pipevine leaves could be frozen and later thawed to feed the larvae. Older larvae would eat the thawed leaves which were dry and brittle but cannibalism, perhaps enhanced by this diet, became a problem. Larvae were especially vulnerable to cannibalism when suspending prior to pupation and were isolated at this point.

It was apparent that the larvae represented both *Battus philenor* and *polydamas* although they were inseparable in their early stages. The first adults emerged in late June and were *philenor*. Many *philenor* emerged before the first *polydamas* (7-VII-1964). Thirty-two additional *polydamas* emerged through mid-July along with a total of 106 *philenor*—this was from an estimated 400 ova and larva that had been collected.

The following year, a single *polydamas* was seen in flight (30-V-1965) near the fish hatchery at Norfolk. The hilltop pipevine area had been freshly mown to a level of a few inches and only a few young larvae were to be found. Five were reared and proved to be *philenor*.

ACKNOWLEDGMENTS

Acknowledgment is given to Richard Heitzman, H. Avery Freeman, Leo J. Paulissen, Fred T. Thorne and Harry K. Clench who were helpful in many ways, especially in confirming determinations of Hesperidae; and to my wife, Wilma, for her help in rearing the larvae of *Battus polydamas* and *Battus philenor*.