

OBSERVATIONS OF *HESPERIA PAWNEE* IN MICHIGAN

by M. C. NIELSEN

The recognition of *Hesperia pawnee* Dodge in Michigan was first established from a female specimen taken by RONALD HODGES on July 6, 1952 in Barry County, near Gun Lake. The determination was made by WILLIAM D. FIELD of the U. S. National Museum. It was certainly a most unusual record as all previous records of this skipper were from states bordering the Great Plains. At first the species was considered to be a possible stray; however, *pawnee* has since been found in 4 additional counties in recent years in Michigan. My observations indicate that *pawnee* occurs in many favored localities throughout the southwestern part of the state and that it was previously overlooked by Michigan collectors. In 1893 R. H. WOLCOTT published a list of butterfly records for the Grand Rapids area and failed to report this skipper. A favorite locality for Wolcott was Lamberton Lake where I observed 2 specimens of *pawnee* on July 16, 1954.

During the past 5 years, I have observed and collected specimens of *H. pawnee*, both sexes, in Allegan, Barry, Kent, Montcalm, and Newaygo Counties — all in the southwestern part of the lower peninsula. The records are from June 19, 1953 to August 9, 1957, with males appearing before the females by approximately 10 days. My observations indicate the species to be single-brooded in Michigan. The foodplant, at least in Montcalm County, is Fall Witchgrass, *Leptoloma cognatum* (Schult) Chase, commonly found growing on prairies and dry fields in southwestern Michigan. Most of my experiences with this skipper are from Montcalm and Newaygo Counties. The notes that follow will represent observations of *pawnee* in these 2 counties hoping that the information will be useful to other collectors in the mid-west.

My first capture of *H. pawnee* was on June 19, 1953 (temp. 95°) in the Flat River State Game Area, Montcalm County. It was an immaculate male specimen (determined by WM. D. FIELD) collected while sunning itself on a moist road adjacent to a large swamp. At first, before placing my net over the skipper, I thought it was a large male *Atrytone logan* Edw., a common species in this area which emerges during the latter part of June. Since then I have collected both sexes in the Flat River Area during 4 years in approximately the same locality of the first capture. In 1953 all specimens were males collected on sunny roads in wooded and swampy areas; this experience led me to believe that *pawnee* preferred a moist habitat instead of its known prairie habitat of the plain states.

The following year HODGES and I located the preferred habitat of *pawnee* in the Flat River Area; it was a dry prairie-like field of sparse grasses, briars, dry lichens and miscellaneous plants in a rolling area of scrub oak and swamp. Actually, the field was part of an abandoned farm on a dry sandy soil which had reverted to a prairie condition that included numerous clumps of fall witchgrass, the foodplant of *pawnee* in this locality. It was

here that we were able to collect females as well as males. In this habitat, the skipper was always collected while resting on grasses or exposed soil; no observations of *pawnee* visiting flowers were made in the Flat River area. I found it practically impossible to spot the skipper on the ground as it was always seen when flushed from the ground by sweeping the net over the vegetation as I walked cautiously through the field. Once it flushes, *pawnee* flies with great speed, low and somewhat erratic, over the field and is usually lost from view against a dull background of ground cover and rolling landscape. I had much better luck in netting *pawnee* after it flushed by dropping quickly to my knees so that its flight could be followed against the sky and be seen when it alighted again. One has to be extremely careful in stalking the skipper as it is undoubtedly one of the wariest of *Hesperia*!

It was in Newaygo County, during 1956-57, that I learned more of the habits and habitats of *H. pawnee*. My first encounter in this county was on July 18 when 2 males in fresh condition were taken in a large prairie of some 200 acres in Brooks Township (T12N, R12W, Section 2). The vegetation, xerophilous in nature, included such grasses as *Leptoloma cognatum*, *Andropogon scoparius* Michx., *A. furcatus* Muhl., *Panicum* sp. and other plants such as *Tephrosia virginiana* (L.) Pers., *Opuntia rafinesquii* Engelm., *Rosa* sp., and *Prunus* sp. This area is unique for the state in that it is very similar to the original prairie that occupied a much larger area at the time of the first settlers. Much of the original prairie was farmed but later abandoned because of the poor soils and lack of sufficient moisture. Government surveyors, when making the first cadastral survey of Brooks Township in 1838, reported several "dry prairies" with an abundance of "grasses, creeping vines and prickly pear cactus." The records of *pawnee* from these prairies are from July 10 to August 9 for the 1956-57 seasons. In 1957 I collected specimens of this skipper on 6 different days on two prairies (also T12, N, R12W, Section 35) in Brooks Twp.; most of the specimens were taken on the following flowers: *Asclepias syriaca* L., *Vicia* sp., *Opuntia rafinesquii*, *Liatrus* sp. and *Helianthus* sp. (all specimens taken in Barry Co. were on flowers of *Medicago sativa* L.). On July 12, 1957 2 males were observed on a road, damp from a heavy rain the previous day, adjacent to the prairie. Most specimens collected in the prairies were taken on cactus (peak during mid-July) and Blazing Star (August) blossoms as both plants are found growing throughout the area. Quite often I found it very easy to net the skipper while it was partly buried in the thick cluster of stamens of the cactus blossom searching for nectar. The males were more numerous on July 10-12 while the females appeared to be rather common on August 6 and 9 visiting the blossoms of Blazing Star. The skipper was easily collected on this flower; if alarmed, it would fly a short distance and alight in the grass. *Hesperia leonardus* Harris males first appeared in the prairie with *pawnee* on August 6 — also on Blazing Star. Other skippers taken earlier with *pawnee* include *Polites manataqua* Harris (common) and *P. themistocles* Latr. (few). Several species of butterflies were also observed flying with *pawnee*: *Cercyonis pegala nephele* Kby., *Speyeria idalia* Dry., *S. aphrodite* Fabr. and *Lycaena phlaeas americana*

Harris. Two interesting species taken in May in the same prairie are *Æneis chryxus strigulosus* McD. and *Hesperia metea* Scud. No observations were made of females ovipositing on grasses in the prairies.

On July 9, 1957 in the Stanton State Game Area, Moncalm County, I was fortunate enough to watch a *pawnee* female oviposit (1:15 PM, clear) on a clump of Fall Witchgrass in a dry field — typical of other *pawnee* localities. The female settled on exposed sand near the foodplant and crawled to the center of the clump and then crawled up a dead grass stem to a point about 3 inches above the ground. As she moved up into the grass, her curved abdomen was constantly probing for the best "spot" on which to oviposit; only one egg was placed on the upper side of a green blade. The skipper then crawled down and away from the center of the grass clump before taking wing. On August 6, in the Flat River area, I found a larva in the 2nd instar on a clump of Fall Witchgrass; its nest was about 3 inches above the ground and consisted of 3 grass blades held together with silken threads, with openings at each end.

In Newaygo County on July 10, 1957, I collected a gravid female and immediately placed it alive in a large paper bag for transportation to Lansing. It wasn't until July 12 at 7 PM that I was able to transfer the skipper to a plastic covered pot in which was placed a rooted clump of Fall Witchgrass. I observed the female oviposit the first egg on July 14 at 12 noon and subsequently watched her oviposit 18 additional eggs, the last egg at 5:40 PM. In the evening of July 14, the covering was removed from the pot and I counted a total of 34 eggs placed at random on green blades. The egg is white, smooth and hemispherical in form and gradually turns a dull yellowish shade with the dark brown head of the minute caterpillar clearly visible shortly before the egg hatches. No more oviposition took place and the female *pawnee* died in the morning of July 17. The first egg hatched on July 22 and the last egg hatched on July 26 (8 eggs were preserved). Each tiny larva devoured its egg shell soon after hatching and rested awhile before feeding on the grass. The young larvæ would feed on the more tender grass blades, either at the tip or the base, and rest on the upper side of the blade. After the first instar, the larvæ made nests by fastening 2 or more blades of grass together with strands of silk, leaving openings at each end. Most nests were made in the upper part of the grass clump where the blades were more numerous and apparently easier to bind. The newly hatched larva were yellowish white in color with a dark brown head and black collar or prothoracic segment. In the intermediate larval stages, the body was light green with the underside and posterior end a yellowish shade; the head and collar remained the same colors. On August 4, only 6 larvæ were left from the original 26 larvæ that hatched: 3 in the first instar and 3 in the second instar. On Sept. 16, only one larva remained on the foodplant; it was nearly full grown and light greenish brown in color with a very dark brown head and black collar. The segments were covered with tiny brown spots which gave it a brownish shade. Its nest was at the base of the clump — a vertical nest with the opening at the top. The larva would leave its nest to

forage and return with a green blade in its mandibles; the blade was then slowly eaten in the nest. On Sept. 19, the larva was killed by my little daughter as it crawled away from the foodplant — apparently searching for a place to pupate. It was unfortunate that during the period of larval development I was not home more often to properly care for the larvæ and not able to make a more detailed study of the larvæ habits and stages.

SUMMARY OF MY RECORDS FOR *H. PAWNEE*

- Allegan Co.—July 16, 1957, Allegan State Forest (T2N, R14W, Section 28).
 Barry Co.—July 8, 1953, Barry Co. State Game Area (T3N, R9W, Section 31); July 4, 1955, same area; July 16, 1957, same area.
 Kent Co.—July 16, 1954, Lamberton Lake area (T7N, R11W, Section 5).
 Montcalm Co.—June 19, 20, 24, 26, 1953 Flat River State Game Area (T9N, R7W, Sections 30-31); June 27, 29, July 2, 1954, same area; July 3, 1955, same area; July 10, 13, 1956, same area; July 9, 1957, Stanton State Game Area (T10N, R7W, Section 12).
 Newaygo Co.—July 18, 19, 1956, Brooks Twp. prairie (T12N, R12W, Section 2); July 10-12, 30, Aug. 6, 9, 1957, Brooks Twp. prairies (Sections 2 and 35).

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The first issues of a new periodical, *Stuttgarter Beiträge zur Naturkunde*, have recently been received. The series is published by the Staatliche Museum für Naturkunde in Stuttgart and will include contributions from the Museum and papers based on its collections, each published separately. The first five numbers are entomological (Diptera, Orthoptera). The publications are intended primarily for exchange, but single issues may also be purchased. For information write to: Staatliche Museum für Naturkunde, Att: Dr. K. W. Harde, Stuttgart O., Schloss Rosenstein, GERMANY.

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