

Passiflora). *Passiflora foetida* L. var. *gossypiella* (Hamilton) Mast probably occurs in the more mesic wooded habitats of this area. No severe winter weather had been experienced in this area by mid-December 1933. The nearest weather records are for Corpus Christi, Nueces Co. (88 km to the NNE). Ironically, the coldest temperature for late 1933 was 43°F on 19 December. *Dryadula phaetusa* is known from the temperate and tropical regions of southern Mexico but extends up the coasts an unknown distance toward the United States (Hoffman, 1940, An. Inst. Biol. Mex. 11: 639-739).

The third report involves the occurrence, which may or may not be associated with these hurricanes, of another tropical butterfly in central Texas. *Anartia jatrophae luteipicta* Fruhstorfer (Nymphalidae) was reported near Sutherland Springs, Wilson Co. in late October 1934 (Parks, 1935, Bull. Brooklyn Ent. Soc. 30: 83). The existence of newly emerged specimens among those collected indicates that a breeding colony had been established. Doubt about the association between the occurrence of this species and these hurricanes results from the observation of this butterfly west of San Antonio on 9 November 1931 by A. J. Boyles. However, Parks (op. cit.) states that "a very careful search has been made [since 1931] without success [until 1934]." Therefore, occurrence of *A. j. luteipicta* in central Texas is believed to be the result of a colony established in late 1933 (or early 1934) after northward dispersal associated with the hurricanes of August and September 1933. Normally, *A. j. luteipicta* would not be expected to survive the winter cold of central Texas. However, the winter of 1933-1934 was exceptionally warm; the coldest temperature recorded at San Antonio (45 km NWW of Sutherland Springs) was 29°F. A population was probably established in late 1933 with successful overwintering and survival until the following winter. Survival through the 1934-1935 winter is unlikely (low temperature 18°F). Survival between the 1931 sighting and the putative 1933 establishment is unlikely since colder weather occurred in both 1931-1932 (low temperature 24°F on 13 March) and 1932-1933 (low temperature 12°F).

In September 1967, Hurricane Beulah, after striking land at the mouth of the Rio Grande River near Brownsville, Cameron Co., Texas, brought extremely heavy rains to southern Texas. As a result of this storm, a fairly large number of lepidoptera species previously unknown in Texas (and the United States) have been reported in southern Texas (Doyle, 1970, J. Lepid. Soc. 24: 212; Heitzman, 1970, Mid-Cont. Lepid. Ser. 12: 10-11; Heitzman & Heitzman, 1972, J. Res. Lepid. 10: 284-286; Kendall, 1970, J. Lepid. Soc. 24: 59-61, 266; Kendall, 1972, *Ibid.* 26: 49-56). At least some of these species have established permanent populations in this area (see later collections reported by Tilden, 1974, J. Lepid. Soc. 28: 22-25).

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COLONY OF *PIERIS NAPI OLERACEA* (PIERIDAE) IN INDIANA

According to Blatchley (1891, Ann. Rep. Indiana State Geol. 17: 365-408), *Pieris napi oleracea*—*aestiva* Harris was collected by Mr. A. B. Ulrey in Kosciusko Co., Indiana in the summer of 1890. When collecting extensively in Kosciusko Co. and other northeastern counties in the mid-1930's and from 1964-1970, I failed to locate *P. napi*. On 12 July 1971, John Campbell, a high school student in my collecting party, collected one in the Pigon River State Fish and Game Area, Mongo, LaGrange Co., Indiana. My identification of this specimen as *Pieris napi oleracea* Harris was confirmed by Mr. Harry K. Clench of the Carnegie Museum. John and I returned to Mongo on 24 August 1971 and collected 23 more specimens. Since that time *P. n. oleracea* has been found annually in the Mongo tamarack bog, the largest bog of its type in Indiana and only 7 miles from the Michigan border.



Figs. 1-2. 1, left, habitat showing *Barbarea* sp., one of favorite larval foodplants of *Pieris napi oleracea*, Pigeon River State Fish and Game Area, Mongo, Indiana; 2, right, close up of *P. n. oleracea*, second summer brood (photographs by David Eiler).

Recently this species has suffered a great restriction in habitat, partly because of competition with *Pieris rapae* and partly because of habitat destruction by man. In the north central and eastern states *P. napi* is found only in the Transition and Canadian zones, not extending south of the Catskill Mountains in New York (Klots, 1951, A field guide to the butterflies, Houghton Mifflin, Boston, 349 p.). Old records are unreliable since *P. napi* was often confused with *Pieris virginensis*, a single brooded species of more southern (Transition Zone) distribution. *Pieris rapae*, a species accidentally introduced from Europe into Quebec about 1860, has spread rapidly throughout most of North America (Howe, 1975, The butterflies of North America, Doubleday & Co., Inc., 633 p.). *Pieris rapae* continues to invade *P. napi* territory. *Pieris n. oleracea* formerly occurred in northern Illinois, but it is now apparently extinct in the state (Irwin & Downey, 1973, Illinois Nat. Hist. Survey, Biological Notes 81: 1-60). Thus, additional notes and records of this species in Indiana should be of interest to entomologists.

Not only is *P. napi* geographically variable, but the generations of *P. n. oleracea* vary from one brood to another. On 19 May 1975 I collected the spring form in the Mongo tamarack bog. It had the veins prominently marked. On 1 July 1975 I collected 18 of the summer form (second brood) and observed dozens more flying in the bog. Members of this large colony flew up and down the bog, concentrating on a very limited patch of water cress (*Barbarea*) (Cruciferae) that nearly choked the narrow stream (Fig. 1). Jewelweed (*Impatiens*), shrubby cinquefoil (*Dasiphora fruticosa*), the beautiful but dangerous poison sumac (*Rhus vernix*), narrow-leaved and broad-leaved cattail (*Typha*), and other plants were growing in this area among the scattered tamarack trees (*Larix laricina*). *Euphydryas phaeton* was flying nearby, not far away from its larval foodplant, turtlehead (*Chelone glabra*). Most of the July *P. n. oleracea* were plain white, except for the blackish basal dustings and traces of black on the apical border; a few had washes of yellow on the underside of the hind wing. A specimen collected on 20 August 1974 had a faint dark spot in cell M_3 of the front wing, a rare variety. In a letter to me, Mr. Clench describes the spring

brood as having sharp, almost black, thin lines on the veins of the hind wing underside, whereas the summer brood has no black striping on the veins (Fig. 2). In both broods the underside ground color on the hind wing and apex of the front wing is yellowish. Of the 18 collected on 1 July 1975 only three were females. The females are more seclusive and thus better protected for reproduction. Occasionally a few *P. n. oleracea* left the bog, flying into an adjoining open field. A few *P. rapae* likewise flew into the bog, mingling with *P. n. oleracea*.

I found two separate colonies of *P. n. oleracea* in the bog, one at the eastern end of the Pigeon River camp grounds and the other at the western end. The two colonies were about one quarter of a mile apart. Collecting in the bog can be somewhat dangerous, not only because of the ever-present poison sumac, but because of the sponge-like soil, which makes the collector feel as if he were walking on a spring coil mattress. When I occasionally lost my footing, I simply fell forward and the vegetation easily supported my weight. Surprisingly, by 10 July 1975, I found only three *P. n. oleracea* in the bog, but by 31 July their numbers had greatly increased. Again I collected 18 and saw dozens more. The highlight of the day came when I found a pair *in copula*. It was 1235 EST and the temperature was 90°F. The pair was settled low in the grass and did not fly, even when I placed the net over them. When I touched the male through the net, it lifted the female upward. In the *Pieridae* I have found that only the males are the flight partners. After making these observations, as a conservation measure, I released the mating pair, which remained *in copula*.

On 18 August 1975, Dr. David L. Eiler and I collected in the two colonies at Mongo. I netted 25 *P. n. oleracea* but released six of them. Dr. Eiler caught seven, the first he had ever seen in their natural habitat. Dozens more were seen flying and feeding in the bog, and a few in the open field. In the bog itself, the *P. n. oleracea* far outnumbered the *P. rapae*.

These data show that there were at least two broods of *P. n. oleracea* in the Mongo bog in 1975 and that the species seems to be well established in LaGrange Co., Indiana.

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AN ECOLOGICAL NOTE ON *POLITES SABULETI SABULETI* AT THE NORTHERN LIMIT OF ITS RANGE (HESPERIIDAE)¹

The Sabuleti Skipper, *Polites sabuleti sabuleti* (Boisduval), is reported here for the first time as occurring in southern Canada, at Penticton in the Province of British Columbia. This locality represents the most northerly distribution of this skipper, the known geographic range of which extends from Washington State to Baja California, the Great Basin east to Colorado, and through western Arizona south into Mexico (MacNeill 1975, Family HesperIIDae, p. 423-578 in Howe, ed., The butterflies of North America, Doubleday & Co., Inc., New York). Its presence as an abundant and apparently established species at Penticton was discovered only recently. Previous faunal studies in southwestern Canada have omitted any mention of this skipper (Gregory 1975, Checklist of the butterflies and skippers of Canada, Lyman Ent. Mus. & Res. Lab. Mem. 3, 44 p.). Its range, therefore, seems to have been extended into southern British Columbia at some time during the quite recent past.

Field observations indicate that this skipper is bivoltine at Penticton. The flight period of the adults extends from late May to early July and occurs again during

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