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# PLUSIINAE (NOCTUIDAE) AT FLOWERS

Literature on Lepidoptera rarely elaborate on the actual methods employed in capturing moths, especially Plusiinae. Most collecting for noctuids involves trapping, utilizing ultraviolet or mercury vapor lights, or bait; however, my experiences with these methods have resulted in relatively few captures of plusiines over my years of collecting in Michigan. I first became acquainted with some of the northern Plusiinae in 1952, while collecting moths at Joe-Pye weed flowers, *Eupatorium* sp., at dusk (with the aid of a flashlight and cyanide jar) at Copper Harbor, Keweenaw County, Michigan. According to the late Sherman Moore (personal communication), many of the Plusiinae taken at that time were either new county records or only the second record for the state. It was this experience that revealed to me that collecting at flowers could be very productive for Plusiinae; but, it wasn't until the late 1960's that I again tried this method of collecting these interesting moths in northern Michigan. The work of Dr. Thomas D. Eichlin also inspired me to make a special effort to collect plusiines and attempt to learn more of their habits and ecology. From 1969 to 1977 I collected these elusive moths at flowers over a total of 30 evenings in four widely separated northern Michigan counties: Chippewa, Keweenaw, Otsego, Schoolcraft.

My collecting experiences extended from 17 July to 6 August, with most of the collecting occurring during the last week of July. I found the most productive period each evening to extend from approximately 2045 to 2215 EDST, although some loopers appeared at 2030 and probably continued to fly later than the time I spent there. Plusiinae activity at flowers began to decrease after 2230.

In each of the above counties, I located a good stand of fireweed, *Epilobium angustifolium* L., in close proximity to sphagnum-heath bogs or in open pine and aspen forests. In all locations there was the presence of spruce, either *Picea glauca* (Moench) Voss or *P. mariana* (Mill.); fir, *Abies balsamea* (L.) Mill.; *Vaccinum* sp.; willow, *Salix* sp. and miscellaneous shrubs, plus herbaceous plants, all possible foodplants for many of recorded species (Table 1). Most of the fireweed patches were along a trail or sandy road, affording easy access for moving about on foot. I used a head-mounted flashlight, an aerial nylon net with a three foot handle and at least three large-mouth cyanide jars. Once I had determined where to stand and watch, the cyanide jars were placed on the ground within easy reach. I had no difficulty seeing the buzzing moth as it darted from flower to flower at dusk, but needed the flashlight when it got too dark. As each moth was netted, I quickly snapped the net to the ground and inserted a cyanide jar up into the net, sometimes using the flashlight to locate the struggling moth in the net. Unless one's actions were swift and accurate, the moth was apt to be 'scalped' on the thorax and rubbed on the wings! I discovered it was best to remain motionless until the first moth was spotted, as plusiine moths are extremely wary and will dart off at the slightest noise or movement. Mosquitoes constantly buzzing around my head and eyes made standing still even more difficult! As the evening grew darker, I had problems judging distance, and consequently, missed several moths that looked like easy catches. I collected under all kinds of weather and temperature conditions, but had the most success under cloudy skies with temperatures at least 60°F. A total of 43 Plusiinae specimens were collected in one evening during a light rain, which is similar to an observation reported by Eichlin and Cunningham (1978, Tech. Bull. No. 1567, USDA). Some of the other flower species frequented by Plusiinae at these locations included: *Apocynum androsaemifolium* L., *Asclepias syriaca* L., *Centaurea maculosa* Lam., *Cirsium* sp., *Diervilla Lonicera* Mill., *Eupatorium* sp. Usually, some of these flowers were found close to the fireweed patches; the taller fireweed plants in larger numbers made them ideal nectaring targets for resident Plusiinae.

The highest number of target species taken on any night was 10, with *Chrysanympha formosa* (Grt.) and *Syngrapha rectangula* (Kirby) being the two most common species found at each location. Four of the species collected were new state records: *S. altera* (Otto.), *viridisigma* (Grt.), *abstrusa* and *cryptica*. The latter two species were recently described by Eichlin and Cunningham (1978, ibid.), while *viridisigma* was elevated from the synonymy of *selecta* (Wlk.), by the latter authors. Most of the previous Michigan

TABLE 1. Results of collecting Plusiinae at flowers in northern Michigan, from 17 July to 6 August: a 6-year period extending from 1969 to 1977.

| Species and (number collected) | | Hosts** | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | 1 | 2 | 3 | 4 | 5 | 6 | 7 |
| *Plusia balluca* (Geyer) | (6) | | X | | X | X | | |
| *Allagrapha aeroides* (Grote) | (28) | | | X | X | | X | |
| *Pseudeva purpurigera* (Walker) | (2) | | | X | X | | | |
| *Chrysanympha formosa* (Grote) | (50) | | | | X | | X | |
| *Eosphoropteryx thyatyroides* (Guenée) | (2) | | | | X | | | |
| *Autographa precationis* (Guenée) | (9) | | | | X | | | |
| *A. bimaculata* (Stephens) | (34) | X | | X | X | X | | |
| *A. pseudogamma* (Grote) | (2) | | | | X | | | |
| *A. mappa* (Grote and Robinson) | (3) | | | | | | X | |
| *A. ampla* (Walker) | (6) | | | X | X | | X | |
| **Syngrapha altera* (Ottolengui) | (1) | | | | X | | | |
| **S. octoscripta* (Grote) | (20) | | | X | X | | | |
| **S. epigaea* (Grote) | (25) | | | | X | | | |
| **S. selecta* (Walker) | (1) | | | | X | | | |
| **S. viridisigma* (Grote) | (32) | X | | X | X | | | X |
| **S. alias* (Ottolengui) | (37) | X | | X | X | | | X |
| **S. abstrusa* Eichlin and Cunningham | (2) | | | | X | | | |
| **S. cryptica* Eichlin and Cunningham | (6) | | | | X | | | |
| *S. rectangula* (Kirby) | (56) | | | | X | | X | |
| *Chrysaspidia putnami* (Grote) | (7) | | | | X | | | |
| (20 species) Total specimens collected 329 | | | | | | | | |

* Specimens determined by T. D. Eichlin.
** 1. *Apocynum androsaemifolium*, 2. *Asclepias syriaca*, 3. *Centaurea maculosa*, 4. *Epilobium angustifolium*, 5. *Cirsium* sp., 6. *Diervilla Lonicera*, 7. *Eupatorium* sp.

records of *selecta*, as cited by Moore (1955, Misc. Pub. Mus. Zool., U. of Mich., No. 88), refer to *viridisigma*. A total of 20 species of Plusiinae were collected during this period at flowers, largely fireweed. As expected, the moths collected in this region have ranges which have been categorized generally as Nearctic Boreal.

Fireweed flowers appear to be the most attractive to many Plusiinae in northern Michigan. I believe collecting at these and other flowers, plus collecting both earlier and later in the season, could result in the capture of additional plusiine species and contribute to the distributional knowledge of these handsome and fascinating moths. It is hoped that these observations and experiences will stimulate other collectors to consider collecting Plusiinae at flowers.

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