

COLLECTING ITHOMIIDAE WITH HELIOTROPE

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Collectors in the tropics depend upon natural and artificial baits to collect Lepidoptera and have developed a wide variety of specialized techniques for this. Yet most of them find it difficult or impossible to obtain adequate samples of Ithomiidae by conventional methods. Confined to the Neotropics, ithomiids are weak-flying butterflies that are easily netted but not readily seen; random collecting with a net alone yields incomplete samples. Ithomiids rarely visit open places or flowers and are not attracted to the usual baits nor even to damp ground. They prefer dark, damp areas in the jungle near water-courses and tend to fly in early morning and towards evening, being relatively inactive at mid-day. Heliotrope (*Heliotropum* sp.), properly used, is an effective bait for ithomiids; but its use has been a secret of a few professional collectors.

I learned of the value of heliotrope as a collecting tool while at El Pao, Estado Bolivar, Venezuela in 1965. Albert Gadou, an experienced collector and my host at El Pao, demonstrated its use on a wooded forest trail near his home. During a week's stay at El Pao many ithomiids were captured at heliotrope along with *Lycorea ceres atergatis* Dlbdy., Hew. & Westw. (Danaiidae) and a dozen or so *Sphecosoma* sp. (Ctenuchidae); these insects were otherwise quite scarce in the area. I returned to Venezuela in 1966 and gathered additional information on the use of heliotrope. *Heliotropum indicus* Linnaeus was collected on the sandy banks of the Rio Caroni where it grows in profusion as a small shrub to a height of 15 inches. The deep purple flowers are clustered on a stalk about six inches long which curls around itself; this appearance has provided the Spanish name for the plant, *rabo de alacran*, literally "scorpion's tail".

Neither the flowers nor the growing heliotrope plants attract ithomiines and it is only after proper preparation that the plant becomes effective. It should be carefully dug up by the roots, tied into small bundles and allowed to dry; after two or three days these bunches are hung up by the roots with the leaves dangling about five feet off the ground. Shaded places along trails or watercourses are best. The bait becomes more and more effective with additional drying (the collector shouldn't be discouraged if he doesn't get immediate results) and will remain so for a long period of time. I saw butterflies attracted to a plant that had been suspended for three or four months.

The ithomiids usually settle among the lowest hanging leaves of heliotrope and rest with folded wings. They may or may not extend the proboscis and not infrequently will slowly pump their wings. Even though they settle among the dried leaves rather than the roots, it is quite important that the roots be present, as bundles without roots attract relatively few individuals. Apparently more males than females are taken at heliotrope, but the ratio is not greater than 2 : 1. A high ratio of males of other families is expected at conventional baits. For instance, *Papilio* taken at damp sand are nearly 100% males.

A small bundle of heliotrope, properly prepared and in a favorable location may bring in several hundred butterflies per day. My companion, Harold Skinner of Caracas, and I collected perhaps 300 individuals during one productive day along the Rio Clarito in February 1966. More than 70 individuals were found at daybreak on two bundles that had hung here overnight.

My collecting in Bolivar was at the height of the dry season (February and March) when the poorest collecting is to be expected. A total of 125 males and 79 females were taken at the bait, representing 21 species and 14 genera of Ithomiidae. These include 11 males and two females of *Hypothyris vallina colophonina* d'Almeida which was previously known from only three specimens; one male, representing the easternmost record, of *Mechanitis polymnia polymnia* (L.); and a series of *Mechanitis isthmia bolivarensis* Fox, which formed a part of the type series of this subspecies. Heliotrope was also used successfully at Barinas in the Venezuelan Andes during the 1966 collecting trip.

A single individual of *Haetera piera* (L.) (Satyridae) was observed on one bunch of the heliotrope that had fallen to the ground. The heliotrope had been hung out on the trail at the same time that fruit bait was being spread along it and it is likely that this one bundle of heliotrope contained traces of fruit. *Haetera piera* was frequently attracted to fruit baits on the ground.

The attraction of ithomiids to heliotrope cannot be readily explained; as they have no association with the growing plant, and dried heliotrope with roots would not normally be expected to be hanging in the forest. The larval food plants of the ithomiids are exclusively Solanaceae. It is unlikely that the alkaloids or essential oils in heliotrope are similar enough to those in Solanaceae to account for the attraction. The native indians of Venezuela and Brazil know heliotrope as *borejan* (variously spelled *borrajan*, *borojan* and *borrojan*) and it is likely that heliotrope is gathered, dried and used by them in some manner. This could account for the discovery of its attractive properties by collectors.

I am indebted to Harold W. Skinner, in whose company the two

trips to the Venezuelan frontier were made; to Albert Gadou, who demonstrated the use of heliotrope to me; and to Dr. Richard M. Fox of the Carnegie Museum for his encouragement and assistance in the preparation of this manuscript.

BOOK REVIEW

GUIDE TO THE GEOMETRIDAE OF CANADA (LEPIDOPTERA). 1. SUBFAMILY STERRHINAE. By W. C. McGuffin. Mem. Ent. Soc. Canada, 50, 1967. 67 pp., 68 color photographs and 44 black and white figures.

This manual is the first in a proposed series designed to "aid in the identification of the Canadian species" of Geometridae, immatures as well as adults. Keys, descriptions, and biological data are presented at the family, subfamily, and generic level. The author recognizes seven genera and 24 species of Sterrhinae as Canadian. He gives brief descriptions of adult maculation and genitalia, and, when known, of eggs, larvae, and pupae. Much of the biological information is the result of his own research. Also included are distribution data for Canada, earliest and latest seasonal records for adult capture, and larval host plants if known.

Illustrations include distribution maps for most of the species; and drawings of such structures as male and female genitalia, hind legs, wing venation, egg, larval head and body chaetotaxy, and pupae. The most outstanding feature of the work, I feel, is the color photographs of the adults. Except for a few "hot" spots on some of the white species, the photographs give excellent representations of the generally faint markings in this group of moths. Many Sterrhinae are polymorphic, and McGuffin illustrates more than one morph in several species.

The work is not a revision, and so does not include reevaluation of the species treated, nor lists of synonymy and exhaustive descriptions. Two errors of a systematic nature bear correction here: the type species of *Scopula* Schrank is *ornata* Scopoli, not *adornata* (p. 11); and *Scopula quaesitata* (Hulst) (p. 20) is an error in determination (held over from McDunnough's 1938 *Check List of the Lepidoptera of Canada and the United States of America*, Part 1). The correct name for the moth described in McGuffin's work as *quaesitata* Hulst is *luteolata* Hulst (1880, Bull. Brooklyn Ent. Soc. 3: 42); the type of *quaesitata* is definitely not a *Scopula*.

The explanations of figures are unfortunately placed all together in a section in front of the 21 pages of illustrations. The reader is bothered in having to refer back to pages 32-34 to learn what species the figures represent. Also in the explanation section, named morphs are referred to as trinomens giving the false impression that they represent subspecies, e.g. *Scopula enucleata mensurata* (Walker).

There will be changes in nomenclature and classification of Canadian Sterrhinae in the future, and I feel some of the treatment of species in this work could have been less skimpy; but by and large the additions to biological information and the copious illustrations make this manual a helpful aid in identifying Canadian species of this difficult subfamily.—CHARLES V. COVELL, JR., *University of Louisville, Kentucky*.