

above the ground. When sunlight touched resting sites, individuals moved around the trunk to shade. Observing and collecting was facilitated in these moths as they rested on the same side of all trees at a given time. Forewing markings, showing the considerable variation common in many *Catocala* species, blended well with the grey bark of the oaks.

It would be difficult to estimate the number of underwing moths in this aggregation, or to know how extensive the population was. But certainly many hundreds of specimens were congregated within the park that afternoon. It is likely this phenomenon occurred in this area in other years as well, but this was my first observation of such a remarkable event. While *C. palaeogama* was the predominate species represented, single specimens of *C. lacrymosa* Guenée and *C. amica* Hübner were collected. A large series of *C. palaeogama* was taken, and a number of these, deposited in the collection of Mr. Bryant Mather, Clinton, Mississippi, were subsequently positively identified by Mr. Eric Quinter, American Museum of Natural History. Specimens of the same catch were also deposited in the collections of Dr. Clifford D. Ferris (Laramie, Wyoming), Mr. Patrick J. Conway (Downers Grove, Illinois), Mr. Mogens C. Nielsen (Lansing, Michigan), and the Illinois Natural History Survey (Urbana, Illinois).

It is interesting to note that a collecting trip during the following weekend to the same locality yielded no additional specimens of *C. palaeogama* after the superabundance of the previous week. The area which had been alive with activity at that time was now dead, so far as that species was concerned. However, specimens of other *Catocala* species were collected during the second visit.

IRWIN LEEUW, 1219 Crystal Lake Road, Cary, Illinois 60013.

---

*Journal of the Lepidopterists' Society*  
33(4), 1979, 267-268

#### NOTES ON THE BIOLOGY OF *BATTUS PHILENOR* (PAPILIONIDAE) IN CENTRE COUNTY, PENNSYLVANIA

Centre County occupies parts of two geographic provinces. The northwestern third lies in the Allegheny Plateau Province, while the southeastern two thirds belongs to the Ridge and Valley Province (Westerfeld, 1959, Pa. Agr. Exp. Sta. Bull. 647: 6-17). The configuration of land surface in the latter is due to the folding of the rocks into parallel mountain chains. These sandstone ridges are oriented from southwest to northeast and average from 550-730 m in elevation. Separated by these ridges are limestone valleys averaging about 310 m above sea level. *Battus philenor* (L.) is largely confined to the stream trenches of these valleys. One such area is along Spring Creek adjacent to the Benner Springs Fish Hatchery about 8.5 km northeast of State College. A small but rather stable population has existed here since at least 1974.

*B. philenor* is bivoltine with flight periods from 13 May to 16 June and 6 July to 26 August. Fresh adults occasionally observed in September and early October represent a partial third brood. However, these individuals, mostly males, are probably lost to the population since it is doubtful that their progeny would have sufficient time to reach the pupal (overwintering) stage prior to the onset of cold weather.

Males are frequently observed visiting mud puddles, or flying rapidly along the creek and woodland trails and in adjacent meadows. Females are more secretive and are best sought along woodland trails or in open woods. Both sexes prefer pink to purplish flowers such as *Hesperis matronalis* L., *Dipsacus sylvestris* Huds., and various thistles (*Cirsium* spp.). Associated butterflies of special note include *Asterocampa clyton* (Boisduval and LeConte), *Calephelis borealis* (Grote and Robinson), and *Erynnis lucilius* (Scudder and Burgess).

One of the reported foodplants of *B. philenor*, *Asarum canadense* L. (Howe, 1975, The Butterflies of North America: 390), is locally abundant on moist, rocky hillsides along Spring Creek. It was assumed that the larvae were utilizing this resource, although none could be located. A similar observation is made by Harris (1972, Butterflies of Georgia: 158) for Bibb County where larvae used only cultivated *Aristolochia* even though *Asarum* was present. On 2 June 1978, a female was confined with potted *A. canadense*. She died after 10 days without oviposition. Internal examination revealed that she was mated and had numerous mature ova. We then began a more intensive search for the specific host.

On 4 August at about 1700 h, a female *B. philenor* was observed ovipositing on *Aristolochia serpentaria* L. This is the only *Aristolochia* species in the county and is rare and confined to the Ridge and Valley Province (Westerfeld, 1961, *Castanea* 26: 34). Additional small plants (about 30 cm in height) were subsequently located growing singly or in small groups on the rocky, open-wooded hillsides adjacent to the creek. Numerous ova and first to fourth instar larvae were found on these plants. Most ova were laid on the petioles and/or margins of the upper leaves with up to four individuals per plant. Plants growing in moist, brushy, shaded areas were larger and more luxuriant; however, ova and/or larvae were present in significantly lower numbers. A female captured on 8 August and confined with potted *A. serpentaria* oviposited within hours of confinement. The resulting ova plus 11 field-collected larvae were reared to pupa using potted plants. Enormous quantities of these plants were required to complete larval development and several field trips were needed to collect additional food. On one of these trips several late-instar larvae were observed wandering apparently in search of food. Ehle (1951, *Lepid. News* 5: 103) noted for Lancaster Co., Pennsylvania that the required food (*A. serpentaria*) far exceeded the quantity available at the original site. The last instar larvae consumed the leaves, seed capsules, and stems to within about 5 cm above ground level. Several first instar larvae were transferred to *A. canadense* immediately after emergence and all died without eating. In addition, last instar larvae temporarily confined with this species refused to eat. Saunders (1932, *Butterflies of the Alleghany State Park*: 234) remarked that he was able to get *B. philenor* larvae to eat only *Aristolochia* and not *Asarum* except for one larva which "ate a little Wild Ginger, but did not seem to like it." Of the 25 larvae reared to pupa, 60% diapaused and were refrigerated.

Conclusions which may be drawn from these observations are as follows: The use of *Asarum canadense* as a larval food source is to be seriously questioned if not completely discounted. At the Spring Creek site, the amount, distribution, and availability of the host plant, *Aristolochia serpentaria*, appears to be a significant factor in regulating population size. Selection pressure toward producing adult females and larvae with maximum search capabilities would be necessary to maintain a stable population in the absence of immigration. Larval parasitism (or predation) was not investigated, however, all of the field collected larvae (third and fourth instars) were successfully reared to pupae.

FRANK D. FEE, 308 S. Corl St., State College, Pennsylvania 16801 and RICHARD BOSCOE, 150 Ridge Pike, Apt. 201, Lafayette Hill, Pennsylvania 19444.

---

*Journal of the Lepidopterists' Society*  
33(4), 1979, 268-269

## BOOK REVIEW

BUTTERFLIES OF SOUTH AUSTRALIA, by Robert H. Fisher, 1978. One of the series "Handbooks of the Flora and Fauna of South Australia," issued by the Handbooks Committee for the South Australian Government, 8vo, soft cover, [iii] + 272 pp., 83 text figures, 16 color plates. Price \$9.50 Australian (approximately \$11.00 U.S.).