

Scriber (1975, doctoral dissertation, Cornell University) reports that, under laboratory conditions, *T. integerrima* supports the growth of *P. polyxenes* as well as (or better than) most of its commoner foodplants. Moreover, females confined over the plant oviposit freely on it (M. Berenbaum and M. Rausher, pers. obs.). The dearth of records for *P. polyxenes* on yellow pimpernel in the wild is therefore intriguing. Habitat unsuitability might be one explanation. *P. polyxenes* does not normally fly in deep woods (Tyler, 1975, *op. cit.*), where *T. integerrima* is found, and thus is not likely to encounter the plant. In this particular instance, the plants were growing along a road cut through thick woods approximately 0.4 km from an open field supporting a luxuriant growth of *Conium maculatum*, a well-documented host plant for *P. polyxenes* (Tietz, 1972, *op. cit.*). Road cuts are known to act as flyways for *P. polyxenes* (Heitzman, 1973, *op. cit.*) and, in this case, might have directed an ovipositing female out of open field habitat into deep woods, where she might otherwise not fly.

Especially interesting with respect to these findings are two other reports of *P. polyxenes* on plants in heavily wooded areas. Scriber and Finke (1978, *op. cit.*) observed an oviposition on *Cryptotaenia canadensis* growing in a narrow wooded strip in an otherwise open residential area, and Rehr (1973, *J. Lep. Soc.* 27: 237-238) reported the occurrence of *P. polyxenes* larvae on another deepwoods plant, *Thaspium barbinode* (Michx.), which was growing along a road cut on a dry bank. *T. barbinode*, like *Taenidia integerrima*, is a purported host of the newly described *P. joanae* (Tyler, 1973, *op. cit.*). In view of the ability of *P. polyxenes* to exploit both *P. joanae* hostplants and habitat, and given the enormous variability in both larval and adult coloration within the species (M. Berenbaum, W. Blau, L. Contardo and P. P. Feeny, pers. obs.), it might well be premature to assign species status to *P. joanae* without first examining the extent to which habitat has contributed to reproductive isolation in areas where *P. joanae* is reported to occur.

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MID-VALVAL FLEXION IN THE LEFT VALVA OF ASYMMETRIC GENITALIA OF *ERYNNIS* (HESPERIIDAE)

The left and right sides of *Erynnis* (*Erynnides*) Burns genitalia often differ grossly in shape (Burns, 1964, *Univ. Calif. Pub. Entomol.* 34). On a hilltop at Red Rocks, Jefferson Co., Colorado on 21 June 1973, I noticed that the male of a copulating pair of *E. pacuvius* (Lintner) seemed to squeeze the female's abdomen repeatedly with his valvae for several minutes before copulation ended. A copulating pair of *E. persius* (Scudder) was then found, and was observed more closely. Mating lasted 38 minutes, and during the last 25 min. at least, the male scraped his left valva

over her convex 7th sternum, by actually bending the valva in the *middle* such that the long ventral process and short middle process bent medially, but the base of the valva and the right valva were relatively stationary.

On a hilltop at Jarre Canyon, Douglas Co., Colorado on 26 May 1978, I observed a copulating pair of *E. persius* in which the male scraped his left valva over the female sternum 7 for 30 min. from capture until both were killed and microscopically examined while still joined. This pair was examined very closely while in copula. The male and female abdomens were inclined upward, forming an angle of about 150° ventrally to each other. The male's uncus fit over the posterior rim of the female lamella, and beneath the papilla analis. The lower process of the right valva pressed the membrane above the female sternum 7. The upper process of the right valva was not visible but probably hooked over the right edge of the lamella. The upper process of the left valva hooked dorsally over the right edge of the female sternum 7. The middle and lower process, however, were flexed medially about 30° over the ventral surface of sternum 7, and were flexed medially another 30° during each flexion at intervals of about 1 per sec. The female dorsal belt of "scent scales" was exposed to view during copulation; the ventral hair pencils were also exposed (but not expanded), and approximately 2 mm of sternum 7 were exposed to view. With each flexion of the middle and lower processes of the left valva, scraping across the female sternum 7 occurred, and the lower process of the right valva pressed the female membrane above sternum 7 inward, while the exposed 2 mm length of sternum 7 shrank to 1.5 mm as the male's abdomen telescoped slightly. The male abdomen exhibited squeezing movements with the valva about 1 per sec. but not peristaltic movements. When dissected, the female was found to have a full-sized spermatophore with the usual complement of transparent granules, milky bulb, and partly formed neck.

Female *Erynnis* genitalia are somewhat unusual in that sternum 7 is nearly as heavily sclerotized as the lamella. The lamella is partly telescoped under sternum 7 during copulation, and the male *persius* scrapes sternum 7 with his left valva over the bulge on the right side of the asymmetric female lamella. It is noteworthy that genitalic asymmetry is developed strongly only in subgenus *Erynnides* and not strongly in subgenus *Erynnis* Schrank (Burns 1964, op cit). Most members of subgenus *Erynnis* probably do not exhibit valval scraping because Burns states that sternum 7 of females is densely scaled in all species except *icelus* (Scudder & Burgess). Asymmetry of genitalia therefore seems associated with asymmetric valval flexion during copulation. The function of valval scraping is unknown. The hair pencils were intact after mating of these females and are intact in most museum specimens which have mated. These observations are reported here because mid-valval flexion is, to my knowledge, completely unknown in Lepidoptera, and hopefully this note will stimulate others to help elucidate the function of this strange behavior.

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EDITOR'S NOTE:

While carrying out numerous intra- and inter-specific hand-pairings of *Limenitis* during the past 12 years, I have often observed the process of copulation in this genus. During mating, it is usual for the males to exhibit mid-valval flexion of the type described above by Dr. Scott. Such observations can be made using a stereomicroscope without disturbing the mating pair. Both valvae can be seen to flex inward, perhaps serving to stimulate the female by raking the distal teeth (or hooks) across her lateral abdominal sternae. The valvae of *Limenitis* are symmetrical, except for the placement and number of teeth on the distal tips of the claspers (see Platt, Frearson, & Graves 1970, *Canad. Entomol.* 102: 513-533).

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