

Remarks. The number of named subspecies of *Chlorostrymon simaethis* now is four. When specimens are viewed from above, it is difficult to make a positive identification of any subspecies. All are essentially identical, with the possible exception of size, which may or may not be associated with different localities. Subspecific differences from the nominate *simaethis* are located on the underside of the wings, and concern primarily the differences in the discal lines. Typical *simaethis* has the post-discal of the forewing bending inward, and that of the hindwing uneven throughout its entire length. The subspecies *sarita* Skinner (1895, Ent. News, 6: 112, Philadelphia) has the postdiscal of the forewing somewhat straighter, and that of the hindwing curved slightly basad with an obvious "bulge" outward at about the midpoint of the wing. The subspecies *jago* Comstock & Huntington (1943, Lycaenidae of the Antilles, Ann. New York Acad. Sci. p. 49-130) appears to be a minor variation of typical *simaethis*; it is considerably larger and the narrow, uneven maculation of the underside is thus magnified. *C. simaethis rosario* follows this varietal pattern on the underside; the discal line is very straight, very narrow without any 'bulge' and the marginal grey band is rather narrow. As a result, the wing has a greater expanse of green color between the discal band and the marginal band.

The Allyn Museum collection contains series of *simaethis* and its subspecies from various tropical localities in the hemisphere. Careful scrutiny of the undersides of any series from a single locality reveals an extraordinarily variable insect. The subspecies *sarita*, found throughout Central and South America from Mexico to Argentina, is the most variable of all. This variability is found within series from any particular locality, and is not correlated with geography.

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OVOPOSITION BEHAVIOR OF REARED *ANTHERAEA POLYPHEMUS* (SATURNIIDAE)

To improve efficiency in the collection of eggs, we studied oviposition behavior in the giant silkworm moth species we rear. We reported information for *Callosamia promethea* (Drury) (Miller & Cooper 1977, J. Lepid. Soc. 31: 282-283) and *Hyalophora gloveri gloveri* (Strecker) (Miller 1978, J. Lepid. Soc. 32: 233-234). Taschenberg & Roelofs (1970, Ann. Entomol. Soc. Amer. 63: 107-111) have reported information for *Hyalophora cecropia* (Linnaeus). This paper reports oviposition data for a colony of *Antheraea polyphemus* (Cramer) maintained on various maples (*Acer* spp.) in Frederick Co., Maryland.

The adults moths in the colony typically emerged in the late afternoon or early evening (1600-1900 hours). If male moths were in the colony, they were placed with the females in indoor mating cages; if males were not available, we placed the females in outdoor mating cages (Miller & Cooper 1976, J. Lepid. Soc. 30: 95-104) to attract wild males for copulation. Only females that mated on the night of or following emergence were included in this study. Mating pairs were observed at frequent intervals

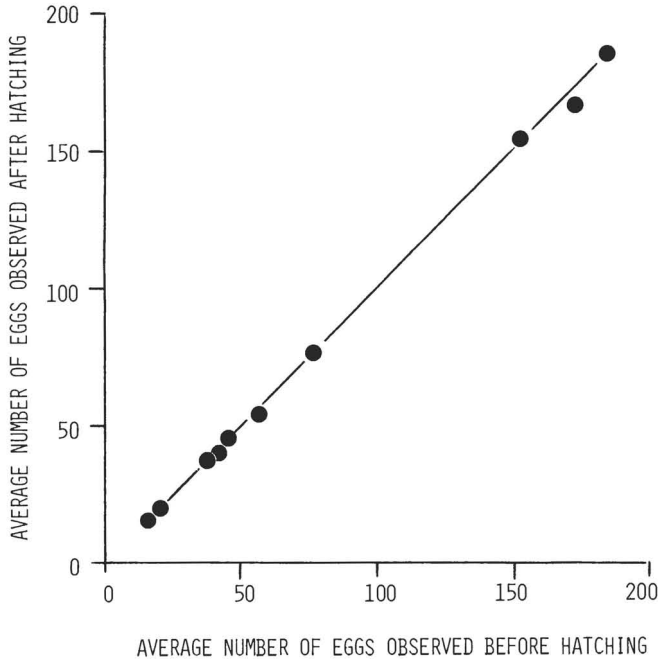


FIG. 1. Relationship between *Antheraea polyphemus* egg counts made before hatching and after hatching and larval feeding on shells.

and females were placed in brown paper bags (lunch size) for oviposition as soon as the mated pairs separated. Females were transferred to new paper bags each night until death. We collected eggs from 16 *A. polyphemus* females.

After a period of time sufficient to allow all eggs to hatch, the bags were opened to record the number of eggs deposited and the number hatched. We observed that larval feeding on egg shells had reduced many egg shells to a very small piece attached to the bag. When larvae hatch in the oviposition bags with foodplants present, they move to the plants and normally do not return to the paper surfaces to consume the egg shells. Allowing the larvae to hatch in bags in the absence of foodplants apparently resulted in more frequent consumption of egg shells. It is thus possible that some eggs might be consumed and lost from the data set. To examine this possibility, we randomly selected 10 oviposition bags. We counted the eggs twice: once before hatching and again after the eggs had hatched and the larvae had fed on the egg shells. The eggs in each bag were counted by each of us before and after hatching.

Fig. 1 shows that the relationship between counts made before and after hatching is linear in our random sample (18–187 eggs per bag). The differences between paired counts averaged less than 1%. We conclude that larval feeding did not adversely affect the accuracy of egg counts made after hatching.

While determining the number and percent hatch of eggs from the 16 females, we observed a very low percent hatch (27.0 and 60.4 percent) for eggs from two individuals that had mated with reared males. Of the 16 females, 8 had mated with reared males and 8 with wild males. To examine the possibility that the type of male was a factor in the number of eggs deposited or the percent hatch, we compared the oviposition and hatching data for these two groups of females (Table 1). Since low percent hatch

TABLE 1. Oviposition and hatching data for eggs from *Antheraea polyphemus* females mated with reared males or wild males.

Female number	Number of eggs		Percent hatch
	Deposited	Hatched	
Mated with Reared Males			
1	84	84	100.0
2	200	54	27.0
3	138	133	94.9
4	172	169	98.2
5	253	153	60.4
6	264	263	99.6
7	357	353	98.8
8	177	174	98.3
	1645	1381	83.9
Mated with Wild Males			
1	199	187	93.9
2	249	236	94.7
3	226	210	92.2
4	189	181	95.7
5	242	240	99.1
6	225	222	98.6
7	269	262	97.3
8	227	223	98.2
	1826	1761	96.4
Totals	3471	3142	90.5

was not consistent among females mated with reared males, we conclude it is not attributable to the reared males. It is possible that the two females in question were involved in sibling matings. However, since we do not maintain individual broods separately we cannot determine this. Low percent hatch for eggs from certain females is a characteristic of the colony; determining the cause is not critical to elucidating the oviposition pattern for our purposes. Therefore, we have consolidated the oviposition and hatching data for all 16 females (Table 2) to accurately represent the oviposition

TABLE 2. Summary of oviposition and hatching data for eggs from reared *Antheraea polyphemus* females.

Night after mating	Number of females	Eggs deposited		% Hatch
		Number	Cumulative %	
1	16	2030	58.5	91.0
2	16	706	78.8	91.6
3	16	358	89.1	90.2
4	16	176	94.2	88.0
5	15	148	98.4	88.5
6	10	38	99.5	76.3
7	5	14	99.9	64.0
8	3	1	100.0	0
9	0	0	100.0	0

behavior of this *A. polyphemus* colony. These 16 individuals deposited a total of 3471 eggs over a 9-day period. All females survived for at least 4 days after mating; 3 individuals lived for 8 days. The average longevity after mating was 6.1 days. The maximum number of eggs deposited by a single female that lived for 8 days was 357; the minimum number was 84 for a female that lived for 4 days. The average number of eggs deposited per female was 216.9. Average percent hatch decreased gradually with time after mating of the females, with a marked decrease after the fifth night.

From these observations we conclude: 1) feeding on egg shells by *A. polyphemus* larvae after they hatch does not adversely affect the collection of oviposition data; 2) whether or not a female *A. polyphemus* mates with a reared male or a wild male does not appear to influence either the total number of eggs deposited or the percent hatch; and 3) *A. polyphemus* follows the general pattern reported for other giant silkworm moth species (the optimum period for collecting eggs is during the first three nights after mating).

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NATURAL INTERSPECIFIC PAIRING BETWEEN *PIERIS VIRGINIENSIS* AND *P. NAPI OLERACEA* (PIERIDAE)

Recent records for *Pieris napi oleracea* Harris and its congener *P. virginiensis* Edw. confirm that although the latter has a more southerly distribution, the geographic ranges of these two species overlap widely in the northeastern United States and upper Great Lakes region (e.g., Forbes 1960, Lepidoptera of New York and neighboring states, Part IV, Cornell Univ. Agric. Expt. Sta., Ithaca, New York; Muller 1968, J. New York Entomol. Soc. 76: 303-306; Tasker 1975, J. Lepid. Soc. 29: 23; Shull 1977, *ibid.*, 31: 68-70; Wagner & Mellichamp 1978, *ibid.*, 32: 20-36; Drees & Butler 1978, *ibid.*, 32: 198-206). The two species are ecologically as well as morphologically distinct. The univoltine habit of *P. virginiensis* corresponds well with the vernal phenology of its woodland larval foodplant (*Dentaria* spp., primarily *D. diphylla* Michx.), although some potential for polyphenism exists (Shapiro 1971, Ent. News 82: 13-16). *P. n. oleracea* is usually bi- (sometimes tri-) voltine and occupies a variety of habitats. These include the beech-maple-hemlock woods in which *P. virginiensis* may be found (where *P. n. oleracea* also utilizes *Dentaria* spp. as a larval foodplant) as well as other wooded areas (e.g. tamarack bog, Shull 1977, *op. cit.*; *Thuja occidentalis* swamp, Chew 1978, J. Lepid. Soc. 32: 129) and open areas where it exploits several native and naturalized crucifer species as larval foodplants (Chew 1978, *Atala* 5: 13-19).

Despite the geographic overlap of these species, however, sympatry on a local scale seems to be rather uncommon, with the result that members of these two species do not frequently interact. Known areas of local sympatry are southern Vermont, western Massachusetts (Howe 1975, *The butterflies of North America*, Doubleday, Garden City, New Jersey; A. B. Klots, in litt.) and northern Michigan (Wagner, in litt. and 1956,