

LAST STAGE LARVA AND PUPA OF  
*GLYPTOCERA CONSOBRINELLA* (ZELLER)  
(PYRALIDAE: PHYCITINAE)

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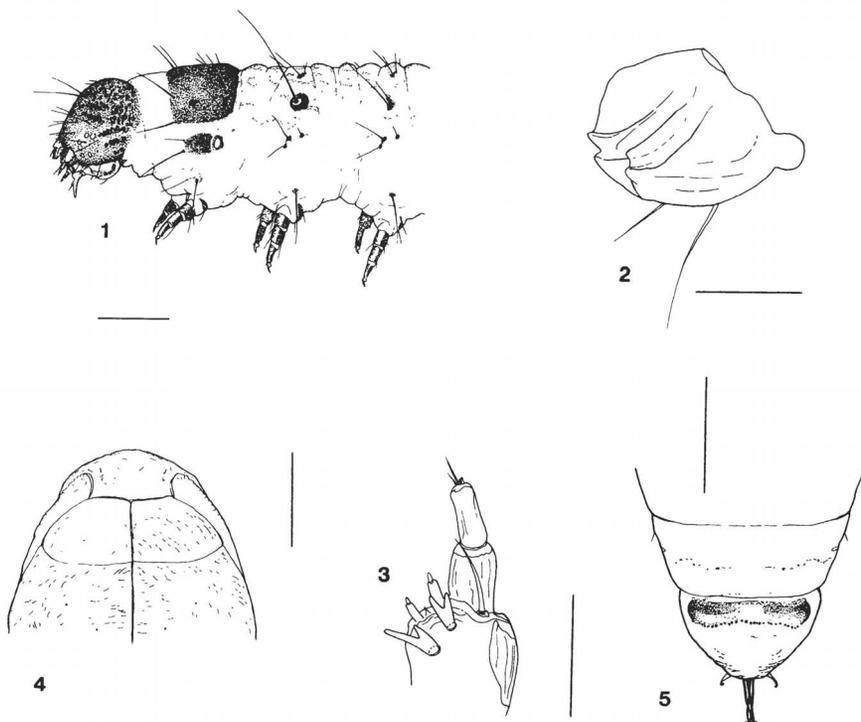
**ABSTRACT.** The last stage larva and pupa of *Glyptocera consobrinella* (Zeller) (Pyralidae) are described and illustrated, and the biology of this phycitine with reference to *Viburnum* (Caprifoliaceae), its larval food plant, is briefly outlined.

**Additional key words:** taxonomy, immature stages, biology, *Viburnum*, *Nephoterix*.

*Glyptocera consobrinella* (Zeller) is a relatively common phycitine (Pyralidae) widely distributed over the eastern United States and south-eastern Canada. Since its description in 1872, as *Nephoterix* [sic] *consobrinella*, little additional information on this species has appeared in the literature. Ragonot in 1889 transferred the species to *Glyptocera*, and in 1893 redescribed and illustrated the adult in his monumental monograph. Hulst (1890) and Forbes (1923) included the species in their publications but contributed no new information. *Viburnum lentago* L. (Caprifoliaceae) was reported as the larval food plant by Dyar in 1910, when he also very briefly (in six lines) described the larva. Heinrich (1956) provided a description of the adult and listed as the larval food plants *Viburnum* and maple (*Acer*) (Aceraceae). Ferguson (1975) gave *Viburnum* as the larval host. Recently, I collected larvae and reared associated pupae and adults of *G. consobrinella* from *Viburnum* in North Carolina. Here I describe in detail the larva and pupa, provide additional information on the biology of the immatures, and discuss affinities of this species with species of the genus *Nephoterix*. Setal chaetotaxy follows Stehr (1987), and the abbreviations for the body stripes are from Neunzig (1979).

Last Stage Larva  
(Figs. 1-3)

**Color.** Head dark reddish brown with indistinct black tonofibrillary platelets. Prothoracic shield and prespiracular plate dark reddish brown to black. Remainder of prothorax mostly dark purple with grayish white to pale green ventrally. Mesothorax and metathorax grayish white dorsally to pale green ventrally with broad, dark purple, partly fused md, sd, sst and est stripes (md slightly darker than other stripes); st and hst stripes red to purple, fragmented; broad red to purple patches ventrally (representing sv and mv stripes); mesothoracic SD1 pinaculum rings dark reddish brown to black with greenish gray centers. Thoracic legs dark reddish brown to black. Abdomen similar to mesothorax and metathorax, but paler, particularly at and below spiracles (mostly pink and green); eighth abdominal SD1 pinaculum rings dark reddish brown to black with greenish gray center; anal shield brown with darker platelets and maculation. Peritreme of spiracles dark reddish



FIGS. 1-5. Last stage larva and pupa of *Glyptocera consobrinella*. 1, Larval head and thorax, lateral view. 2, Right larval mandible, mesial view. 3, Right larval maxilla, dorsal view. 4, Pupal head and thorax, dorsal view. 5, Pupa, caudal segments, dorsal view. Scale bars: (1, 4, 5) 1.0 mm; (2, 3) 0.25 mm.

brown to black. Pinacula dark reddish brown to black. Tonofibrillary platelets of abdomen relatively distinct, dark gray.

**Morphological features.** Length of entire insect 15.0–20.0 mm, avg. 18.0 mm. **Head.** Width 1.48–1.60 mm, avg. 1.55 mm; surface slightly uneven; adfrontals reach ca.  $\frac{5}{7}$  distance to epicranial notch; AF2 setae usually slightly above level of forking of epicranial suture; AF2 setae slightly below imaginary line between P1 setae; P1 setae farther apart than P2 setae; labrum deeply emarginate; inner surface of mandible with strongly developed transverse retinaculum; sensilla trichodea of maxilla forked.

**Prothorax.** Shield with distance between D1 setae less than distance between XD1 setae, on each side distance between SD1 and SD2 setae considerably greater than between SD1 and XD2 setae, distance between D1 and D2 greater than distance between D1 and XD1 setae, and XD2, SD1 and SD2 form an acute angle; L setae of each side in a nearly vertical configuration.

**Mesothorax and metathorax.** SD1 pinaculum rings of mesothorax well developed; SD1 setae of mesothorax ca.  $2 \times$  as long as SD1 setae of mesothorax; on each side of mesothorax and metathorax D1 and D2 pinacula fused and SD1 and SD2 pinacula usually fused.

**Abdomen.** D2 setae of anterior segments ca. 0.75 mm long; D1 setae of anterior segments ca. 0.7 to  $1.0 \times$  as long as D2 setae; distance between D2 setae on segments 1–7 slightly greater than distance between D1 setae; distance between D1 and D2 on each side of segments 3–6 slightly less than distance between D1 and SD1; SD1 setae of segments 1–7 without pinaculum rings; crochets in a biordinal to triordinal ellipse, number on prolegs

of segments 3, 4, 5, 6 and anal segment, 62-68, 72-74, 67-70, 74-76 and 64-66, respectively; vertical diam. of spiracles on segment 8 ca.  $1.5\times$  larger than same diam. of spiracles on segment 7; horizontal diam. of spiracle on each side of segment 8 almost  $2\times$  as great as distance between L1 and L2; SD1 pinaculum rings of segment 8 relatively broad and complete; SD1 setae of segment 8 ca.  $1.6\times$  longer than SD1 setae on segment 7; 2 SV setae on each side of segment 8; distance between D1 and D2 on each side of segment 9 ca.  $1.2\times$  distance between D1 and SD1; 2 SV setae on each side of segment 9.

### Pupa (Figs. 4, 5)

**Color.** Yellowish brown to pale reddish brown; abdominal segment 10 reddish brown; gibba dark reddish brown.

**Morphological features.** Length of entire pupa (exclusive of cremastral setae) 9.0-10.5 mm, avg. 9.7 mm. **Head:** Surface slightly uneven; pilifers contiguous; length of maxillae 5.0-5.3, avg. 5.2 mm; setae very short.

**Thorax.** Prothorax slightly wrinkled; spiracles absent; mesothorax slightly wrinkled, without punctures; metathorax slightly wrinkled with ca. 30 punctures on each side of meson and extending about  $\frac{1}{2}$  distance from meson to lateral margin; setae very short.

**Abdomen.** Segments 1-4 with proximal  $\frac{1}{2}$  moderately punctate dorsally; punctures of segment 4 reaching and extending beyond spiracles; segments 5-7 with distinct punctures encircling proximal  $\frac{1}{2}$  to  $\frac{3}{4}$  of segments; spiracles subcircular, slightly raised; segment 4 with D1, SD1 and L2 setae; segments 5-7 with D1, SD1, L2 and sometimes SV2 setae; segment 8 usually with L2 setae; no setae on segment 9; gibba ca.  $6\times$  as wide as median length; caudal margin of gibba with small punctures; cremastral setae consisting of 4 centrally located, posteriorly directed, somewhat slender setae with strongly curved tips, and 2 outer posterolaterally directed, relatively robust, slightly to strongly hooked setae; outer setae ca.  $0.3\times$  length of inner setae.

**Material examined.** North Carolina, ca. 20 km N of Raleigh, 10 larvae, *Viburnum rafinesquianum* Schultes, 30-IX-84, H. H. Neunzig; 2 larvae, 2 pupae, *Viburnum rafinesquianum* Schultes, 14-X-85, H. H. Neunzig. Deposited in the North Carolina State University Insect Collection.

### Biology

Along the coast of Maine, in August, Dyar (1910) collected larvae of *G. consobrinella* from the leaves of *Viburnum lentago*. He reported that larvae reached the last stage and formed cocoons for overwintering in September, and adults emerged the following spring. Based on label data of adults caught in light traps in eastern North America, and on the basis of my own rearing studies in North Carolina, the species also has a spring generation throughout its range. In north central North Carolina, adults from the overwintering generation fly about the middle of May, eggs are laid, and there is about a two-month development period with pupation about mid-July. Adults of this generation eclose and oviposit from the end of July to early August, and large larvae are present on the host from late September to mid-October.

Small larvae form loose tubes of frass and silk on leaves of the host. Feeding at this stage usually occurs along the edges of leaves that are curled with silk around the frass tube. The last pair of leaves of a shoot is frequently infested. Shelters of larger larvae consist of several, loosely

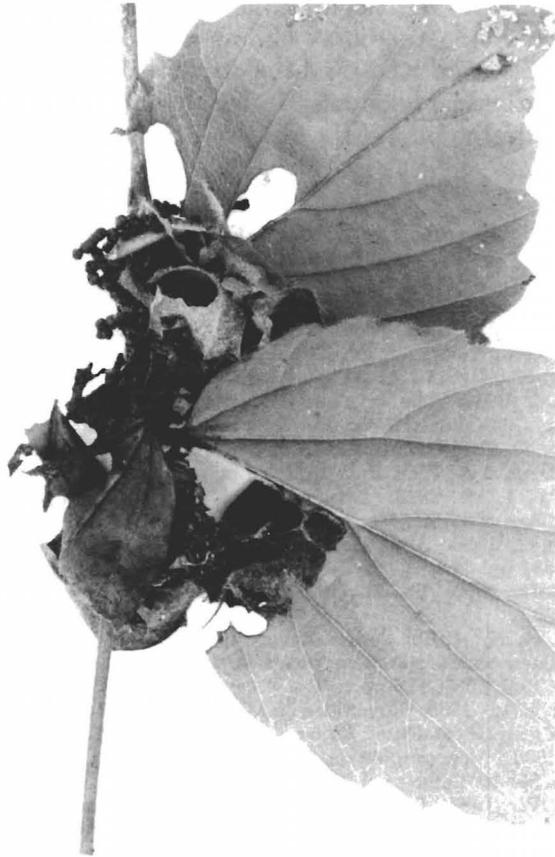


FIG. 6. Larval shelter and feeding injury of *Glyptocera consobrinella* on *Viburnum rafinesquianum*.

silked-together leaf fragments and considerable frass (Fig. 6). Large larvae cut off lower leaves, or parts of leaves, and carry these to their terminal shelters to eat or add to their place of concealment. Cocoons are formed in the soil, usually at the base of the host plants.

#### DISCUSSION

Heinrich (1956) suggested that the genus *Glyptocera* is closely related to the genus *Nephopterix* on the basis of similar character states in the adults. Morphological features of the larvae and pupae of *G. consobrinella*, and those of *Nephopterix* species as elaborated by Doerksen and Neunzig (1975) and Neunzig (1979), support this view. Shared character states include: in the last stage larvae: mandible with strong

inner transverse retinaculum, the distance between SD1 and SD2 on each side of the prothorax almost always greater than the distance between SD1 and XD2, and the distance between D1 and D2 on each side of abdominal segments 3–6 less than the distance between D1 and SD1; and in the pupae: the absence of thoracic spiracles.

#### ACKNOWLEDGMENT

The larval shelter and feeding injury (Fig. 6) was photographed by K. M. Neunzig.

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