

ADDITIONAL NOTES ON THE LIFE HISTORY
OF *NEOTERPES EDWARDSATA* (GEOMETRIDAE)

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Del Mar, California

During the summer evenings of 1962 the geometrid moth, *Neoterpes edwardsata* Packard, was unusually abundant at light in Del Mar, California. This made possible the completion of the life history record previously published in 1955. At that time I neglected to illustrate the egg and larva, although attention was called to a previous paper published in 1942, on a closely related form, *Neoterpes ephelidaria* (Hulst), which paralleled in many particulars the metamorphosis of *N. edwardsata*. Eggs of the latter species were obtained on April 10, 1962. These hatched April 17 and 18.

EGG (fig. A.): 0.75 mm. to 1. mm. by 0.4 mm. to 0.7 mm. Oval, with a slightly flattened base. When first laid they were greenish-yellow, which gradually changed to yellow. Shortly before hatching they became spotted and streaked with reddish-brown. The illustration on the plate (fig. A) shows the yellow phase before the spotting had occurred. The surface of the egg is covered by vertical (longitudinal) ridges, 18 to 20 in number, which arise at the flattened base and end at the rounded top where they break up into irregular pits. The ridges are topped with a line of pearly white nodules. Between these ridges there are well defined horizontal striations. The eggs are laid singly on their sides.

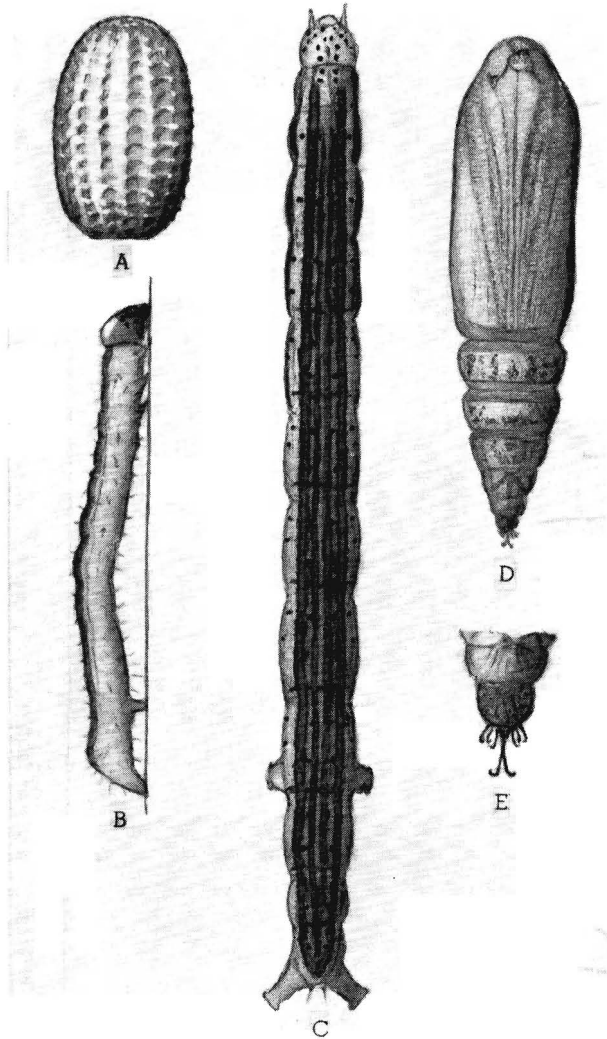
FIRST INSTAR LARVA (fig. B): Length 2.8 mm. Head width 0.25 mm. Body, cylindrical and comparatively narrow. The head is well rounded, and wider than the first segment. It is translucent deep yellow. The ocelli are conspicuously black, and the mandibles are edged with yellow-brown. The body ground color is light yellow. There is a middorsal longitudinal wide gray band, and paralleling it laterally a faint narrow dark stripe. The single pair of prolegs and the anal prolegs are concolorous with the body, as are also the true legs. The body form is accurately pictured in fig. B.

SECOND INSTAR LARVA: Length 5.5 mm. Head width approximately 0.6 mm. There are green and yellow examples. In the yellow form, the gray middorsal band persists but is less clearly defined. It is bordered by a narrow whitish band. The remainder of the body is yellow.

LARVA OF 10 MM. LENGTH: Considerable color variation becomes apparent in this intermediate stage. There are green, yellow and tan forms. In all of these the wide middorsal band persists with varying

degrees of intensity and modification.

LARVA OF 15 MM. LENGTH: Head width 1.1 mm. In this phase there is great variation in the dorsal bands. Some foreshadow the characters that are present in the mature larva, by separating into a central paired element and two wider bands bordering it laterally. In



Early stages of *Neoterpes edwardsata*.

Fig.A. Egg, lateral aspect, enlarged $\times 40$. Fig.B. First instar larva, lateral aspect, enlarged $\times 26$. Fig.C. Mature larva, dorsal aspect, enlarged $\times 4\frac{1}{2}$. Fig.D. Pupa, dorsal aspect, enlarged $\times 5$. Fig.E. Caudal segments and cremaster of pupa, ventral aspect, enlarged $\times 25$.

Reproduced from water color drawing by the author.

this bordering band two black dots appear on each segment, close to the segmental junctures. Lateral to these dots, and running the length of the body is a narrow yellow line.

MATURE LARVA (fig. C): Length 28 to 30 mm. Head width 1.8 mm. In all examples under observation the ground color was tan, or in a few specimens, soiled ochre, overlaid with numerous longitudinal darker stripes or dashes. No green forms were noted, but might possibly have been found in the wild. The middorsal longitudinal bands are eight in number, arranged in pairs of narrow dark lines, each enclosing a wider stripe of yellow or ochre. Laterally there is a longitudinal yellow stripe. The two black dots previously noted on each segment have increased to four, and in addition two dots appear on each side in the stigmatal area. The placement of these is shown in the illustration of the mature larva, fig. C. The legs and prolegs are concolorous with the body.

PUPA (fig. D.): Length 13 to 16 mm. In our previous papers of 1942 and 1955, illustrations of the pupa, in lateral and dorsal aspects, were shown. The structural details observable on the ventral surface were not recorded. The illustrations on the plate remedy this deficiency. It will be noted that the antennae and maxillae reach to the wing margin. The cremaster probably furnishes the best diagnostic features. This is shown on fig. E. The long central pair of spines arising from the caudal tip cross over each other. Their tips are recurved laterally. The three short recurved spines on each side, arising near the bases of the larger spines, seem to be a constant feature. These hooks make such a firm anchorage in the silk of the fragile cocoon that they are frequently broken or twisted on removal. Other details of the chrysalis were given in our previously published records.

The host plants of *N. edwardsata* are Bush Poppy (*Dendromecon rigida* Benth.) and Matiljah Poppy (*Romneya coulteri* Harv.). The closely related *Neoterpes ephelidaria* (which is probably a desert form of *edwardsata*) feeds on Chicolete (*Argemone platyceras* v. *hispida* Prain.). I have searched assiduously on California Poppy (*Eschscholtzia californica* Cham.) for possible infestation, without results. Other species of the Papaveraceae may possibly prove to be host plants.

References

- Comstock, John A., & Charles Montague Dammers, 1942. Notes on the life histories of two California moths. *Bull. so. Calif. acad. sci.* 41: 44-47, pl.10.
- Comstock, John Adams, 1955a. Miscellaneous notes on North American Lepidoptera. Early stages of *Neoterpes edwardsata* Pack. *Bull. so. Calif. acad. sci.* 54: 30-35, pl.15.
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