

## The Adaptive Feeding Habit of a Pine Caterpillar

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**Abstract:** The characteristic feeding habit and position of mature larvae of *Panthea furcilla* (Packard) (Lepidoptera, Noctuidae) on *Pinus strobus* is described and illustrated.

The larvae of *Panthea furcilla* (Packard) (Lepidoptera, Noctuidae) in Connecticut appear to feed chiefly on the white pine (*Pinus strobus*) although it is possible that they feed on other available pines or on larch (*Larix*). The needles of white pine are, however, very long and extremely thin and flexible. If a last instar larva were to crawl out on a single needle its weight would make the needle droop so that the larva would dangle very insecurely. Each needle is, moreover, too long for a larva holding on to a twig with its anal prolegs to be able to reach the tip, the most efficient point at which to begin feeding.

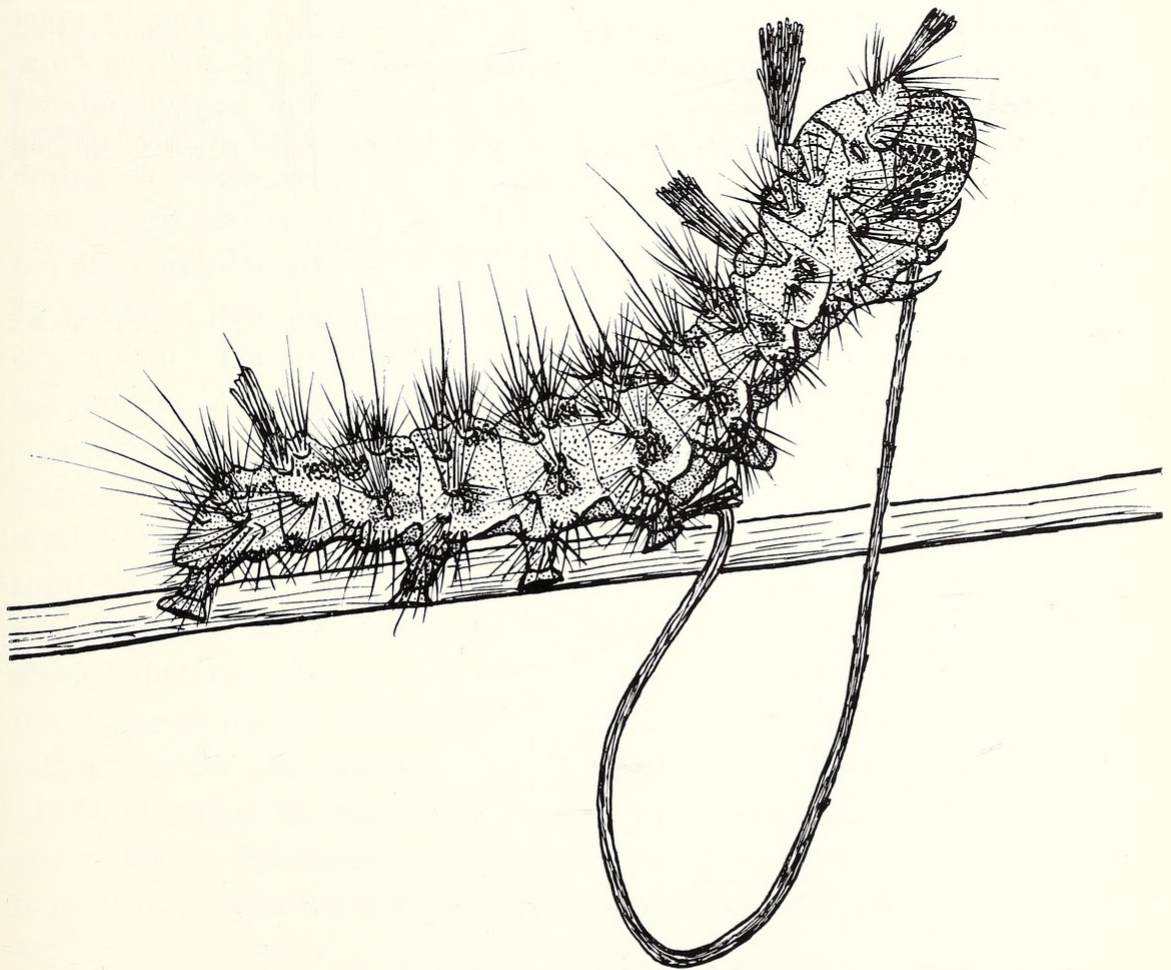


FIG. 1. Larva, *Panthea furcilla* (Packard) in last instar, in typical feeding position on *Pinus strobus*. From a photograph of a specimen from Putnam, Windham Co., Conn.

These factors create a situation in which a normally feeding larva would be faced with the alternatives of physical insecurity or inefficient feeding.

The older, heavier larvae of *furcilla* feed as follows. First, the posterior pro-legs take and keep a secure hold on a twig or the firm base of a bundle of needles. Next, the thoracic legs grasp a single needle and "walk" along it, passing it to the rear. As a result the needle, forced backward and down, is bent into a long bow beneath the larva (Fig. 1). When the entire needle is thus bent down the larva begins eating the tip. A slight relaxation of the thoracic legs permits the spring of the needle to force it forward as its tip is eaten away. The larva continues eating until the whole needle has been consumed, backing up a little along the twig to finish the most basal part. Thus, all of the needle is eaten cleanly without the larva having to relinquish its secure posterior hold.

The young larvae of *furcilla* and the small larvae of other pine feeding species (e.g., *Semiothisa*, Geometridae) do not have this problem, since a single needle is rigid enough to support their weight. It would be interesting to know how the heavy larvae of such a species as the pine sphinx, *Lapara*, manage on white pine. It would, furthermore, be very worthwhile to know what is done by other species of *Panthea* that feed on pines with shorter, stiff needles, such as *Pinus resinosa*, *banksiana* and *rigida*; for it would be of considerable phyletic interest if it could be shown that the adaptive feeding habit here described is limited to the white pine feeding *P. furcilla*.

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