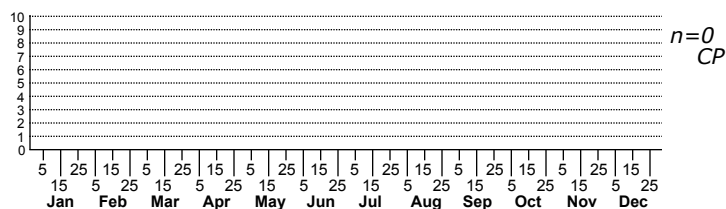
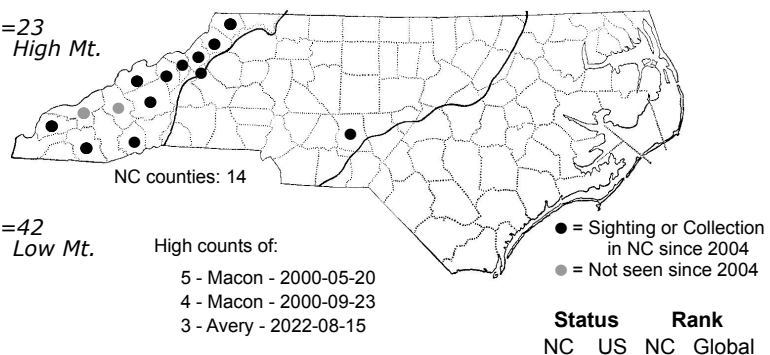
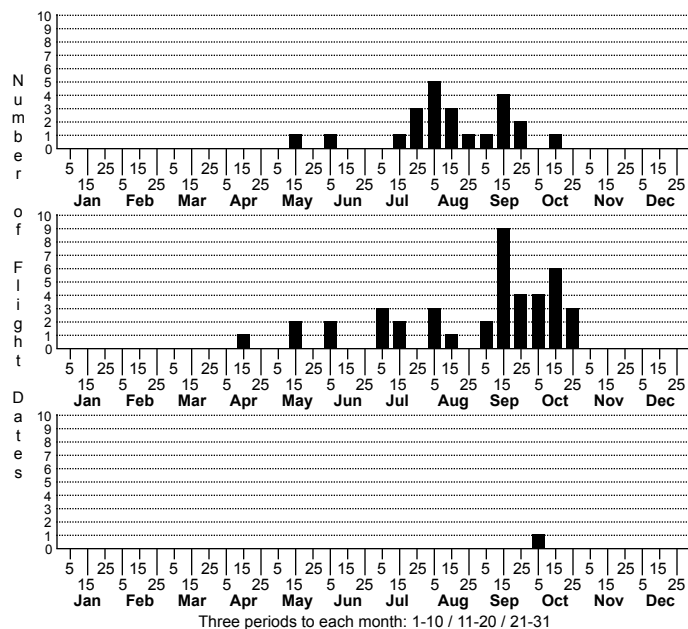


Lambdina fiscellaria Hemlock Looper



FAMILY: Geometridae SUBFAMILY: Ennominae TRIBE: Ourapterygini
 TAXONOMIC COMMENTS: One of nine members of this genus that occur in North America, four of which have been recorded in North Carolina.

FIELD GUIDE DESCRIPTIONS: Covell (1984); Beadle and Leckie (2012)

ONLINE PHOTOS:

TECHNICAL DESCRIPTION, ADULTS: Forbes (1948)

TECHNICAL DESCRIPTION, IMMATURE STAGES: Forbes (1948); Wagner et al. (2001); Maier et al. (2013)

ID COMMENTS: A medium-sized Geometrid. Variable in color, with both yellowish and gray forms similar to *L. fervidaria* and *pellucidaria*, with similar dusting with darker gray. Possesses a more angular outer margin than other species of *Lambdina*, with points at M3 on the fore- and hindwings. The lines are dark brown and clean-cut, usually edged with yellow on the sides away from the median area (Forbes, 1948). The postmedian is characteristically sharply bent at M3. Could be confused with *Besma endropiaria*, which is similar in color and in its angulate wings. The postmedian line in that species, is more smoothly curved in *endropiaria* and a submedian line is usually present, which is absent in species of *Lambdina*.

DISTRIBUTION: Almost all of our records come from the Mountains, but with one anomalous record from the eastern Piedmont that suggests that it could be much more widespread.

FLIGHT COMMENT: Appears to be bivoltine in the Mountains, with the second brood extending later into the fall than is true for the other species of *Lambdina*. The one Piedmont record we have is from October, well after the last dates for *L. fervidaria* in that region.

HABITAT: All but one of our records come from mesic forests in the Mountains, including riparian and cove forests at lower elevations and northern hardwoods and spruce-fir forests at high elevations. Our one record from the Uwharrie Mountains area in the eastern Piedmont is aberrant enough but even more anomalous in coming from a stand of dry hardwood forest, although one that contains an extensive seepage slope. No Hemlocks are known from that area and the pines at that site are a mixture of Coastal Plain and Piedmont species, including Pond, Longleaf, Shortleaf, and Loblolly.

FOOD: Polyphagous, feeding primarily on Fir, Hemlock, Spruce, Pine and other conifers but also on hardwood trees and shrubs, at least during outbreaks (Wagner et al., 2001; Maier et al., 2011).

OBSERVATION_METHODS: Appears to come well to 15 watt UV lights but not recorded at flowers or bait.

NATURAL HERITAGE PROGRAM RANKS: G5 [S4?]

STATE PROTECTION: Has no legal protection, although permits are required to collect it on state parks and other public lands.

COMMENTS: This species is regarded as a pest of Hemlock forests in Canada and is subject to suppression efforts using *Bacillus thurengiensis* and other biological controls (Hebert and Brodeur, 2013). We have only a moderate number of records for this species in North Carolina, however, almost all from the Mountains; the North Carolina Forest Service does not list this species as a forest pest in this state. Given that it has several alternative larval hosts, it is uncertain how threatened *fiscellaria* might be due to decimation of two of its most important host species, Fraser Fir by the Balsam Woolly Adelgid and of Hemlock by the Hemlock Woolly Adelgid.