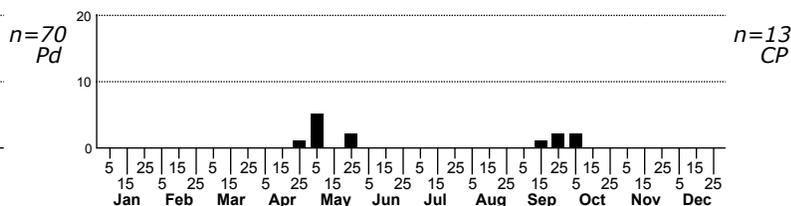
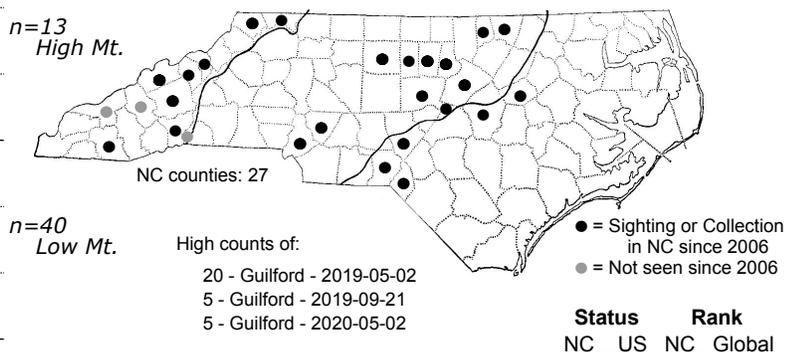
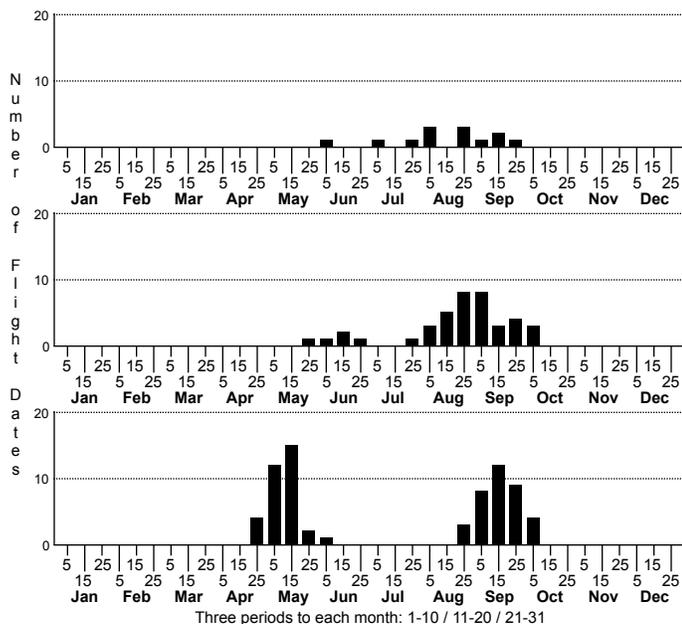


Pandemis limitata Three-lined Leafroller Moth



FAMILY: Tortricidae SUBFAMILY: Tortricinae TRIBE: Archipini

TAXONOMIC COMMENTS: The genus *Pandemis* includes around 67 described species worldwide, including four native and two introduced species in North America. Our four native species are very closely related and their status as being valid species has been questioned. Recent molecular and phylogenetic studies by Dombroskie and Sperling (2012) provide support for continuing to recognize all four lineages as species. We have only two species in North Carolina that are easily distinguished by both maculation and genitalia.

FIELD GUIDE DESCRIPTIONS: Beadle and Leckie (2012)

ONLINE PHOTOS:

TECHNICAL DESCRIPTION, ADULTS: Robinson (1869)

TECHNICAL DESCRIPTION, IMMATURE STAGES: MacKay (1962)

ID COMMENTS: The following is mostly based on the description by Freeman (1958) and Robinson (1869). The head, palps, antennae, and thorax are light reddish brown. The ground color of the forewing is light reddish brown and is stained or blotched with numerous small, dark brown marks. The ground is overlain with three darker brown patches or bands. These include a basal patch that covers one third of the forewing, a broad, posteriorly oblique median band that extends from the costa to the inner margin, and a small, semi-oval subapical patch on the costa. The outer margin of the basal patch, both margins of the median band, and the entire inner margin of the subapical patch are bounded by narrow pale lines. The fringe is reddish brown, while the hindwing is two-toned with a whitish band along the costal third of the wing that transitions into gray on the remainder of the wing. In this species the ground color is usually lighter than the basal patch, median band, and subapical patch, but specimens are occasionally seen that have these marks nearly concolorous with the ground.

This species is very similar to *Pandemis lamprosana*, but tends to be more reddish. It is best distinguished by the subapical patch, which has a narrow pale line around the margin (lacking in *P. lamprosana*). In addition, *P. lamprosana* has a uniformly white to light gray hindwing, versus a two-toned gray and white hindwing for *P. limitata*.

DISTRIBUTION: *Pandemis limitata* occurs in southern Canada from British Columbia eastward to Nova Scotia and Prince Edward Island. It also occurs throughout much of the eastern US, with scattered population farther west in the Rocky Mountains and California. In the eastern US, the range extends from Maine southward to northern Florida, and westward to eastern Texas, central Oklahoma, Missouri, eastern Nebraska, Iowa, Wisconsin and Minnesota. As of 2024, almost all of our records are from the Piedmont and Blue Ridge, with a small number of records from the western Coastal Plain.

FLIGHT COMMENT: The adults have been observed from March through November in different areas of the range, with the main flight period occurring from May through September. As of 2024, our records extend from late-April through early October. Most local populations in North Carolina appear to be bivoltine, with the first brood following the spring leaf-out and a second occurring in late-summer. High-elevation populations in the Blue Ridge may only produce one generation per year.

HABITAT: Local populations are typically associated with mesic hardwood forests or mixed pine-conifer forests. They can also be found along woodland edges, in orchards and in semi-wooded residential neighborhoods.

FOOD: Much like *P. lamprosana*, the larvae are polyphagous and feed on a taxonomically diverse group of deciduous trees and shrubs (Freeman, 1958; Schaffner, 1959; Gilligan and Epstein, 2014; Prentice, 1966; Ferguson, 1975; Godfrey et al., 1987; Wagner et al., 1995; Robinson et al., 2010; Marquis et al., 2019). Some of the reported hosts include Boxelder (*Acer negundo*), Silver Maple (*A. saccharinum*), Sugar Maple (*A. saccharum*), Gray Alder (*Alnus incana*), Red Alder (*A. rubra*), False Indigo-bush (*Amorpha fruticosa*), Paper Birch (*B. papyrifera*), chestnuts (*Castanea*), Gray Dogwood (*Cornus racemosa*), American Hazelnut (*Corylus americana*), Burningbush (*Euonymus atropurpureus*), Common Apple (*Malus domestica*), Sweet-gale (*Myrica gale*), commercial apples (*Malus domestica*), European Crab Apple (*M. sylvestris*), Sweet Cherry (*Prunus avium*), Choke Cherry (*Prunus virginiana*), White Poplar (*Populus alba*), Balsam Poplar (*P. balsamifera*), Quaking Aspen (*Populus tremuloides*), White Oak (*Quercus alba*), Scarlet Oak (*Q. coccinea*), Bur Oak (*Q. macrocarpa*), Northern Red Oak (*Q. rubra*), Black Oak (*Q. velutina*), American Basswood (*Tilia americana*), American Elm (*Ulmus americana*) and Slippery Elm (*U. rubra*), Hillside Blueberry (*Vaccinium pallidum*) and other *Vaccinium*, and *Viburnum*. As of 2024, we have rearing records from Common Pawpaw (*Asimina triloba*), Pin Oak (*Q. palustris*) and Willow Oak (*Q. phellos*).

OBSERVATION_METHODS: The adults are attracted to lights.

NATURAL HERITAGE PROGRAM RANKS: GNR S455

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

COMMENTS: This species is common in the Piedmont and Blue Ridge and appears to be secure within the state.