



**Natural Heritage
& Endangered Species
Program**

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Massachusetts Division of Fisheries & Wildlife

**Twilight Moth
*Lycia rachelae***

State Status: **Endangered**
Federal Status: **None**

DESCRIPTION: The Twilight Moth (*Lycia rachelae*) is a geometrid moth with a wingspan of 30-37 mm in the male (McGuffin 1977); the wings of the female are nonfunctional, rudimentary buds. In the male, both the forewing and hind wing are translucent with faint bands of white scales, and black scales prominently outlining the wing veins. On the forewing, the costal margin is black with orange patches, and the inner margin is black with white patches. The postmedial, median, and antemedial lines are wide, but faint and diffuse black bands. The reniform spot is reduced to a crescent-shaped concentration of black scales at the apex of the discal cell. On the hind wing, the postmedial line is a wide, but faint and diffuse black band, and the discal spot is a crescent-shaped concentration of black scales at the apex of the discal cell. In both sexes, the body is densely “hairy” (covered with elongate, hair-like scales), black in color with the longest “hairs” gray and tan; and with a dorsal orange stripe running from the head, across the thorax, and along the length of the abdomen.

HABITAT: In Massachusetts, the Twilight Moth inhabits sandplain pitch pine-scrub oak barrens, as well as other shrublands and woodlands on sandy soils.



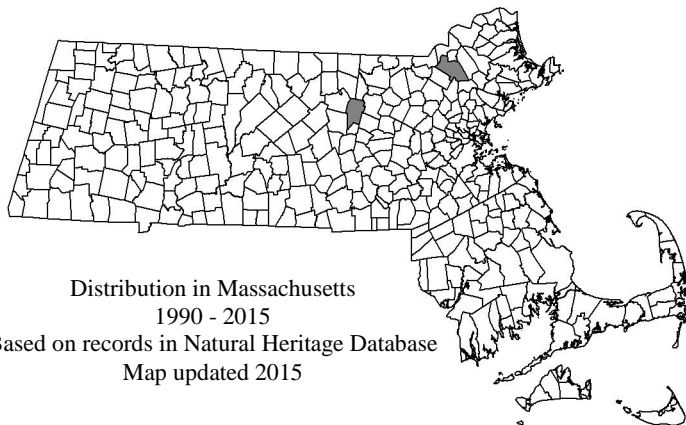
Lycia rachelae, male • Specimen from MA: Worcester Co., Lancaster, collected 10 Apr 2002 by M.W. Nelson

Adult Flight Period in Massachusetts

Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec

LIFE HISTORY: Male Twilight Moths fly at dusk, and for a couple hours after, on evenings following the first relatively warm days of spring. In Massachusetts, such days typically occur in late March and April. Females ascend shrub and tree trunks and emit pheromone, waiting for males to find them by scent. Eggs are laid on a variety of shrubs and trees, with an apparent preference for poplars (*Populus*) and willows (*Salix*), but also birches (*Betula*), elms (*Ulmus*), and hazelnuts (*Corylus*) (Farquhar 1934). Eggs hatch two to four weeks after oviposition (McGuffin 1977), and larvae begin feeding on buds and new growth of the host plant. Larval development is slow, with larvae feeding for up to two months before pupating. Pupae overwinter.

GEOGRAPHIC RANGE: The major portion of the Twilight Moth’s range is in Canada, from Quebec west to British Columbia, and at high elevation in the Rocky



A Species of Greatest Conservation Need in the Massachusetts State Wildlife Action Plan

Massachusetts Division of Fisheries & Wildlife

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Mountains of the western U.S., south to Colorado (McGuffin 1977, Schweitzer et al. 2011). The Twilight Moth is a boreal species, and the rare and localized populations in northeastern Pennsylvania, Massachusetts, New Hampshire, and Maine are relicts from the period following retreat of Pleistocene glaciers. In Massachusetts, this species is only known from two sites in the northeastern part of the state.

STATUS AND THREATS: The Twilight Moth is threatened by habitat loss, and fire suppression in sandplain pitch pine-scrub oak barrens. Other potential threats include introduced generalist parasitoids, aerial insecticide spraying, non-target herbiciding, off-road vehicles, light pollution, and global warming.

Literature Cited

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- McGuffin, W.C. 1977. Guide to the Geometridae of Canada (Lepidoptera). Volume II. Subfamily Ennominae, part 2. *Memoirs of the Entomological Society of Canada* No. 101: 1-191.
- Schweitzer, D.F., M.C. Minno, and D.L. Wagner. 2011. *Rare, Declining, and Poorly Known Butterflies and Moths (Lepidoptera) of Forests and Woodlands in the Eastern United States*. Forest Service, U.S. Dept. of Agriculture, Washington, DC. 517 pp.

Authored by M.W. Nelson, NHESP Invertebrate Zoologist, April 2015

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