

Species Listing PROPOSAL Form:
Listing Endangered, Threatened, and Special Concern Species in Massachusetts

Scientific name: *Neoligia semicana* Current Listed Status (if any): Special Concern

Common name: Northern Brocade Moth

Proposed Action:

Add the species, with the status of: _____ Change the scientific name to: _____
 Remove the species Change the common name to: _____
 Change the species' status to: Endangered (Please justify proposed name change.)

Proponent's Name and Address: Michael W. Nelson, Ph.D., Invertebrate Zoologist
 Natural Heritage & Endangered Species Program
 Massachusetts Division of Fisheries & Wildlife
 100 Hartwell Street, Suite 230
 West Boylston, MA 01583

Phone Number: 508-389-6374

E-mail: mike.nelson@state.ma.us

Fax:

Association, Institution or Business represented by proponent: Massachusetts Natural Heritage & Endangered Species Program

Proponent's Signature:



Date Submitted: June 2, 2014

Please submit to: Natural Heritage & Endangered Species Program, Massachusetts Division of Fisheries & Wildlife, 100 Hartwell Street, Suite 230, West Boylston, MA 01583

Justification

Justify the proposed change in legal status of the species by addressing each of the criteria below, as listed in the Massachusetts Endangered Species Act (MGL c. 131A) and its implementing regulations (321 CMR 10.00), and provide literature citations or other documentation wherever possible. Expand onto additional pages as needed but make sure you address all of the questions below. The burden of proof is on the proponent for a listing, delisting, or status change.

(1) Taxonomic status. Is the species a valid taxonomic entity? Please cite scientific literature.

Yes, *Neoligia semicana* was first described by Walker in 1865, as *Miana semicana* (Troubridge & Lafontaine 2002), and its species status continues to be recognized in recent works including Troubridge & Lafontaine (2002), Lafontaine & Schmidt (2010), and MPG (2014).

(2) Recentness of records. How recently has the species been conclusively documented within Massachusetts? The most recent record of *Neoligia semicana* in Massachusetts is from 5 July 2005, observed by M. Mello (NHESP database).

(3) Native species status. Is the species indigenous to Massachusetts?

Yes; the type locality of *Neoligia semicana* is North America (Troubridge & Lafontaine 2002).

(4) Habitat in Massachusetts. Is a population of the species supported by habitat within the state of Massachusetts?

Yes, currently there is one known element occurrence (local population) of *Neoligia semicana* in Massachusetts (NHESP database).

(5) Federal Endangered Species Act status. Is the species listed under the federal Endangered Species Act? If so, what is its federal status (Endangered or Threatened)?

No, *Neoligia semicana* is not listed under the federal Endangered Species Act.

(6) Rarity and geographic distribution.

(a) Does the species have a small number of occurrences (populations) and/or small size of populations in the state? Are there potentially undocumented occurrences in the state, and if so, is it possible to estimate the potential number of undocumented occurrences?

Neoligia semicana is listed as a Special Concern species in Massachusetts. However, *Neoligia semicana* currently has only one known element occurrence (local population) in the state, on Nantucket (NHESP database). No data on population size are available, but no more a single adult moth has been observed at any single time and place, suggesting that the population is small. Substantial potential habitat for *Neoligia semicana* exists in southeastern Massachusetts, but moth surveys over the past 30 years across Cape Cod and the offshore islands by P.Z. Goldstein, M. Mello, M.W. Nelson, D.F. Schweitzer, T. Simmons, and others have not documented any other populations. A second population on outer Cape Cod is now considered historic, as *Neoligia semicana* has not been documented there in over 30 years (NHESP database); that site was surveyed in 2001, 2002, and 2003 by M.W. Nelson, but *Neoligia semicana* was not found.

(b) What is the extent of the species' entire geographic range, and where within this range are Massachusetts populations (center or edge of range, or peripherally isolated)? Is the species a state or regional endemic?

The Massachusetts population of *Neoligia semicana* is at the eastern edge of its geographic range, which extends north to Maine, south to Pennsylvania, and west to Ohio (Troubridge & Lafontaine 2002).

(7) Trends.

(c) Is the species decreasing (or increasing) in state distribution, number of occurrences, and/or population size? What is the reproductive status of populations? Is reproductive capacity naturally low? Has any long-term trend in these factors been documented?

There are no data to indicate any trends in state distribution, population size, or reproductive status of *Neoligia semicana* in Massachusetts. One population on outer Cape Cod is now considered historic, leaving a single extant population in the state. *Neoligia semicana* has a single brood (generation) per year.

(8) Threats and vulnerability.

(d) What factors are driving a decreasing trend, or threatening reproductive status in the state? Please identify and describe any of the following threats, if present: habitat loss or degradation; predators, parasites, or competitors; species-targeted taking of individual organisms or disruption of breeding activity.

Potential threats to *Neoligia semicana* in Massachusetts include: (1) habitat loss; (2) invasion by exotic plants; (3) hydrologic alteration; (4) eutrophication or other water pollution; (5) aerial insecticide spraying; (6) non-target herbiciding; (7) off-road vehicles; and (8) light pollution.

(e) Does the species have highly specialized habitat, resource needs, or other ecological requirements? Is dispersal ability poor?

In Massachusetts, *Neoligia semicana* inhabits fresh or brackish wetlands on the coastal plain, including marshes, bogs, and coastal plain pondshores; the larval host plant is undocumented, but is likely a sedge (Cyperaceae) or wetland grass (Poaceae) (E. Quinter, pers. comm.). As a flying insect, *Neoligia semicana* disperses readily.

Conservation goals.

What specific conservation goals should be met in order to change the conservation status or to remove the species from the state list? Please address goals for any or all of the following:

- (a) State distribution, number of occurrences (populations), population levels, and/or reproductive rates
- (b) Amount of protected habitat and/or number of protected occurrences
- (c) Management of protected habitat and/or occurrences

With only one current element occurrence (local population) in Massachusetts, the status of *Neoligia semicana* should be changed from Special Concern to Endangered. Threats include habitat loss, invasion by exotic plants, hydrologic alteration, eutrophication or other water pollution, aerial insecticide spraying, non-target herbiciding, off-road vehicles, and light pollution.

Additional targeted surveys for *Neoligia semicana* in Massachusetts are needed. When and if the total number of element occurrences in the state exceeds five, and at least 50% of mapped habitat for these occurrences is managed and protected from known threats, then the status of this species should be downgraded to Threatened.

Literature cited, additional documentation, and comments.

Lafontaine, J.D., and B.C. Schmidt. 2010. Annotated check list of the Noctuoidea (Insecta, Lepidoptera) of North America north of Mexico. *Zookeys* 40: 1-239.

MPG. 2014. *North American moth photographers group*. Digital guide to moth identification. Mississippi State University, Mississippi State, Mississippi. <http://mothphotographersgroup.msstate.edu/MainMenu.shtml>.

Troubridge, J.T., and J.D. Lafontaine. 2002. Revision of species of the "*Oligia*" *semicana* group (Lepidoptera: Noctuidae) with descriptions of a new genus and 12 new species. *Canadian Entomologist* 134: 157-191.