Species Status Assessment

Class: Insecta
Family: Noctuidae
Scientific Name: *Lithophane lepida lepida*
Common Name: A noctuid moth (Pine Pinion Moth)

Species synopsis:

Pine pinion moths historically ranged from Ottawa, Ontario to Albany, New York and eastward to Nova Scotia. There are current taxonomic ambiguities whether the current sub-species *L. l. lepida* and *L. l adipel* are sub-species or distinct species. *L. l. adipel* ranges from northern New York and New Hampshire, south to Georgia and westward from there in Canada to Alberta. *L. l. lepida* occurs only in Maine, Nova Scotia, New Brunswick, Quebec, and eastern Ontario, with an overlapping range with *L. l. adipel* in eastern New York and New Hampshire (D. Lafontaine, personal communication). Further differences between the two individuals exist in appearances, with forewing and genitalia differences (D. Lafontaine, personal communication). The pine pinion moth was historically found around the Albany area and has not been seen in over 100 years. The only current location in New York is in Clinton County, where it was documented in sandy pitch pine (*Pinus rigida*) barrens in 1991. Long term trends for this species have shown a decrease in population size since the 1900s (Schweitzer et al. 2011, NatureServe 2012).

I. Status

a. Current and Legal Protected Status

i. Federal Not Listed **Candidate?** No

ii. New York Endangered; SGCN

b. Natural Heritage Program Rank

i. Global G3T1T3

ii. New York S1 **Tracked by NYNHP?** Yes

Other Rank:
IUCN Red List: Not Assessed
United States and Canada National Status: Not Assessed

Status Discussion:
The pine pinion moth is rarely collected in the Northeast. Recent reviews from experts have found that previously recorded populations of this species are actually the subspecies *L. lepida adipel.* The current circumscription of this species contains only specimens found from Ottawa, Ontario to Albany, NY and eastward (Schweitzer et al. 2011). This species is listed as critically imperiled in New York and New Hampshire (NatureServe 2012).

I. Abundance and Distribution Trends

a. North America

i. Abundance

__X__ declining ____increasing _____stable ____unknown

ii. Distribution:

__X__ declining ____increasing _____stable ____unknown

Time frame considered: _____Not Specified_____

Severe decline

b. Regional

i. Abundance

__X__ declining ____increasing ____stable _____unknown

ii. Distribution:

__X__ declining ____increasing ____stable _____unknown

Regional Unit Considered: _____Northeast_____
Time Frame Considered: ____ Not Specified_____

Moderate decline

c. Adjacent States and Provinces

CONNECTICUT **Not Present __X___** **No data _____**

MASSACHUSETTS **Not Present __X___** **No data _____**

NEW JERSEY **Not Present __X___** **No data _____**

PENNSYLVANIA **Not Present __X___** **No data _____**

VERMONT **Not Present __X___** **No data _____**

ONTARIO **Not Present _____** **No data __X___**

i. Abundance

____ declining ____increasing _____stable __X_ unknown

ii. Distribution:

____ declining ____increasing _____stable __X_ unknown

Time frame considered: _____2009_____
Listing Status: _____Not Listed_____

QUEBEC **Not Present _____** **No data __X___**

i. Abundance

____ declining ____increasing _____stable __X_ unknown

ii. Distribution:

____ declining ____increasing _____stable __X_ unknown

Time frame considered: _____Not Specified_____
Listing Status: _____Not Listed_____

d. NEW YORK **No data _____**

i. Abundance

____ declining ____ increasing ____ stable __X_ unknown

ii. Distribution:

____ declining ____ increasing ____ stable __X_ unknown

Time frame considered: ___Not Specified___

Monitoring in New York.

There are no regular surveys or monitoring for this species. The New York Natural Heritage Program conducted black light surveys in 1991 at the states only know location. Surveys for this species were conducted in the Albany Pine Bush, Saratoga Airport and Wilton Wildlife Preserve, Albany County, from 10 March to 2 April, 2010 (NYSDEC 2010).

Trends Discussion:

Short term trends for *Lithophane lepida lepida* are shown to be stable, with less than 10% change. Long term trends have shown a decline of 70-90%. This species occurs spottily from Nova Scotia to eastern Ontario. In the United States, this species occurs in Maine, New Hampshire and New York (D. Lafontaine, personal communication). Populations in Albany had declined prior to extensive habitat loss from urbanization, and now are extirpated (NatureServe 2012).

Figure 1. Occurrence location of *Lithophane lepida lepida* in New York (New York Natural Heritage Program 2013). Map created by Shawn Ferdinand, NYSDEC.

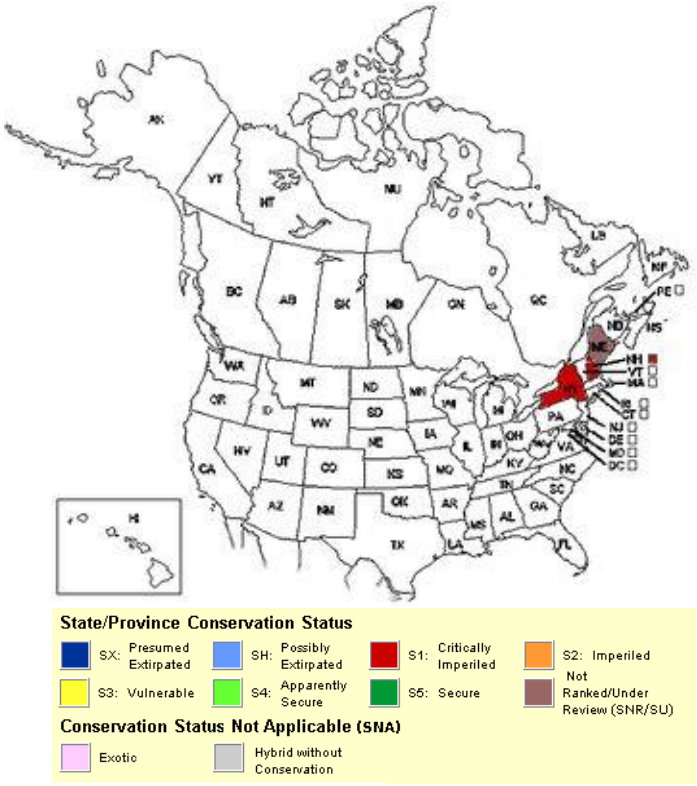

Figure 2. Conservation status of *Lithophane lepida lepida* in North America (NatureServe 2012).

II. New York Rarity, if known:

Historic	# of Animals	# of Locations	% of State
prior to 1970	_____	1	_____
prior to 1980	_____	_____	_____
prior to 1990	_____	1	_____

Details of historic occurrence:

One specimen has been collected from Keene, Essex County in 1965 (McCabe 2010). Two adults were collected in 1982 and 1 adult in 1984 at the Clintonville Pine Barrens, Clinton County (New York Natural Heritage Program 2013).

Current	# of Animals	# of Locations	% of State
	_____	**1**	_____

Details of current occurrence:

This species was proven extant at the Clintonville Pine Barrens, Clinton County in 1991 (New York Natural Heritage Program 2013).

New York's Contribution to Species North American Range:

Distribution (percent of NY where species occurs)

_X_ 0-5%

____ 6-10%

____ 11-25%

____ 26-50%

____ >50%

Abundance (within NY distribution)

___ abundant

___ common

___ fairly common

___ uncommon

_X_ rare

NY's Contribution to North American range

____ 0-5%

____ 6-10%

____ 11-25%

_X_ 26-50%

____ >50%

Classification of New York Range

____ Core

__X_ Peripheral

____ Disjunct

Distance to core population:

_____

IV. Primary Habitat or Community Type:

1. Pine barrens
2. Oak-pine forest

Habitat or Community Type Trend in New York:

__X__ Declining ____Stable ____ Increasing ____Unknown

Time frame of decline/increase: _____

Habitat Specialist? __X__ Yes _____ No

Indicator Species? __X__ Yes _____ No

Habitat Discussion:

Specimens of the pine pinion were collected in extensive sandy pitch (*Pinus rigida*) and jack pine (*Pinus banksiana*) forests and barrens (New York Nature Explorer 2009). This species inhabits early-successional communities dominated by pitch pine and scrub oak (*Quercus ilicifolia*) (Sperduto and Nichols 2004). Pine pinion serve as an indicator of ecological condition. When the barrens habitat goes unmanaged and reverts to a closed canopy system, populations of this moth become increasingly vulnerable to extirpation (New Hampshire Fish and Game Department 2005).

V. New York Species Demographics and Life History

_X_ Breeder in New York

__ Summer Resident

___ Winter Resident

_____ Anadromous

_____ Non-breeder in New York

_____ Summer Resident

_____ Winter Resident

_____ Catadromous

_____ Migratory only

_____Unknown

Species Demographics and Life History Discussion:

The nocturnal larvae feed on new growth of pines in the spring and finish feeding in late June through early July. Larvae pupate under the soil until adults appear in late September through mid-October. The larval foodplant for this includes pitch pine (*Pinus ridgida*), short-leaf pine (*Pinus echinata*), and loblolly pine (*Pinus* taeda). Adults can be seen flying from January to April and October to November (NYSEDEC 2012).

VI. Threats:

Threats specific to this species have not been identified in the literature. However, it is thought that activities including logging could affect the host plant of this species. General threats identified to affect moth species include habitat loss and degradation caused by development; habitat fragmentation; alteration of natural fire regimes; natural succession of shrubland, woodland, and barrens habitats; land clearing; coastal erosion; and sea level rise. Past use of chemical biocides to control gypsy moth and other pest insects continues to kill native Lepidoptera (Schweitzer 2004). Introduced parasitoid flies have been known to negatively affect native Lepidoptera (Boettner et al. 2000). Other threats may include invasive species, light pollution affecting reproductive success, over grazing of host plants by wild deer populations, and off-road vehicle use (NYSDEC 2005).

Are there regulatory mechanisms that protect the species or its habitat in New York?

_____ No ____ Unknown

__X__ Yes

The pine pinon moth is listed as an endangered species in New York and is protected by Environmental Conservation Law (ECL) section 11-0535 and the New York Code of Rules and Regulations (6 NYCRR Part 182). A permit is required for any proposed project that may result in a take of a species listed as Threatened or Endangered, including, but not limited to, actions that may kill or harm individual animals or result in the adverse modification, degradation or destruction of habitat occupied by the listed species.

Specimens that were collected in New York were within the Clintonville Pine Barrens, an area owned by The Nature Conservancy, are protected from development.

Describe knowledge of management/conservation actions that are needed for recovery/conservation, or to eliminate, minimize, or compensate for the identified threats:

Surveys could confirm the current population status and possibly discover new populations. This species is known to be attracted to bait traps in the spring, but not in the fall (NYSDEC 2012). This species shares habitat with Karner blue butterfly (*Lycaeides melissa samuelis*) and any extant population may benefit from management for that species.

Conservation actions following IUCN taxonomy are categorized in the table below.

Conservation Actions	
Action Category	**Action**
Law and Policy	Policies and Regulations
Education and Awareness	Awareness & Communications
Land/Water Protection	Site/Area Protection
Land/Water Protection	Resource/Habitat Protection
Land/Water Management	Site/Area Management
Land/Water Management	Invasive/Problematic Species Control
Land/Water Protection	Site/Area Protection

The Comprehensive Wildlife Conservation Strategy (NYSDEC 2005) includes recommendations for the following actions for other moths, and for *Lithophane lepida lepida* in particular.

Easement acquisition:
___ Where appropriate, acquire easements to promote moth protection and conservation.
Fact sheet:
___ Create fact sheets covering moths.
Habitat management:
___ Determine best management regime for moth species, including fire and other forms of management.
Habitat monitoring:
___ Develop standardized measures of habitat parameters for each species of listed moth.
___ Investigate threats to food and host plants.
___ Monitor land development projects.
Habitat research:
___ Examine role of light pollution as threat to moths.
___ Determine host/ food plant.
Life history research:
___ Investigate the metapopulation dynamics of those species which warrant it.
___ Examine role of introduced parasites and predators in threats to moths.
Other action:
___ Develop standard definition of what is needed for "viable" populations of moths.
___ Research the role of pesticide use in threats to moths.
Population monitoring:
___ Inventory of species within historical range.
___ Develop standardized survey protocols for moths.
Private fee acquisition:
___ Where appropriate, encourage/assist private entities to acquire land for moth protection and conservation.

State fee acquisition:

___ Where appropriate, acquire land essential to moth protection and conservation.

State land unit management plan:

___ Incorporate needs of moths into state land management plans.

VII. References

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