Pine Barrens Lepidoptera

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Federal Listing	N/A
State Listing	
Global Rank	
State Rank	
Regional Status	N/A

This Profile Includes:

Barrens Itame	(*Speranza exonerate*)
Barrens xylotype	(*Xylotype capax*)
Broad-lined Catopyrrha	(*Erastria coloraria*)
Cora moth	(*Cerma cora*)
Edward's Hairstreak	(*Satyrium edwardsii*)
Graceful Clearwing	(*Hemaris gracilis*)
New Jersey tea Spanworm	(*Apodrepanulatrix liberaria*)
Noctuid Moth	(*Chaetaglaea cerata*)
Persius Duskywing Skipper	(*Erynnis persius*)
Pine pinion moth	(*Lithophane lepida lepida*)
Pinion Moth	(*Xylena thoracica*)
Phyllira tiger moth	(*Grammia phyllira*)
Sleepy duskywing	(*Erynnis brizo brizo*)
Twilight Moth	(*Lycia rachelae*)
Zale sp. 1 nr. Lunifera	

Justification (Reason for Concern in NH)

These pitch pine-scrub oak woodland specialists serve as indicators of the ecological condition of the community. As the habitat goes unmanaged and reverts to a closed canopy system, populations decline and become increasingly vulnerable to extirpation, a reflection of the loss of vital compositional and structural elements within the community.

Distribution

This group of Lepidoptera occupies pine barrens. This will include both scrub oak woodlands and mature oak-pine woodlands composed of a dense scrub oak understory and greater canopy closure. Larval host plants include tyical pine barrens plant species such as scrub oak (*Quercus ilicifolia*), various heath species (*Ericaceae sp*.), and less common plants such as *Ceanothus americanus*.

Habitat

This group of Lepidoptera occupies pine barrens, woodlands dominated by pitch pine (*Pinus rigida*) and scrub oak (*Quercus ilicifolia*) (Sperduto and Nichols 2004). Some species also occur in oak-pine woodlands composed of a dense scrub oak understory and greater canopy closure. For a detailed habitat description refer to the pine barrens habitat profile. Larval host plants include typical pine barrens plant species such as scrub oak, various heath species (*Ericaceae sp*.), and less common plants such as *Ceanothus americanus*.

NH Wildlife Action Plan Habitats

- Pine Barrens

Distribution Map

Current Species and Habitat Condition in New Hampshire

The relative health of populations for each species is not known at this time.

Population Management Status

Need to monitor population level for some species to determine if there is a need for population management such as captive rearing and augmentation.

Regulatory Protection (for explanations, see Appendix I)

#Type!

Quality of Habitat

Habitat quality is relatively stable or improving in the two key units in New Hampshire – Concord and Ossipee. Evaluate the need to introduce uncommon elements such as New Jersey tea to Ossipee pine barrens.

Habitat Protection Status

Habitat Management Status

Current habitat management and restoration techniques in Concord and Ossipee pine barrens include native plant propagation, vegetation management using specialized mowers and feller bunchers, and prescribed fire. Habitat monitoring is often completed before and after management implementation.

Threats to this Species or Habitat in NH

Threat rankings were calculated by groups of taxonomic or habitat experts using a multistep process (details in Chapter 4). Each threat was ranked for these factors: Spatial Extent, Severity, Immediacy, Certainty, and Reversibility (ability to address the threat). These combined scores produced one overall threat score. Only threats that received a "medium" or "high" score have accompanying text in this profile. Threats that have a low spatial extent, are unlikely to occur in the next ten years, or there is uncertainty in the data will be ranked lower due to these factors.

Mortality and habitat impacts from catastrophic fire (Threat Rank: Medium)

The amount of habitat available for rare pine barrens lepidoptera is limited within NH. A catastrophic fire of large extent and high intensity could result in significant losses to already small populations preventing the ability for recovery.

Appendix A: Insects

A species response to fire is dependent on five characteristics 1) ecological specialization 2) vagility (movement ability) 3) above ground life stages 4) voltinism (number of broods) and 5) response to key plant food to fire (Swengel 1996). Insects that are small in number and have a high degree of ecological specialization are extremely susceptible to extirpation from local fire (New 2014). Recent surveys for pine barrens lepidoptera in the Ossipee Pine Barrens revealed that some species showed significant differences in abundance following limited controlled burning over a short period of time (Brown 2013).

Habitat degradation and impacts from landscaping with non-pine barrens species or allowing the forest to get overgrown in adjacent developed landscapes (Threat Rank: Medium)

Private landowners within the pine barrens community may selectively manage their property removing or degrading the habitat quality, and fragmenting the landscape.

Habitat and species impacts from inappropriate management and over-use of fire (Threat Rank: Medium)

Mechanical treatments and prescribed burning conducted in high frequency during the same time period each year may result in a negative effect on pine barrens lepidopteran species.

Swengel et al. 2010 determined there were declines in tallgrass prairie specialist butterflies that were not co-evolved with implemented fire regimes in the midwest.

List of Lower Ranking Threats:

Habitat degradation and impacts from powerline maintenance with herbicide

Mortality from insecticide use (mosquito and gypsy moth treatment)

Mortality and species impacts from change in behavior due to pollution

Species impacts from competition (gypsy moth eruptions)

Habitat and species impacts from cessation of timber management where management has enhanced habitat previously

Habitat degradation and species impacts from change of structure

Species and habitat impacts from shifts and changes in species composition

Habitat and species impacts from prolonged drought or windstorm damage that results in catastrophic fire

Habitat impacts from changes in precipitation that impacts use of fire

Species impacts from changes in precipitation that impact reproduction

Species impacts from phenology shifts (pollination and food sources)

Actions to benefit this Species or Habitat in NH

Manage pitch-pine scrub oak habitat in a rotational matrix.

Primary Threat Addressed: Habitat degradation and species impacts from change of structure

Specific Threat (IUCN Threat Levels): Natural system modifications

Objective:

General Strategy:
Management creates areas of open or semi-open habitat that provide a range of light intensity and diverse vegetation native to the pines barrens that support a diversity of pine barrens lepidoptera. Habitat heterogeneity satisfies microhabitat needs and moderates the impact of large-scale environmental events. Habitat management also provides connectivity among resource-rich habitat patches, increasing dispersal rates, colonization, and overall suitable habitat area.

Political Location: **Watershed Location:**

Coordinate citizen science program for data collection.

Objective:

General Strategy:
Develop a group of trained volunteers to assist with more frequent surveys at identified locations.

Political Location: **Watershed Location:**

Continue intensive monitoring every ten years at managed sites.

Objective:

General Strategy:
Sites that are managed for pine barrens should be monitoring on a consistent interval to evaluate long term trends in species and identify any significant changes in the species composition.

Political Location: **Watershed Location:**

Review current list of SGCN species to determine other species that may need additional conservation actions.

Objective:

General Strategy:
Compile a list of all tracked species from Natural Heritage Bureau and new publications for review. Work with taxa experts at the national level to determine priority species for conservation actions in the future.

Political Location: **Watershed Location:**

Monitor the health of known populations, determine if captive propagation would be useful for some species.

Objective:

General Strategy:
Coordinate targeted surveys for specific species over numerous consecutive years to determine health of the populations. Instead of lethal black light trapping, non-lethal sheet surveys could be used to minimize the adverse effect of the study.

Political Location: **Watershed Location:**

References, Data Sources and Authors

Data Sources
Technical field reports, agency data, scientific journal articles, and element occurrence databases were used to determine habitat and distribution of pine barrens lepidoptera.
Technical field reports, agency data, scientific journal articles and element occurrence database.

Data Quality
The quality and extent of data on pine barrens Lepidoptera in New Hampshire is limited to targeted surveys conducted by a few conservation groups. Since 2005 follow up surveys have been conducted in sites that are managed to evaluate impacts. In addition, a survey was conducted in 2007 to begin looking at potential pine barrens identified in the WAP mapping for the presence of rare species. This was only conducted for one year not providing information on trend to date.

2015 Authors:
Heidi Holman, NHFG

2005 Authors:

Literature

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