



Insects

Barrens Metarranthis Moth

Metarranthis apiciaria

Priority 2 Species of Greatest Conservation Need (SGCN)

Class: Insects (*Insecta*)

Order: Butterflies, Skippers, And Moths (*Lepidoptera*)

Family: Emerald Moths And Allies (*Geometridae*)



General comments:

The Barrens Metarranthis Moth is a member of the Geometridae family and genus Metarranthis. Its life history, larval host plants, and habitat preferences are not well known, but almost all collections are associated with rare barrens or savanna communities. In Maine, its type locality is Pitch Pine barren – a rare habitat type in the state. This species has experienced a >90% unexplained decline across most of its range, and may be extirpated from Maine, where it has not been observed for over 50 years. It is at risk due to its possible dependence on a rare habitat that is highly vulnerable to development, gravel mining, forest succession from fire suppression, and aerial pesticide spraying, along with potentially other unknown threats.

Species Conservation Range Maps:

Town Map: [Metarranthis apiciaria_Towns.pdf](#)

Subwatershed Map: [Metarranthis apiciaria_HUC12.pdf](#)

SGCN Priority Ranking - Designation Criteria:

Historical:	Species currently listed as state (SH) or global (GH) historical (by MDIFW or NatureServe) that have some reasonable probability of rediscovery with further survey effort. State Rank: SU, Global Rank: G1G3, Rounded Global Rank: G2, MDIFW Historical: Yes
High Regional Conservation Priority:	Northeast Regional Synthesis (RSGCN): Responsibility: Low, Concern: High NatureServe: Global Rank: G2 State Rank: SU

Habitat Associations:

Formation: Northeastern Upland Forest

Macrogroup: Appalachian Oak - Pine Forest & Woodland

	Habitat System: Central Appalachian Dry Oak-Pine Forest <i>potential habitat</i>
	Habitat System: Central Appalachian Pine-Oak Rocky Woodland <i>potential habitat</i>

Macrogroup: North Atlantic Coastal Forest & Woodland

★ Primary Habitat	Habitat System: Northeastern Interior Pine Barrens <i>typically associated with rare barrens and savanna habitats; type locality in ME is PP but host plant and habitat preferences undocumented</i>
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Formation: Northeastern Upland Forest

Habitat System: Northern Atlantic Coastal Plain Pitch Pine Barrens
potential habitat

Threats

Threat Priority Level based on Severity and Actionability		Moderate Severity	High Severity
	Highly Actionable	Medium-High	High
	Moderately Actionable	Medium	Medium-High
	Actionable with Difficulty	Low	Low

IUCN Level 1 Threat Natural Systems Modifications

IUCN Level 2 Threat: Fire and Fire Suppression

Severity: High Severity **Actionability:** Moderately Actionable

Notes: pine barren habitat is fire dependent; fire suppression can alter successional stage and habitat availability over time; poorly timed/planned fire can cause direct mortality

IUCN Level 2 Threat: Removing or Reducing Human Maintenance

Severity: High Severity **Actionability:** Moderately Actionable

Notes: natural succession of PPSO and other barren habitat is a significant threat at some sites

IUCN Level 1 Threat Other Options

IUCN Level 2 Threat: Lack of knowledge

Severity: Moderate Severity **Actionability:** Highly Actionable

Notes: no modern occurrences; unknown stressor(s) caused past declines; lack of knowledge about distribution, status, threats, habitat, host plant(s), life history

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IUCN Level 1 Threat Other Options

IUCN Level 2 Threat: Resource Needs

Severity: High Severity	Actionability: Moderately Actionable
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Notes: lack of funding and staff for implementing conservation actions (e.g., comprehensive surveys, long-term monitoring, habitat management, research, outreach & education)

IUCN Level 2 Threat: Unknown

Severity: High Severity	Actionability: Moderately Actionable
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Notes: species experienced very large, unexplained past declines rangewide; specific stressors and threats unknown beyond potential threats to type locality (pitch pine barren)

IUCN Level 1 Threat Residential and Commercial Development

IUCN Level 2 Threat: Housing and Urban Areas

Severity: High Severity	Actionability: Moderately Actionable
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Notes: loss and fragmentation of habitat; unprotected pine barrens are prime land for development in southern ME

IUCN Level 1 Threat Energy Production and Mining

IUCN Level 2 Threat: Mining and Quarrying

Severity: Moderate Severity	Actionability: Moderately Actionable
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Notes: habitat loss; xeric pine barrens are prime areas for sand and gravel extraction

IUCN Level 1 Threat Other Options

IUCN Level 2 Threat: Education & Outreach

Severity: Moderate Severity	Actionability: Moderately Actionable
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Notes: some threats and challenges can be minimized through enhanced public outreach and advocacy (e.g., pesticide use, habitat management, light pollution, awareness and appreciation)

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IUCN Level 1 Threat Residential and Commercial Development

IUCN Level 2 Threat: Commercial and Industrial Areas

Severity: Moderate Severity

Actionability: Moderately Actionable

Notes: loss and fragmentation of habitat; unprotected pine barrens are prime land for development in southern ME

IUCN Level 1 Threat Transportation and Service Corridors

IUCN Level 2 Threat: Roads and Railroads

Severity: Moderate Severity

Actionability: Moderately Actionable

Notes: loss and fragmentation of habitat; unprotected pine barrens are prime land for development in southern ME

IUCN Level 1 Threat Other Options

IUCN Level 2 Threat: Other Threat

Severity: High Severity

Actionability: Actionable with Difficulty

Notes: species experienced very large, unexplained declines rangewide; is possibly extirpated from ME, which may not be reversible; pesticides likely a factor (e.g., aerial insecticide spraying control efforts for spongy moth in southern ME)

Species Level Conservation Actions:

Only species specific conservation actions that address high (red) or medium-high (orange) priority threats are summarized here.

Conservation Action	Category	Biological Priority	Type
Document life history, host plants, extent of habitat use outside pitch pine - scrub oak barrens.	Research	high	new

Threat(s) Addressed By This Conservation Action

- Lack of knowledge
- Other Threat

Conservation Action	Category	Biological Priority	Type
Conduct comprehensive surveys to determine if species is still extant in Maine, its distribution and status.	Survey and Monitoring	high	new

Threat(s) Addressed By This Conservation Action

- Lack of knowledge
- Other Threat

Barrens Metarranthis Moth *Metarranthis apiciaria***Priority 2 SGCN****Conservation Actions Associated with the Dry Barrens Lepidoptera Guild:**

Conservation Action	Category	Biological Priority	Type
Communication with Maine Forest Service and Bureau of Pest Control is necessary to prevent unintended mortality from aerial pesticide spraying (e.g., for spongy moth and spruce budworm)	Species Management	high	on-going

Threat(s) Addressed By This Conservation Action

- Other Threat

Conservation Action	Category	Biological Priority	Type
Conduct a statewide review of potential high quality barrens habitat that is threatened by ecological succession and identify strategic habitat restoration actions for implementation by key conservation partners.	Habitat Management	critical	on-going

Threat(s) Addressed By This Conservation Action

- Removing or Reducing Human Maintenance
- Fire and Fire Suppression

Conservation Action	Category	Biological Priority	Type
A concerted effort should be made to conserve as much of the remaining unprotected sandplain grasslands and PP/SO barrens as possible.	Habitat Management	critical	on-going

Threat(s) Addressed By This Conservation Action

- Commercial and Industrial Areas
- Roads and Railroads
- Housing and Urban Areas
- Other Threat
- Removing or Reducing Human Maintenance
- Fire and Fire Suppression
- Mining and Quarrying

Conservation Action	Category	Biological Priority	Type
Increase MDIFW staff capacity for survey and conservation of SGCN invertebrates.	Policy	critical	new

Threat(s) Addressed By This Conservation Action

- Education & Outreach
- Lack of knowledge
- Resource Needs

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Conservation Action	Category	Biological Priority	Type
Develop/distribute guidelines and outreach materials to inform conservation partners, land use managers, and the general public about the impacts of pesticides on native pollinators and to promote the alternative use of Integrated Pest Management practices.	Public Outreach	moderate	on-going

Threat(s) Addressed By This Conservation Action

- Education & Outreach
- Other Threat

Broad Taxonomic Group Conservation Actions:

Additional relevant conservation actions for this species are assigned within broader taxonomic groups in Maine's Wildlife Action Plan: Element 4.

Habitat Based Conservation Actions:

Additional conservation actions that may benefit habitat(s) associated with this species can be found in Maine's Wildlife Action Plan: Element 4. Click on the Habitat Grouping of interest to launch a habitat based report summarizing relevant conservation actions and associated SGCN.

The Wildlife Action Plan was developed through a lengthy participatory process with state agencies, targeted conservation partners, and the general public. The Plan is non-regulatory. The species, threats, and voluntary conservation actions identified in the Plan complement, but do not replace, existing work