

SPECIES PROFILE

American Marten

Martes americana

State Listing: Threatened
Global Rank: G5
State Rank: S2
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ELEMENT 1: DISTRIBUTION AND HABITAT

1.1 Habitat Description

In the Northeast, American marten are found in forests dominated by mid successional, coniferous, and deciduous stands, as well as in partially harvested stands (Chapin et al. 1997, Fuller 1999, Payer 1999). Complex horizontal and vertical structure is especially important to marten, and coarse woody debris is associated with prey access and abundance, denning and nesting sites, refuge from predators, and thermo-regulation (Buskirk et al. 1988).

Because canopy cover in deciduous forests decreases dramatically in winter, conifers may be important to martens. During the winter, marten require more horizontal structure (e.g. coarse woody debris) for access to subnivean resting sites, thermal protection (Taylor and Buskirk 1994), and access to prey (Sherburne and Bissonette 1994). To compensate for scarce prey and higher metabolism during winter, marten have been known to shift to larger prey, such as snowshoe hare (Lachowski 1997), which provide more energy per volume than mice and voles (Zielinski 1986). At elevation, deep snow, unique soil composition, inclement weather, and infrequent logging all contribute to the conifer cover and coarse woody debris that marten seek. Thus, ridgelines and areas of high elevation may be particularly important for marten in New Hampshire. Marten compete with species such as the fisher.

1.2 Justification

In New Hampshire, marten were once common and economically important. By 1935, habitat loss and trapping had resulted in a drastic population decline. Marten remained scarce despite 2 reintroduction attempts and were one of the first species legally classified as threatened in New Hampshire.

Since the early 1980s, evidence of marten has been observed in towns throughout northern New Hampshire. Based on tracks, sightings and an examination of marten distribution, it appears that northern New Hampshire has an expanding population of marten. However, marten demographics are still poorly understood. In addition to being threatened in New Hampshire, marten are of particular concern because of their status as an “umbrella species”; their large range and sensitivity to disturbance make them broad indicators of ecosystem health.

1.3 Protection and Regulatory Status

American marten are listed as threatened in New Hampshire (RSA 212-A). Currently, New Hampshire has a Memorandum of Understanding with the majority of the large landowners, which requires consultation with New Hampshire Fish and Game (NHFG) when proposing to harvest timber above 2,700 ft. There is also an informal agreement with fisher trappers pertaining to the reporting and confiscation of marten carcasses if incidentally captured.

1.4 Populations and Habitat Distribution

Marten were once found throughout the state (except along the coast), but currently appear to be found only from the southern end of the White Mountains north to the town of Pittsburg, where populations are highest (Kelly 2005). Populations found further

south may be isolated by habitat fragmentation resulting from development and habitat differences (e.g., less snow, less coniferous and mixed coniferous/deciduous cover). High elevation habitat appears to be extremely important along the southern edge of their current distribution in New Hampshire.

1.5 Town Distribution Map

Figure 1

1.6 Habitat Map

Figure 2

1.7 Sources of Information

Information on marten habitat, population distribution, and status was collected from Kelly (2005), trappers, technical field reports, agency data (United States Forest Service (USFS), United States Fish and Wildlife Service (USFWS)) and scientific journals.

1.8 Extent and Quality of Data

Marten have been a priority research species for the past 3 years, during which time they were systematically sampled. Data on population demography and high-elevation populations are still lacking. Stand-level data, such as coarse woody debris and snag densities, are needed for better marten management.

1.9 Distribution Research

Distribution research has drawn on intense collection and observation data, as well as upon incidental captures data.

ELEMENT 2: SPECIES CONDITION

2.1 Scale

Conservation planning units for American marten are based on watershed, landownership, and ecological subsection characteristics.

2.2 Relative Health of Populations

Historically, marten were likely most common around the Connecticut Lakes. Currently, it appears that marten are well established in the headwaters of the

Connecticut River and Magalloway River drainages, and are scarce in the Indian Stream drainage. Marten continue to be common in the Mahoosuc and White Mountains, particularly at higher elevation where snowfall is deeper and coniferous cover is greater.

2.3 Population Management Status

Marten populations are not specifically managed, but see sections 2.4, 2.5, and 2.6 for details on habitat protection and management.

2.4 Relative Quality of Habitat Patches

The Connecticut Lakes subsection provides key ecological attributes for marten. The Connecticut Lakes Headwater Property makes up a large percentage of the subsection and has specific wildlife and timber management objectives that will benefit marten. Specific Special Management Areas (SMA) were set aside as marten habitat and require NHFG consultation before logging. Further restrictions on SMAs are also conducive to linking marten habitat.

The Mahoosuc-Rangeley also has excellent potential to provide key ecological attributes for marten. Large land ownerships make up a large percentage of this subsection and provide excellent opportunity to maintain or increase the amount of marten habitat. Larger ownerships in the subsection have recently experienced a high turnover in ownership, which has resulted in widespread, heavy cutting that has likely reduced the amount of habitat available to marten.

The White Mountain subsection, with its interconnected high elevation habitat patches, is well suited for martens. The White Mountain subsection is virtually all White Mountain National Forest (WMNF) and provides excellent opportunity to manage and monitor marten habitat.

2.5 Habitat Patch Protection Status

The Connecticut Lakes subsection is made up of landowners with conservation easements, as well as land that is owned in fee by the state of New Hampshire. The Connecticut Lakes Timber Company currently owns 146,400 acres of working forest with a comprehensive easement held by New Hampshire Department of Economic Resources and Development. NHFG owns in fee 25,000 acres within the

subsection. Habitat that remains unprotected includes Crystal Mountain and Blue Ridge, as well as the Sanguinary and Rice Mountain Ridge with associated lower elevation areas. Unincorporated towns in this subsection have some level of protection through zone districts.

The Mahoosuc-Rangeley subsection is virtually unprotected by ownership and/or easement. High elevation areas have the most protection under unincorporated town zoning and state ownership (e.g., Nash Stream), whereas lower elevation habitats have experienced extensive cutting over the past 10 years with little protection or zoning. Wildlife management objectives are incorporated whenever possible through NHFG's technical assistance program for large landowners. Under this program, compliance with biologists' recommendations is not mandatory. The White Mountain subsection is virtually entirely protected through ownership by the USFS.

2.6 Habitat Management Status

Under the Connecticut Lakes Headwaters Area (CLNA) Draft Stewardship Plan, a primary goal for the property is to establish and maintain wildlife habitats that provide for game and non-game wildlife species native to the Connecticut Lakes Ecoregion. Specific consideration will be given to the landscape context and habitat availability existing outside the boundaries of the CLNA, with emphasis on those species considered to be rare or of conservation concern (e.g., marten). Boreal forest species are also a specific target for this goal. Unincorporated places within the subsection have specific zoning for critical wildlife habitat (PD3 zones), wetlands (PD7 zones), and unusual areas (PD8).

Conserved land within the Mahoosuc-Rangeley subsection includes the Vicki Bunnell Preserve, Nash Stream State Forest, Kilkenny National Forest (part of WMNF), and the Randolph Town Forest, all of which have specific goals for promoting boreal forest and wildlife species within their boundaries. The majority of low-lying habitat remains in large ownerships with few easements and little protection, and is thus at risk of logging. Virtually all of the White Mountains subsection is made up of the WMNF. The age class objectives include having 59 to 63% of the softwood habitat as mature habitat, and 30% as old habitat.

2.7 Sources of Information

Information on habitat protection and management was obtained from literature review, expert review and consultation (W. Staats, NHFG, personal communication), pertinent research, the Connecticut Lakes Headwaters Forest Draft Stewardship Plan, the Draft Plan for Connecticut Lakes Natural Area, Zoning Ordinances for Coos County Unincorporated Places and the WMNF Proposed Land and Resource Management Plan.

2.8 Extent and Quality of Data

Habitat data on stand-level forest condition and landscape connectivity are lacking.

2.9 Condition Assessment Research

An extensive GIS database of habitat age, fragmentation, and management status is needed. Information could be derived from aerial photos and analyzed every 2 to 5 years, or from databases of specific properties held by large landowners.

ELEMENT 3: SPECIES AND HABITAT THREAT ASSESSMENT

3.1.1. Unsustainable Harvest (Forestry Operations and Management)

(A) Exposure Pathway

As a forest interior species, marten require that a certain percentage of their home range be mature forest.

(B) Evidence

Landscape use, composition, and connectivity are especially important to marten (Hargis et al. 1999, Chapin et al. 1998). In Maine, marten are nearly absent from landscapes where more than 0 to 40% of the landscape is in early successional forest (Hargis et al. 1999). Partially harvested forest stands are still utilized by marten as long as they maintain a basal area greater than 18 m²/ha in live trees and snags, especially when the stands retain at least 25 to 30% of the stand in coniferous cover.

3.1.2. Development

(A) Exposure Pathway

Development results in direct loss of forested habitat for marten.

(B) Evidence

Marten are less likely to be captured in areas close to open habitat and in areas with increasing amount of high contrast edge (Hargis et al. 1999). Marten are a forest dependent species and are unable to use prey in agricultural lands associated with higher road and people densities. Indeed, marten populations have been shown to be lower near dense road networks (Robitaille and Aubry 2001).

3.1.3. Scarcity (Competition)

(A) Exposure Pathway

Interspecific competition between marten and fisher is likely related to the competition for prey (e.g., red squirrels and snowshoe hare) and denning locations (e.g., cavity trees). Habitat partitioning is likely more prevalent during the winter, when deeper snow limits fisher populations, though during non-limiting conditions marten and fisher habitat overlap extensively. When marten and fisher populations overlap, it is also likely that fisher eat marten.

(B) Evidence

Krohn et al. (1995) noted that age and recruitment ratios of marten differed significantly across areas where fisher and marten overlapped. Furthermore, in core marten habitat there was little to no fisher recruitment. In core fisher habitat, where marten were present, there was a higher percentage of juvenile marten, suggesting that fisher compete with marten where limitations to fisher populations are low (Krohn et al. 1995). Kelly (2005) compared catch per unit effort (CPUE) values between fisher and marten and found that areas with low CPUE for fisher were more likely to have higher CPUE values for marten.

3.1.4. Climate Change

(A) Exposure Pathway

Climate change, which has resulted in decreased snow depths in winter, may be pushing marten further north and into higher elevation habitats with more snow.

(B) Evidence

Marten are smaller, more agile, and more likely to hunt beneath the snow than fisher (Steventon 1979, Raine 1983). Subnivean air pockets can act as thermal insulators, further increasing the marten's advantage in deep snow (Taylor and Buskirk 1996).

3.1.5 Unregulated Take (Illegal or Unregulated Take)

(A) Exposure Pathway

Fisher trappers incidentally capture marten in fisher sets, sometimes killing them.

(B) Evidence

Fisher trappers are required to turn incidental marten kills over to the local conservation officer. Trappers are also required to keep a trapping journal, where incidental captures should be documented.

3.2 Sources of Information

Information on threats was taken from Kelly (2005), Krohn et al. (1995), Ray (2000), expert review, and consultation (W. Staats, NHFG).

3.3 Extent and Quality of Data

There is well-documented information on the effects of climate change, timber harvesting, and development on martens. The impacts of unregulated take and interspecific competition with fisher are more difficult to assess.

3.4 Threat Assessment Research

Potential threat assessment research would include an in-depth examination of the relationships between marten and fisher. The impacts of timber harvesting and development should also be closely monitored by monitoring marten populations across the landscape as cover distribution changes.

ELEMENT 4: CONSERVATION ACTIONS

4.1.1 Work with landowners to promote forest management that maintains marten habitat across the landscape, Restoration and Management

(A) Threats

Timber harvesting without regard for non-timber resources and development

(B) Justification

- Working with large landowners to promote mature forest characteristics will directly increase the amount of habitat available for marten.
- The ecological response for this objective is having at least 60% of the landscape in mature forest status (more than 18 m²/ha of live trees and snags, with a mean height of more than 9 m and more than 7.6 m diameter at breast height (dbh) (Fuller, 1999)).
- The conservation action can be adapted to new information by shifting emphasis to innovative or altered management techniques.

(C) Conservation Performance Objective

The desired outcome is to maintain large forested blocks of habitat, to maintain connectivity, and to maximize sustainable forestry practices on those lands. Integration of landscape level wildlife management objectives should also be included in guidelines for Forest Certification programs. The desired period is the next 30 years.

(D) Performance Monitoring

Specific objectives will be to assess land cover dynamics using GIS and to examine how the changes in cover relate to potential marten habitat.

(E) Ecological Response Objective

The desired ecological response is the increase and maintenance of the amount of suitable marten habitat in New Hampshire by balancing marten habitat needs with sustainable forestry.

(F) Response Monitoring

Studies of marten densities and distribution can be used to assess the impacts of this action.

(G) Implementation

Implementation of each performance objective can be initiated by NHFG. Guidelines for forest certification should be examined and implemented by the forestry industry. Further marten distribution and density information can be collected where appropriate in coordination with cooperating agencies and

academic institutions.

(H) Feasibility: 1.56

4.1.2 Encourage the maintenance of large forest ownerships, Policy and Regulation

(A) Threats

Timber harvesting without regard for non-timber resources, development

(B) Justification

Working to maintain large ownerships through tax incentives and conservation easements will minimize the threat of development. The conservation action can be adapted to new information by shifting priorities and methods based on circumstance and timing with landowner interest or turnover.

(C) Conservation Performance Objective

The desired outcomes of maintaining large forest ownerships are to maximize the effectiveness of landscape forest management, minimize development pressures and opportunity, and support local economies dependent on the forest products industry. The appropriate scale for this action is statewide, with a focus on the historic large ownerships found north of the White Mountains that are part of the greater Northern Forest. Maintaining large ownerships through tax incentives and conservation deals (e.g., the Connecticut Lakes Headwaters Area) will provide important management opportunities for specific species such as marten.

(D) Performance Monitoring

Property size and turnover rates can be tracked over time. Existing properties should be identified and prioritized according to immediate threats of development and parceling.

(E) Ecological Response Objective

Maintaining large ownerships will benefit marten populations and other wildlife with similar habitat requirements. This will be accomplished when the majority of large ownerships have long-term incentives to minimize parceling and development.

(F) Response Monitoring

Areas to monitor include properties without ease-

ments, including lands owned by T.R. Dillion, Bayroot, Plum Creek, and GMO. Baseline threats should be identified for each property, and properties should be prioritized based on current threats.

(G) Implementation

Maintaining large forest ownerships is a multi-agency, region-wide endeavor that will involve a large number of stakeholders. NHFG and other conservation organizations such as The Nature Conservancy, Society for the Protection of New Hampshire Forests, New Hampshire Timberland Owners Association, and Trust for Public Land should be integral to this process.

(H) Feasibility: 1.38

4.1.. Continue to monitor and manage fisher populations, Restoration and Management

(A) Threats: Interspecific competition

(B) Justification

Monitoring fisher populations, understanding habitat relationships between fisher and marten, and managing (e.g., trapping) fishers may benefit martens. The action can be adapted to new information, and new data can be collected as needed.

(C) Conservation Performance Objective

The desired outcome of monitoring and managing New Hampshire's fisher population is to minimize interspecific competition between marten and fisher, and to increase knowledge about fisher and marten demographics. The appropriate scale for this action is statewide. Trapper data can be supplemented by compiling track transect data from agencies and landowners who collect it (e.g., USFS and Dartmouth College Grant). This should be a long-term effort.

(D) Performance Monitoring

Trapper survey data should be logged and analyzed in the NHFG furbearer database, and these data should be analyzed to identify the best methods for tracking fisher and marten populations statewide.

(E) Ecological Response Objective

The desired ecological response of monitoring and managing fisher in New Hampshire is the increase

in the number of resident, breeding marten in New Hampshire and the existence of a stable marten population. If appropriate, fisher seasons in core marten habitat may need to be liberalized to minimize inter-specific competition between the 2 species.

(F) Response Monitoring

Potential areas for response monitoring include the CLNA and the WMNF. Baseline information should be collected on the WMNF to supplement limited fisher trapping data from the remote high elevation locations where marten are likely abundant.

(G) Implementation

Long-term monitoring and management, which for the most part are already taking place under direction of the furbearer biologist for NHFG, should be continued. Further analysis of marten and fisher interactions may be needed and could be coordinated by region 1 biologists.

(H) Feasibility: 3.06

4.1.4 Investigate, adopt and tailor (to minimize marten captures) Best Management Practices (BMPs) for fisher in New Hampshire, Regulation and Policy

(A) Threats: Unregulated take

(B) Justification

Investigating, adopting, and tailoring BMPs for fisher to minimize marten captures will likely decrease the number of marten incidentally killed in fisher traps.

(C) Conservation Performance Objective:

The desired outcome of using BMPs for fisher trapping in New Hampshire is to minimize the number of marten that are incidentally captured in fisher traps, while still maximizing the recreational, economic and management benefits that fisher trapping provides. The appropriate scale for this action is statewide. Marten distribution and abundance may be highly related to fisher distribution and abundance, and trapping data provide important insight into that relationship. The desired period is over the next 2 to 5 years.

(D) Performance Monitoring:

Current BMPs for fisher trapping will be examined, and modifications will be made when necessary. Specific factors to examine are the use of non-lethal traps in areas where marten densities are greatest, or adjusting trigger placement to minimize marten captures in traps. Both methods should be examined for effectiveness, feasibility, and trapper support.

(E) Ecological Response Objective

The desired ecological response of examining fisher BMPs is to minimize impacts on marten populations due to incidental captures. Successful implementation of fisher trapping BMPs will result in fewer than 5 marten incidentally captured per year and the maintenance of fisher trapping as a tool to minimize interspecific competition between marten and fisher.

(F) Response Monitoring

Areas for response monitoring include the CLNA, Dixville Notch, and the WMNF where there has been incidental captures of marten by fisher trappers.

(G) Implementation

Implementation can be accomplished through the furbearer working group, NHFG's furbearer biologist, and regional biologists assisting in the effort.

(H) Feasibility: 2.63

ELEMENT 5: REFERENCES

5.1 Literature

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Distribution of American Marten in New Hampshire

Distribution
■ Known



Known = confirmed observations from trapper reports and surveys conducted by the University of Massachusetts and NH Fish & Game Department.

