American Marten

Martes americana

Federal Listing	N/A
State Listing	T
Global Rank	G5
State Rank	S2
Regional Status	High

Photo by Ravenel Bennett

Justification (Reason for Concern in NH)

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 (Kelly et al. 2009) and were one of the first species classified as threatened on the states list of threatened and endangered species. 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.

Distribution

Marten were once found throughout the state except along the coast (Silver 1957). Marten have been documented as far south as the northern shore of Lake Winnipesauke, yet core habitat and populations are found in the White Mountains and to the north. Populations found in the White Mountain National Forest and central Coos County may be isolated by habitat fragmentation resulting from development (e.g., roads) 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. Occupancy modeling has predicted that marten could expand into Sullivan and Cheshire Counties but current distribution in these areas is unknown (Kelly 2005).

Habitat

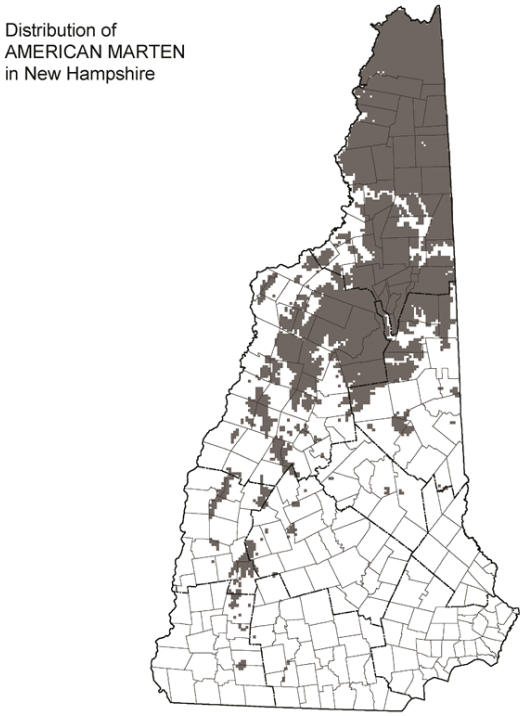
In the Northeast, American marten are found in forests dominated by mid- to late-successional, coniferous, and deciduous stands, as well as in partially harvested stands (Chapin et al. 1997, Fuller and Harrison 2005, Payer 1999). Stands with complex horizontal and vertical structure are especially important to marten, due to prey access and abundance (Sherburne and Bissonette 1994), denning and nesting sites (Buskirk et al. 1989, Ruggerio et al. 1998), refuge from predators (Buskirk and Rugerrio 1994, Hodgman et al. 1997), and thermoregulation (Buskirk and Harlow 1989).

During winter, martens prefer stands with greater horizontal structure (e.g., coarse woody debris) to access subnivean resting and hunting sites (Payer and Harrison 2003). These conditions are often found in mature mixed-wood and softwood forests. 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 higher elevations, 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 (Kelly 2005, Siren 2013). Marten distribution is likely limited by fisher distribution which is considered to be dependent on snow dependent factors (Krohn et al. 1995).

NH Wildlife Action Plan Habitats

- Northern Hardwood-Conifer Forest
- High Elevation Spruce-Fir Forest



Distribution Map

Current Species and Habitat Condition in New Hampshire

Marten populations in the White Mountains and north seem to be increasing or stable. Historically marten were likely found throughout southwestern NH, yet evidence of marten recolonization in this area is lacking.

Currently marten populations and habitats are not being scientifically monitored. Estimates of abundance and health are based on historic research (Kelly 2005, Siren 2013) and general observations and incidental captures from the public and staff regarding distribution and habitats.

Portions of northern New Hampshire have a disproportionate amount of younger spruce fir and mixed forest that may be limiting marten movement and occupation of the landscape (Siren 2015, Guild 2013).

Population Management Status

Incidental capture tracking

Biologists currently track the number and location of incidentally captured marten during the fisher trapping season. Age and sex of each individual is mapped in ArcGIS to help identify trends and potential impacts of the incidental take.

Occurrence monitoring

Biologists also currently track the number and location of observed marten from the public and staff. Locations are mapped in ArcGIS to identify trends and changes in the distribution of observations.

Incidental capture mitigation

NHFG is exploring opportunities to work with Vermont Fish and Wildlife and local NH trappers to test the efficacy of an exclusion device to minimize the number of incidental marten captures during fisher trapping. Population impacts of incidental take is thought to be minimal due to the high percentage of juvenile animals captured indicating trapping is likely occurring in suboptimal habitats.

Use of Special Management Areas (SMA) and conservation easements

Biologists have used the identification and further technical assistance of SMA areas identified through conservation easements to help provide habitat recommendations for marten habitat use and movement across the landscape. Especially in overlapping habitats with lynx, a landscape analysis of marten and lynx habitat would be beneficial in providing recommendations to the single landowner that currently has both species on the landscape.

Public outreach

Biologists are currently working with foresters and land managers to consider marten habitat and landscape/stand requirements when planning harvests. Creating public awareness about the species distribution and habitat needs.

Population isolation due to management on larger ownerships

In northern NH there is extensive pressure on larger ownerships due to ownership changes and turnover over the last 20 years. Landowners are currently seeking alternative methods of increasing investment return on these ownerships due to financial pressures including energy development and parcelization.

Regulatory Protection (for explanations, see Appendix I)

- Endangered Species Conservation Act (RSA 212-A)

Quality of Habitat

Northern Coos County has good to improving habitat quality for marten. The Connecticut Lakes Natural Area (CLNA)(owned and managed by NHFG) is specifically managed for wildlife and marten are a focal species in that management. Additionally the conservation easement on the CLTC property and continued technical assistance in managing the SMA's established for marten is also improving the quantity and quality of marten habitat in this landscape.

Central Coos County likely has medium to good habitat for marten. Ownership patterns have resulted in extensive areas of younger forest and less optimal marten habitat. High elevation areas are likely serving as sources for population expansion and dispersal. Research conducted on Kelsey Mountain (Siren 2013) provides a good summary of this relationship.

The White Mountain National Forest is good to excellent habitat, especially in high elevation remote sections of the Forest. Stands are more mature and mixed in nature. Populations may be isolated

due to loss of connectivity between the Forest and surrounding landscape during leaf off season. Additionally the Forest is at the southern edge of marten distribution in New Hampshire making the importance of deeper snow and more mixed or softwood cover types are more pronounced.

Habitat Protection Status

Conserved land contributing to marten habitat include: The Connecticut Lakes Natural Area, Connecticut Lakes Timber Company, the Vicki Bunnell Preserve, Nash Stream State Forest, Kilkenny National Forest, the White Mountain National Forest, and the Randolph Town Forest and the Errol Town Forest, all of which have specific goals for promoting boreal forest and wildlife species within their boundaries.

Portions of Coos County remain unprotected through easement or conservation ownership. High elevation habitats in these areas have limited protection under the unincorporated town zoning. These high elevation areas and connecting habitats are critical north/south as well as east/west movement corridors between populations and states. Within the PD6 zone (Zoning Ordinances Coos County Unincorporated Places 1991) for the unincorporated town ownerships NHFG biologists work with managers to plan high elevation harvests.

Habitat Management Status

Connecticut Lakes Natural Area is owned by NHFG with a conservation easement held by the Nature Conservancy. Within this property there is a 15,000 acre Nature Preserve where no active management will occur. The remaining 10,000 acres will be managed specifically for wildlife. Several other state ownerships such as Nash Stream State forest are benefitting marten as well.

Connecticut Lakes Timber Company owned by Forests Land Group with conservation easement held by the state of NH. This property has several Special Management Areas (SMA) specifically established for marten as well as goals and objectives in the Stewardship Plan that will benefit marten. Town forests such as the Randolph Community Forest and the Errol Town Forest both have stipulations in their easements regarding wildlife and associated habitats. .

White Mountain National Forest owned by the federal government has structure goals and objectives conducive to excellent marten habitat.

The majority of habitat in central Coos County remains in large ownerships with few easements and little protection, and is thus at risk of logging and development. Unincorporated places within New Hampshire have specific zoning for critical wildlife habitat (PD3), wetlands (PD7), high elevation (PD6), and unusual areas (PD8).

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.

Habitat loss from forest insect outbreaks (native and non-native) (Threat Rank: High)

Spruce bud worm is predicted to spread south over the next 10 years and has potentially to significantly impact the amount of balsam fir and therefore softwood cover throughout core marten

habitat in NH. Northern NH has also seen an increase in the number of softwood stands impacted by balsam wooly adelgid, which could also significantly impact balsam fir distribution and abundance in NH.

Habitat impacts from development (Threat Rank: Medium)

Development causes a direct loss of habitat as well as increased access for other less specialize carnivores such as coyotes, fisher and fox which can compete with marten.

Habitat impacts from climate change reducing the amount of core habitat and connectivity (Threat Rank: Medium)

Climate change will likely cause a retraction and conversion of spruce fir habitat as well as reduce annual snow depth, distribution and duration allowing species less adapted to these conditions to outcompete marten on the southern edge of their distribution.

Excessive timber harvesting resulting in landscapes that lack sufficient habitat to support marten populations (Threat Rank: Medium)

Mortality from incidental capture in body gripping trap (Threat Rank: Medium)

Direct mortality from body gripping traps used primarily for fisher trapping.

Increasing competition from generalist species (Threat Rank: Medium)

Increasing abundance and distribution of species (i.e. fisher, coyote and fox) that compete and predate on marten could impact marten distribution.

List of Lower Ranking Threats:

Human and wildlife community impacts from roads (including forest roads)

Habitat impacts from communication tower and wind turbine development

Actions to benefit this Species or Habitat in NH

Development of best management practices to maintain marten habitat

Primary Threat Addressed: Excessive timber harvesting resulting in landscapes that lack sufficient habitat to support marten populations

Specific Threat (IUCN Threat Levels): Biological resource use

Objective:
Development of best management practices for habitat management to maintain marten habitat

General Strategy:
NHFG will develop best management practices that can be used when enguaging private and public landowners in technical assistance for managing wildlife habitats

Political Location: **Watershed Location:**

Primary Threat Addressed: Habitat loss from forest insect outbreaks (native and non native)

Specific Threat (IUCN Threat Levels): Invasive & other problematic species, genes & diseases

Objective:

General Strategy:

Political Location: **Watershed Location:**

Primary Threat Addressed: Habitat impacts from climate change reducing the amount of core habitat and connectivity

Specific Threat (IUCN Threat Levels): Climate change & severe weather

Objective:

General Strategy:

Political Location: **Watershed Location:**

Monitor the distribution and abundance of forest insect pests to help identifiy places most susceptible to invasion and potential impacts

Primary Threat Addressed: Habitat loss from forest insect outbreaks (native and non native)

Specific Threat (IUCN Threat Levels): Invasive & other problematic species, genes & diseases

Objective:
Early identification of areas likely to be most susceptible to insect outbreaks

General Strategy:
Monitoring

Political Location: **Watershed Location:**

Identify areas that will be most resilient to climate change to help identify core marten areas and connecting habitats

Primary Threat Addressed: Habitat impacts from climate change reducing the amount of core habitat and connectivity

Specific Threat (IUCN Threat Levels): Climate change & severe weather

Objective:
Protect and enhance areas that would be most reslient to climate change and associated habitat changes that would be detrimental to marten

General Strategy:
Identify important parcels and their protection status to maintain marten habitat on the landscape

Political Location: **Watershed Location:**

Develop methods to minimize incidental capture

Primary Threat Addressed: Mortality from incidental capture in body gripping trap

Specific Threat (IUCN Threat Levels): Biological resource use

Objective:
Work with Vermont to test the efficacy of a marten exclusion device for use by fisher trappers utilizing body gripping traps

General Strategy:
Working collaboratively with neighboring state to help minimize the number of marten incidentally captured in fisher body gripping sets. VT Fish and Wildlife has designed a device to help do this and NHFG will work with them to test the efficacy of the device.

Political Location: **Watershed Location:**

Minimize road construction in core marten habitat

Primary Threat Addressed: Human and wildlife community impacts from roads (including forest roads)

Specific Threat (IUCN Threat Levels): Transportation & service corridors

Objective:
Minimizing road development in core marten habitat will help to mitigate habitat loss as well as increased access by competing predators; increases are of compacted snow surfaces in winter and humans (trapping).

General Strategy:
Work with landowners and towns to minimize the developemnt of new permanent roads. Promote

the use of seasonal roads when needed.

Political Location: **Watershed Location:**

Minimize high elevation and core marten habitat loss due to development

Primary Threat Addressed: Habitat impacts from communication tower and wind turbine development

Specific Threat (IUCN Threat Levels): Energy production & mining

Objective:
To minimize or prevent the development of high elevation and core marten habitat

General Strategy:
Work with conservation commissions, the unincorporated towns planning board and local landowners to minimize or prevent the development of high elevation and core marten habitat

Political Location: **Watershed Location:**

Provide technical assistance and outreach to unincorporated towns planning board, conservation commissions, towns and managers on the importance of high elevation habitats and potential impacts of development in core marten habitat

Primary Threat Addressed: Habitat impacts from development

Specific Threat (IUCN Threat Levels): Residential & commercial development

Objective:
Minimize or prevent development in high elevation habitats

General Strategy:
Recent research (Siren 2013) has shown the potential impacts of development in high elevation habitats for marten. NHFG should work with the local conservation commissions as well as the unicorporated towns planning board to minimize or prevent development in these habitats.

Political Location: **Watershed Location:**

References, Data Sources and Authors

Data Sources
Information on marten habitat, population distribution, and status was collected from Kelly (2005), Siren (2013), trappers, technical field reports, agency data (United States Forest Service (USFS), United States Fish and Wildlife Service (USFWS) and scientific journals.
Information on habitat protection and management was obtained from literature review, expert review and consultation.

Data Quality

Species Distribution

Currently marten distribution is tracked using public sighting records and incidental captures during the fisher trapping season. Both methods are biased toward areas with increased human densities and areas with more roads. Little is known about the distribution of marten in less accessible areas such as high elevation habitats and remote roadless areas such as the White Mountain National Forest and portions of Coos County. Additionally marten distribution in southern Vermont is expanding and could impact the recolonization of southwestern New Hampshire by marten.

Habitat Distribution

Marten habitat distribution is largely based on Kelly (2005). Data collected since 2005 could be used to update this model and thus estimates of potential marten occurrence state wide. Additional insight into marten habitat in New Hampshire is summarized in Siren (2013) which could be used to update habitat models in New Hampshire.

There is little information regarding the connectivity of populations and habitats in Coos County, especially the influence of areas that don't meet landscape habitat requirements as a result of management.

Species

Condition of species across the state based on Kelly (2005) and Siren (2013) as well as collected information on occurrence and incidental capture maintained in Access and ArcGIS.

Gap in knowledge include distribution and abundance in remote high elevation habitats impacted by development and timber harvesting, as well as distribution in historically occupied locations such as southwestern New Hampshire.

Habitat

More information is needed on the status of spruce fir and mixed wood habitat throughout northern New Hampshire, the amount being converted to hardwood due to management practices and the amount being adequately regenerated. Historical accounts seem to indicate that spruce fir was more abundant throughout Coos County. It is unknown if spruce-fir restoration is possible, due to diverse landownership, management restrictions, shifting markets, and climate change.

2015 Authors:

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2005 Authors:

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