

American marten

Martes americana

Status

Federal status: G5 N5

NH state status: S2, Threatened

ME state status: S5, Not listed

In New Hampshire, the marten appears to be expanding, but it is still uncommon. The marten is still trapped in Maine and other parts of its range where it is not listed. Population levels may fluctuate greatly in Maine dependent on the harvest levels, but Maine is a large source population – over 50% of the U.S. harvest consistently comes from Maine.

The expert panel indicated a range-wide outcome of B-C because less than 50% of the historic range is currently occupied. On the WMNF, the outcome given for current condition was an uncertain C. Marten populations on the Forest still are greatly reduced from historic levels. In the future, the panel thinks their populations could get better or worse, largely depending on what happens to them off-Forest and possible changes in snow depth and resulting competition.

Distribution

Marten are distributed throughout Canada and Alaska, south through the Rockies, Sierra Nevadas, northern Great Lakes region, the Adirondack region of New York, and northern New England. In northern New England, they are limited to northern Maine and New Hampshire. Marten have been documented as far south as Waterville Valley in New Hampshire. The WMNF is at the southern edge of the marten's range. Marten occurrences are not tracked in Maine, however the southern limit is at about the same latitude as in New Hampshire.

Habitat

The proposition that marten are old growth generalists comes from the western U.S. and Ontario where early- to mid-successional stands may lack structural features required by marten. In the northeastern U.S., marten are stand generalists. They occur in large numbers in coniferous, mixed coniferous-deciduous, and deciduous forests, including forests damaged by spruce budworms or managed for fiber. Recent research has shown that physical structure at the stand level, which increases access to prey and avoidance of predators, influences suitability of habitat for marten more than forest age or species composition alone. Mixed and deciduous forests in the northeast can be structurally complex at a relatively young age.

In Maine, marten generally do not use forests that are less than 30-40 ft tall or with a basal area of less than 80 ft²/acre. Marten do not tolerate a lot of patchiness. Ideally, at least 80% of a marten's home range (2-2.8 km² for females; 5-10 km² for males) should meet these criteria to be suitable. The probability of marten occurring in an area reaches zero when less than 55% of a home range meets these criteria. Marten with partial harvests in their home ranges are the only marten to expand their ranges significantly in

the winter to take advantage of more suitable habitat. Marten show intolerance for tree spacing where they can't get from tree to tree, which is how they escape from predators. They do not need a closed canopy, but they do need overhead cover, which can occur in young forests. Marten use clearcuts (age 0 to 15 or 20 in Maine) less than expected based on availability.

In the winter, marten use subnivean resting sites and therefore may only occur in regions with heavy snowfall. Coarse woody debris on the forest floor and dense clusters of small diameter live conifer stems provide subnivean access points to prey and winter resting places.

Den sites typically are in large (>15 in/40 cm dbh) hollow trees or logs and subterranean dens.

Limiting Factors

Snow depth appears to be the primary range delineator. Over time, habitat for marten in the Green Mountains and substantial portions of New Hampshire has declined due to reduced snow depth. The WMNF is the southern edge of the heavy snowfall zone and is therefore likely the southern edge of range for the marten. Snow depth is important for foraging, resting sites, and escape from predators.

Landscapes that do not meet the threshold of about 80% in forest at least 30' tall and having 80 ft²/acre of basal area are the primary limiting factor in northern New England. Intensive even-aged management has fragmented what had been suitable habitat in some parts of northern Maine and New Hampshire and reduced coarse woody debris levels in stands. New Forest Practice regulations in Maine that promote partial harvests that would drop residual basal area below 80 ft²/acre across the landscape could exacerbate the problem, leaving even larger areas in unsuitable conditions.

When landscape level considerations have been met, stand conditions can become important. Lack of structural complexity, including large hollow trees or logs, other coarse woody debris, and dense clumps of small diameter conifers, decreases habitat suitability and can increase predation.

Fisher abundance may limit ability of marten to recolonize parts of their historic range, and may reduce habitat suitability in parts of their current range. Predation by fishers (in addition to suboptimal habitat) possibly contributed to the failure of attempts to reintroduce marten to Vermont; even at high elevations in Vermont, fishers still outcompeted marten.

Trapping historically limited marten in Maine and elsewhere. It is not currently a concern, but could become one if habitat conditions reduce population levels.

Viability concern

Habitat on the WMNF has improved in recent years as the Forest ages, and is likely to continue improving in the future. The outcome provided by the panel was C currently, but with the potential for that to improve or decline in the future. This species remained on the SVE list due to the potential for viability on the Forest to decline toward a D. However, any reduction in viability would likely result from factors outside WMNF control, such as predation, snow depth, and changes to the source populations in Maine.

Management activities that might affect viability

Timber harvest and other activities that remove or substantially open the forest canopy may make an area unsuitable for marten if they result in less than 80% of the landscape being at least 30' tall and having at least 80 ft²/acre of basal area. Management that does not reduce landscape conditions below this level would not affect viability because the area would remain suitable for marten.

Within a suitable landscape, removal of snags, down logs, and dying trees reduces structural complexity and may reduce habitat suitability. Management that retains or improves the structural complexity of suitable habitats would benefit marten. Forest practices such as on-site delimiting, slash management, and retention of scattered large trees and snags may increase structural complexity within a harvested stand to levels at or above those required by marten.

References

- Buskirk, S.W., Harestad, A.S., Raphael, M.G., and Powell, R.A. (eds). Marten, sables, and fishers: biology and conservation. Cornell University Press, Ithaca, New York.
- Chapin, T.G., Phillips, D.M., Harrison, D.J., and York, E.C. 1997b. *Seasonal selection of habitats by resting marten in Maine*. In: Proulx, G., Bryant, H.N., and Woodard, P.M. (eds). *Martes*. Taxonomy, ecology, techniques, and management. Provincial Museum of Alberta, Canada. Pp. 166-181.
- Chapin, T.G., Harrison, D.J., and Katnik, D.D. 1998. Influence of landscape pattern on habitat use by American marten in an industrial forest. *Conservation Biology*. 12(6): 1327-1337.
- DeGraaf, R.M. and Yamasaki, M. 2001. New England wildlife: habitat, natural history, and distribution. University Press of New England, Hanover and London.
- Fuller, A.K. 1996. Influence of partial timber harvesting on American marten and their primary prey in northcentral Maine. Master's thesis. University of Maine, Orono.
- Hargis, C.D., Bissonette, J.A. and Turner, D.L. 1999. The influence of forest fragmentation and landscape pattern on American marten. *Journal of Applied Ecology* 36:157-172.
- Krohn, W.B., Elowe, K.D., and Boone, R.B. 1995. Relations between fishers, snowfall, and marten. *Forestry Chronicals* 71:97-105.
- Lachowski, H.J. 1997. Relationships among prey abundance, habitat, and American marten in northern Maine. Master's thesis. University of Maine, Orono.
- NatureServe. 2001. An online encyclopedia of life [web application]. Version 1.3. Association for Biodiversity Information. Arlington, Virginia.
<http://www.natureserve.org/>.
- Payer, D.C. and Harrison, D.J. 1999. Effects of forest structure on spatial distribution of American marten. National Council for Air and Stream Improvement. Technical Bulletin No. 787. August.

Payer, D.C. and Harrison, D.J. 2000. Structural differences between forests regenerating following spruce budworm defoliation and clear-cut harvesting: implications for marten. *Canadian Journal of Forestry Research* 30:1965-1972.

SVE panel. 2002. GMNF/WMNF Species Viability Evaluation Mammal Expert Panel notes on American marten (*Martes americana*). Panel held May 21-23, 2002, Manchester, NH.

Wilbert, C.J., Buskirk, S.W., and Gerow, K.G. 2000. Effects of weather and snow on habitat selection by American marten (*Martes americana*). *Canadian Journal of Zoology* 78:1691-1696.