**The status of the Canada lynx on the WMNF and the potential for Forest Service activities to impact the species**

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**Introduction**

The White Mountain National Forest (WMNF) once served as the core of the Canada lynx (*Lynx canadensis*) population in New Hampshire. By the 1970s, the species had mostly disappeared from the area (Kilborn 2019). While individuals are still occasionally observed, reproduction has not been documented in many decades. This paper summarizes the current status and the probable future of the Canada lynx on the WMNF and discusses how management activities could impact the species.

**Recent lynx observations**

Since 2004, there have been twelve documented occurrences of lynx or lynx tracks on the WMNF (USFS, unpublished data). Only two of these (17%) were located below 2500 feet[[1]](#footnote-1) in elevation. In both instances, the Forest Service determined these were transient individuals. All other observations occurred above 2700 feet in elevation.

An intensive camera trapping effort focusing on lynx and other mammalian species began on the WMNF in 2014 (Sirén et al. 2021). These cameras have captured lynx on seven occasions, all at 2700 feet in elevation or higher. Of the 88 cameras deployed on the WMNF since the start of the monitoring effort, 51 (58%) are or were located below 2700 feet in elevation. Therefore, camera traps are capturing lynx disproportionately higher than one would assume if elevation did not play a role in lynx occupancy. This makes sense given snowshoe hare populations are highest on the WMNF at higher elevations.

**Analysis of lynx observations**

It is believed these observations on the WMNF represent individuals wandering or dispersing during the winter breeding season (Shea 2017). It is generally accepted that the WMNF no longer harbors a viable population of lynx (Kilborn 2019, Interagency Lynx Biology Team [ILBT] 2013). A lack of currently suitable habitat in the Connecticut Lakes region of Maine and New Hampshire has likely influenced the slow return of lynx to the WMNF region (Vashon et al. 2012). As a result, the ILBT considered the WMNF as a “peripheral” area for lynx (ILBT 2013). Peripheral areas are characterized by sporadic lynx observations and no evidence of reproduction. The ILBT determined that peripheral areas are incapable of supporting self-sustaining populations of lynx; this is likely the case for the WMNF (Hoving et al. 2003). However, peripheral areas may still contribute to lynx persistence on the landscape by enabling successful dispersal, which may be very important during years when snowshoe hare abundance is low in core lynx areas (ILBT 2013).

The WMNF will continue to have lynx moving through the highlands on occasion, but they may never reproduce or linger for long periods of time due to the region’s limited food sources (Kilborn 2019) and limited and fragmented spruce-fir habitat (Hoving et al. 2003) compared to occupied habitats further north. This is likely to be exacerbated by climate change as declines in snowpack on the WMNF and elsewhere are anticipated, which will favor bobcat and other competitors over lynx (Sirén et al. 2021). As a result, the Canada lynx is expected to continue declining in the WMNF region over the next several decades (Sirén et al. 2022).

Wandering or dispersing individuals are most likely to be found at higher elevations (above 2500 feet) on the WMNF where there is more spruce-fir habitat and prey and less competition. While lynx may be present at lower elevations from time to time, these individuals are most likely passing through quickly as they seek more suitable habitats. While individuals may be found wherever adequate habitat exists at higher elevations, they are somewhat less likely to occur on the Saco Ranger District given habitat quality and historical occurrences compared to the Pemigewasset and Androscoggin districts.

While the research summarized in the preceding paragraphs shows future breeding on the WMNF is unlikely, it cannot be completely discounted. The Canada lynx is inextricably linked to its main prey item, the snowshoe hare. Hare populations naturally ebb and flow and are a function of predation and habitat availability. Even-aged timber harvests and spruce budworm outbreaks create the regenerating spruce-fir habitat favored by snowshoe hare and lynx. Budworm outbreaks, associated salvage harvests, and the maturation of the forest that follows these events have greatly influenced the range and population density of the lynx in northern New England (Vashon et al. 2012). The combined effects of even-aged forest management, insect outbreaks, and the cyclical nature of the showshoe hare population could potentially push the breeding range further south and into the WMNF in the future, at least temporarily.

**Potential effects of management activities**

Absent any changes to the breeding status of lynx on the WMNF, management activities conducted by the Forest Service on the WMNF only have the potential to impact individual lynx that have wandered or dispersed from a core area (i.e., northern Maine). Individuals moving through the WMNF may be displaced from areas or redirected from their traveling routes if they encounter an active project area; this direct effect is far more likely to happen above 2500 feet in elevation than below. Most projects conducted by the Forest Service at higher elevations are of short duration and involve minimal vegetation management (e.g., trail maintenance and reroutes). Impacts from such projects on lynx would be both insignificant (i.e., so small they cannot be meaningfully measured, detected, or evaluated) and discountable (i.e., very unlikely to occur).

If future conditions allow for lynx to persist for long periods and reproduce on the WMNF, projects that take place in occupied denning habitat could pose substantial direct impacts.

Lynx could face indirect effects if the quality and quantity of foraging and denning habitat[[2]](#footnote-2) is decreased to levels that would no longer support lynx. Additionally, activities that result in the removal of foraging or diurnal security habitat to the extent that habitat connectivity is severed would indirectly affect the species. This is unlikely to occur since the WMNF Land and Resource Management Plan (USDA Forest Service 2005) contains several Standards and Guidelines to protect lynx habitat and ensure it does not become fragmented by management activities. Provided adherence to these guidelines, habitat would not be altered in a way that would negatively affect the Canada lynx.

**References**

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1. Based on a review of existing information on snow conditions on the WMNF, the USFS concluded that snow conditions at higher elevations (>2500 feet above sea level) would provide a competitive edge for lynx during winter over other predators such as coyote and bobcat (Sirén et al. 2021). Snow conditions are more variable below 2500 feet. After considering the effects of climate change, lynx may be at competitive disadvantage in areas below 3900 feet (1200 meters) within a few decades (Sirén et al. 2022). To ensure a conservative approach to lynx conservation, the Forest Service will continue to use 2500 feet to delineate higher and lower quality lynx habitats on the WMNF. [↑](#footnote-ref-1)
2. Although the WMNF does not support a breeding population of the Canada lynx, the conservation and promotion breeding habitat is important in case habitat conditions and snowshoe hare populations change in a way that would push the lynx further south. [↑](#footnote-ref-2)