Climate Change and Snow Dependent Species: A Case for the Wolverine

FY 2009 President's Budget

Issue

The wolverine is one of the rarest and least studied carnivores in the U.S. Throughout its world-wide range, the wolverine is recognized as an alpine weasel, associated with areas of deep, persistent snow. The relationship between wolverine and snow is tied largely to reproduction. Females locate reproductive dens in deep snow caves that provide consistent temperatures and protection from predators. Raising kits to weaning is a ten-week process with young wolverines emerging from the den in early May.

Forest Service scientists from the Rocky Mountain Research Station (RMRS) and the Pacific Northwest Research Station studying the relationship between wolverine presence and the distribution of spring snow have found that the geographic area defined by persistent spring snow is (1) condordant with the current world-wide distribution and historical U.S. distribution of the wolverine, (2) includes 99% of all documented wolverine dens world-wide, (3) includes over 90% of year-around wolverine telemetry relocations from six U.S. research studies, and (4) is significant in explaining genetic connectivity and dispersal corridors across the western U.S. As such, the distribution of persistent spring snow appears to define a bioclimatic niche for the wolverine.

Importance

An annual reduction in the extent of spring snow due to global warming will reduce this area (94% of which, in the western U.S., occurs on Forest Service lands), thereby threatening reproductive success in an already rare carnivore. Public interest in the wolverine has increased dramatically over the past decade as evidenced by petitions for listing the wolverine submitted in 2000 and 2005.

Future Plans

RMRS plans to expand its research of wolverine ecology, investigating den site selection relative to climate change, and developing noninvasive genetic sampling techniques that facilitate population monitoring. This includes conducting fieldwork, evaluating genetic relationships, supporting Geographic Information System (GIS) analyses, and hiring staff.

Expected Outcomes

As the warming climate reduces the extent of wolverine habitat, populations will have to either adapt or become increasingly isolated. The public is aware of the limited extent of current populations and will want to know what can be done to protect wolverine populations. By increasing our understanding of the wolverine's current distribution and the factors that impact den site selection and reproduction, the Forest Service will be better able to respond to public concerns about this rare and fascinating animal.

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