

Sierra Nevada Red Fox and Forestry

Wildlife in Managed Forests:
Reference Series

The Sierra Nevada red fox (SNRF; *Vulpes vulpes necator*) is a rare and elusive subspecies of the wide-ranging red fox (*Vulpes vulpes*). Presence of a montane red fox population in the Oregon Cascades has been known since the 1960s, however, genetic results from a 2012–2014 study revealed that the DNA of these montane foxes matched with the SNRF, rather than the expected Cascade red fox subspecies (*Vulpes vulpes cascadenensis*). The SNRFs in Oregon are further classified as the Southern Cascades distinct population segments (DPSs). The Southern Cascades DPS is currently under review to be listed under the Endangered Species Act (ESA), and is an Oregon State Wildlife Action Plan Species.

SNRF range in size from about 7 to 10 pounds, and have thick fur to withstand cold temperatures at high elevations. SNRF coloration ranges from yellow–reddish brown (red phase) to grayish brown with darker lines on the back and shoulders (cross phase) and black with silver guard hairs (black or silver phase). Common gray foxes (*Urocyon cinereoargenteus*) and kit foxes (*Vulpes macrotis*) are the other two fox species in Oregon. Comparisons to these species and the Rocky Mountain red fox (*Vulpes vulpes macroura*) can be found in the table below.

SNRF are often found in remote and inaccessible areas. In Oregon, SNRF have been found in high-elevation subalpine meadows and forests of the Cascade Mountains, as well as high-use recreation areas such as ski resorts and campgrounds. Sightings range from Mount Hood to Crater Lake (Oregon Department of Fish & Wildlife). SNRF prey on small mammals such as rabbits, mice and voles, as well as carrion (typically road-killed deer). Little is known about their range, distribution, population size and reproduction. Ongoing research projects in both Oregon and California are beginning to shape the answers to some of these unknowns.



Sierra Nevada red fox in the Oregon Cascades at 4,800 foot elevation.
Photo by Bill Freund.

MONTANE ENVIRONMENTS

Montane ecosystems are those found near the crests of mountain ranges; they are high in elevation, cooler in climate, and maintain a higher snow pack level and cloud cover than other habitats. Vegetative species can be highly variable, and may include meadows dominated by grasses and flowering plants, as well as alpine and subalpine forests dominated by a variety of tree and shrub species.

FOXES IN OREGON				
COMMON GRAY FOX	KIT FOX	RED FOX		
The gray fox is medium-size. It has a salty gray coat with cinnamon markings, a cream underside and a tail lined with black. Unlike other canid species, the gray fox can climb trees to hunt or rest. Denning sites include ground dens dug by gray foxes or other species, logs, debris, abandoned buildings and rocky outcroppings. Typically gray fox are found west of the Cascades, although in recent years there have been sightings of them in the eastern part of the state.	Kit foxes are the smallest species of fox found in Oregon. Their features include large ears and slim, long legs. A black-tipped tail comprises 40 percent of its total length. Kit foxes have grizzled brownish-gray backs, blending to light rusty brown sides and legs. Their chests and the insides of their legs are white. Kit foxes inhabit desert and semi-desert areas of eastern Oregon. The range of the kit fox reaches its northern limit in the southeastern corner of the state. This species is listed as State Threatened in Oregon.	The red fox is the largest of the fox species. Their coat is a distinct rich orange. Red fox legs, paws and ear tips are commonly black, and their muzzle is compact and pointed. They are known to be territorial and occur throughout Oregon.		
		SIERRA NEVADA	ROCKY MOUNTAIN	FUR TRADE ESCAPEES
		Little is known about the Sierra Nevada red fox (SNRF). SNRF are difficult to study, because they are mostly nocturnal and are found in remote and mountainous habitats. SNRF have unique body characteristics such as fur-covered toe pads and lighter bodies that may have evolved to allow for success in montane environments.	The Rocky Mountain red fox (RMRF) is the largest of the montane subspecies of red foxes, with a heavier body and longer tail. RMRF can be found in areas of eastern Oregon, including parts of the Cascades. RMRF are also found in three color phases, causing them to be confused with SNRF.	In addition to SNRF, red foxes that escaped or were released from fur farming resulted in the establishment of non-native populations of red fox in the lowlands in Oregon. These populations of red foxes are generally found in close proximity to human development, and mainly west of the Cascades.

WHAT ARE SOME THREATS TO SNRF?

- competition from other species
- lack of meadow habitat at high elevations and degradation of habitat
- low reproductive rates and genetic bottlenecks in some populations
- vehicle mortalities and diseases

IS THERE RECENT RESEARCH ON THE SIERRA NEVADA RED FOX?

Currently there is very little research about the population size and demographics of SNRF. Researchers believe reproduction is a critical limiting factor for population growth, and that management should focus on factors that are most likely to influence breeding, reproduction and juvenile recruitment. Reproductive success and timing are currently being studied. It is important to determine the timing of reproduction, denning and pup-rearing, as this is the most sensitive period in foxes' lives. Based on current research in the Oregon Cascades, SNRF are mating in the late winter months (late February to early March), and denning with kits in early April to late May (ODFW, unpublished). Data from radio-collared individuals in Oregon suggests SNRF have especially large home ranges (approximately 139km²) relative to their body size (ODFW, unpublished).

WHAT DOES THIS MEAN FOR MANAGEMENT?

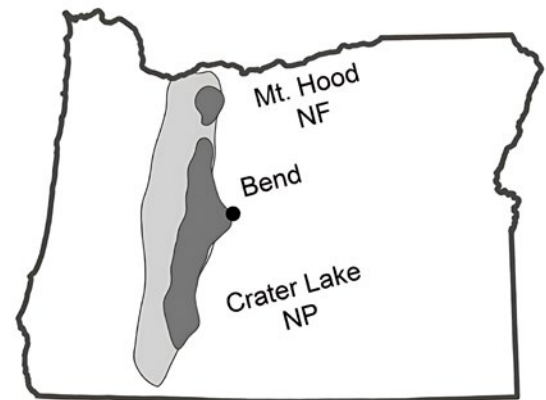
In areas where managed forests overlap with use by SNRF, the following is recommended:

- maintaining forests as forests
- protecting den sites
- minimizing forest activities near active den sites during the breeding season
- reporting sightings
- restoring or maintaining high-elevation meadow habitat

Research on SNRF is ongoing. With better understanding of their distribution, habitat requirements and subspecies delineation, management strategies can be developed.



Sierra red fox



■ Current predicted distribution

■ Historical range

SOURCES & MORE INFORMATION

Oregon Department of Fish and Wildlife: <https://www.dfw.state.or.us/news/2015/october/100715b.asp>

Oregon Forest Practices Act: <http://www.oregon.gov/odf/Pages/lawsrules.aspx>



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