Sierra Nevada Red Fox and Forestry

Wildlife in Managed Forests: Reference Series

There are three species of fox in Oregon: gray fox (Urocyon cinereoargenteus), kit fox (Vulpes velox) and red fox (Vulpes vulpes); see the table below. The Oregon Department of Fish and Wildlife Conservation Strategy highlights the need to protect the kit fox and a subspecies of the red fox known as the Sierra Nevada red fox (SNRF; Vulpes vulpes necator). This reference sheet focuses on the Sierra Nevada red fox, which is one of two native red fox subspecies found in Oregon. Forest carnivore studies in the Oregon Cascades have been ongoing since the early 1960s, and have confirmed the continued presence of montane red foxes since that time. The montane red foxes of the Oregon Cascades were thought to be the Cascade red fox; however, recent genetic research has classified them as SNRF. This reclassification determines that, historically, SNRF were found throughout the Oregon and California Cascades. SNRF are found mainly in montane environments.

SNRF range in size from about 6 to 10 pounds, and have thick fur. 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).

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 ENVIORNMENTS

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.

<table>
<tr><th colspan="4">FOXES IN OREGON</th></tr>
<tr><th>COMMON GRAY FOX</th><th>KIT FOX</th><th colspan="2">RED FOX</th></tr>
<tr><td rowspan="2">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.</td><td rowspan="2">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.</td><td colspan="2">The red fox is the largest of the fox species. Red foxes are known to mate for life. 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.</td></tr>
<tr><td>SIERRA NEVADA</td><td>ROCKY MOUNTAIN</td><td>FUR TRADE ESCAPEES</td></tr>
<tr><td>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.</td><td>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.</td><td>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.</td></tr>
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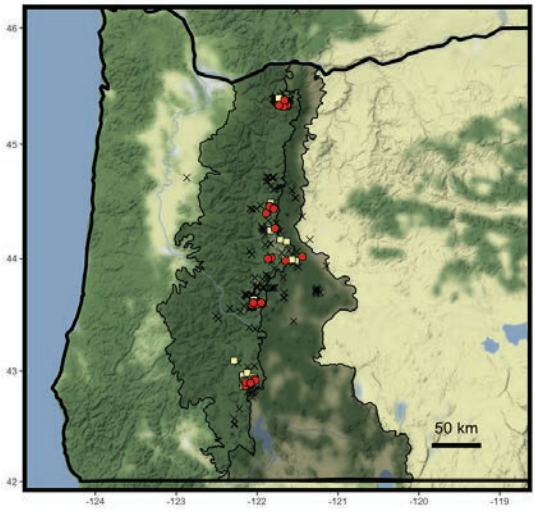
WHAT ARE SOME THREATS TO SNRF?

- 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).



This map, provided by Cate Quinn at the Center for Veterinary Genetics at the University of California Davis, displays the very limited data.

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.

SOURCES & MORE INFORMATION

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

The Oregon Conservation Strategy: http://www.oregonconservationstrategy.org

Oregon's Endangered Species: https://www.fws.gov/oregonfwo/promo.cfm?id=177175701

Sierra Nevade red fox

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