

# Wolverine-Forest Carnivore Research in the Northern Cascades of Oregon

## *Mid-Season Progress Report for Field Season 1*

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*Three-Fingered Jack in the Mt. Jefferson Wilderness Area, Deschutes National Forest, Oregon Cascades. A wolverine was confirmed in this area during 1965.*

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On 4 February 2013, the U.S. Fish and Wildlife Service (USFWS) published a proposal to list the distinct population segment of the wolverine in the contiguous U.S. as threatened under the federal Endangered Species Act (Federal Register Vol. 78, No. 23; USFWS 2013a). In Oregon, the wolverine was thought to have been extirpated by 1936 (Hiller 2011). Based on records from the Oregon Department of Fish and Wildlife (ODFW), at least 1 report of a wolverine was documented for each decade from the 1960s to the 1990s, including locations in Linn, Harney, Wheeler, and Grant counties, respectively (Hiller 2011). More recently, a monitoring project resulted in confirmation of 3 individual wolverines in northeastern Oregon (Magoun et al. 2013), an area with no prior documentation of wolverines. During 2008, a wolverine (probably of Rocky Mountain origin) was confirmed in northern California, the first such evidence for almost 90 years (Moriarty et al. 2009).

A recent examination of verified and documented reports of wolverines in the contiguous U.S. suggested that, in the Pacific states, the Cascade Mountain Range of Washington and northern Oregon, and the central and southern Sierra Nevada Mountain Range in California may contain habitat conditions appropriate for wolverines (Aubry et al. 2007). Although evidence suggests that much of the Oregon Cascades may be suitable for dispersing wolverines, there may also be smaller areas where wolverines may persist (R. Inman, Wildlife Conservation Society, unpublished data). Questions related to confirmations of wolverines in Oregon and adjacent states include whether wolverines are present in the Cascades and if so, what is their origin; do wolverines use the Cascades as corridors for dispersal; and is there a persistent breeding population of wolverines in the Cascades. Our objectives include addressing these questions, specifically for the northern Cascades of Oregon.

Other relatively rare and sensitive forest carnivores exist in the Oregon Cascades, including a montane subspecies of red fox (*Vulpes vulpes* sp.) and the American marten (*Martes americana*). The Sierra Nevada red fox (*V. v. necator*) is presumed to be the montane red fox subspecies present on our study area. This subspecies is currently under review for potential protection under the federal Endangered Species Act (USFWS 2013b). The American marten is listed as a Sensitive Species (Vulnerable Category) under the Oregon Conservation Strategy (ODFW 2005). Our objectives also include to assess habitat use of montane red fox on our study area and to use genetic information to determine the subspecies. We are also collecting data to model habitat use of marten on our study area.

## Study Area

Monitoring activities are scheduled to occur for 2 field seasons (approximately Oct–May 2012–2014) in the Willamette National Forest (about 6,900 km<sup>2</sup> [1.7 million ac]) and the Deschutes National Forest (about 7,300 km<sup>2</sup> [1.8 million ac]) in the northern Cascade Mountain Range of Oregon. Efforts are being concentrated within the Mt. Jefferson, Mt. Washington, and Three Sisters wilderness areas, which are primarily located in Deschutes County west of Sisters, Oregon. The Mt. Jefferson Wilderness Area is the northernmost study site and covers 423 km<sup>2</sup> (104,523 ac) with a range in elevation from 914 m (3,000 ft) to 3,199 m (10,497 ft) above sea level. The Mt. Washington Wilderness Area, south of Mt. Jefferson, covers 220 km<sup>2</sup> (54,278 ac) and elevation ranges from 914 m (3,000 ft) to 2,376 m (7,794 ft) above sea level. The Three

Sisters Wilderness Area is the southernmost study site and covers 1,138 km<sup>2</sup> (281,190 ac) and elevation ranges from 610 m (2,000 ft) to 3,157 m (10,358 ft) above sea level. Forests in these wilderness areas are dominated by Douglas-fir on the west slope of the Cascades, and ponderosa pine on the east slope of the Cascades. Other vegetation types include silver fir, sub-alpine fir, mountain hemlock, western hemlock, lodgepole pine, and alpine meadows. Santiam Pass (1,468 m [4,817 ft] in elevation) to the north generally experiences snowfall during 10 months of each year, with a monthly peak of 262 cm (103 in) of snow depth during March (Western Regional Climate Center 2011); snowfall and snow depth typically increases with increasing elevation in the study area.

## **Methods**

Magoun et al. (2011) described a highly effective system using motion-detection cameras at bait stations to identify individual wolverines, sex of individuals, and lactation status of females based on digital imagery. They also incorporated a hair-snag system at bait stations for collection of samples for DNA analysis. Our methods will generally follow those of Magoun et al. (2011). DNA analysis of collected hair samples will verify the identification and sex of the individual wolverine(s) photographed at bait station(s). Additionally, DNA analysis may detect specific familial relationships and further determine the potential source population or a genetically distinct population in the Cascades of northern Oregon (Magoun et al. 2011).

Evidence of presence of red fox will result in construction of baited camera stations and hair-snagging devices designed for fox and marten (California Department of Fish and Game, unpublished report). Hair and scat samples are being analyzed to assess subspecies, individual identification, and other information. All bait stations are being used to collect information on presence of marten for habitat modeling purposes.

## **Preliminary Results**

Since October 2012, a total of 20 baited camera stations have been constructed and monitored in the study area (Fig. 1). Stations were distributed throughout the study area and locations were based on topographical and ecological features, as well as field access, in an effort to maximize the probability of detecting wolverines, if present. Locations of baited camera stations range in elevation from 1,014 m (3,326 ft) to 2,237 m (7,340 ft).

A total of 799 camera-days as of 20 February 2013 has resulted in collection of >5,000 digital images. Six mammalian species have been detected to date, with American marten detected at 79% (15 of 19) of stations (Table 1). One station (#18) had not yet been monitored at the time of this report.

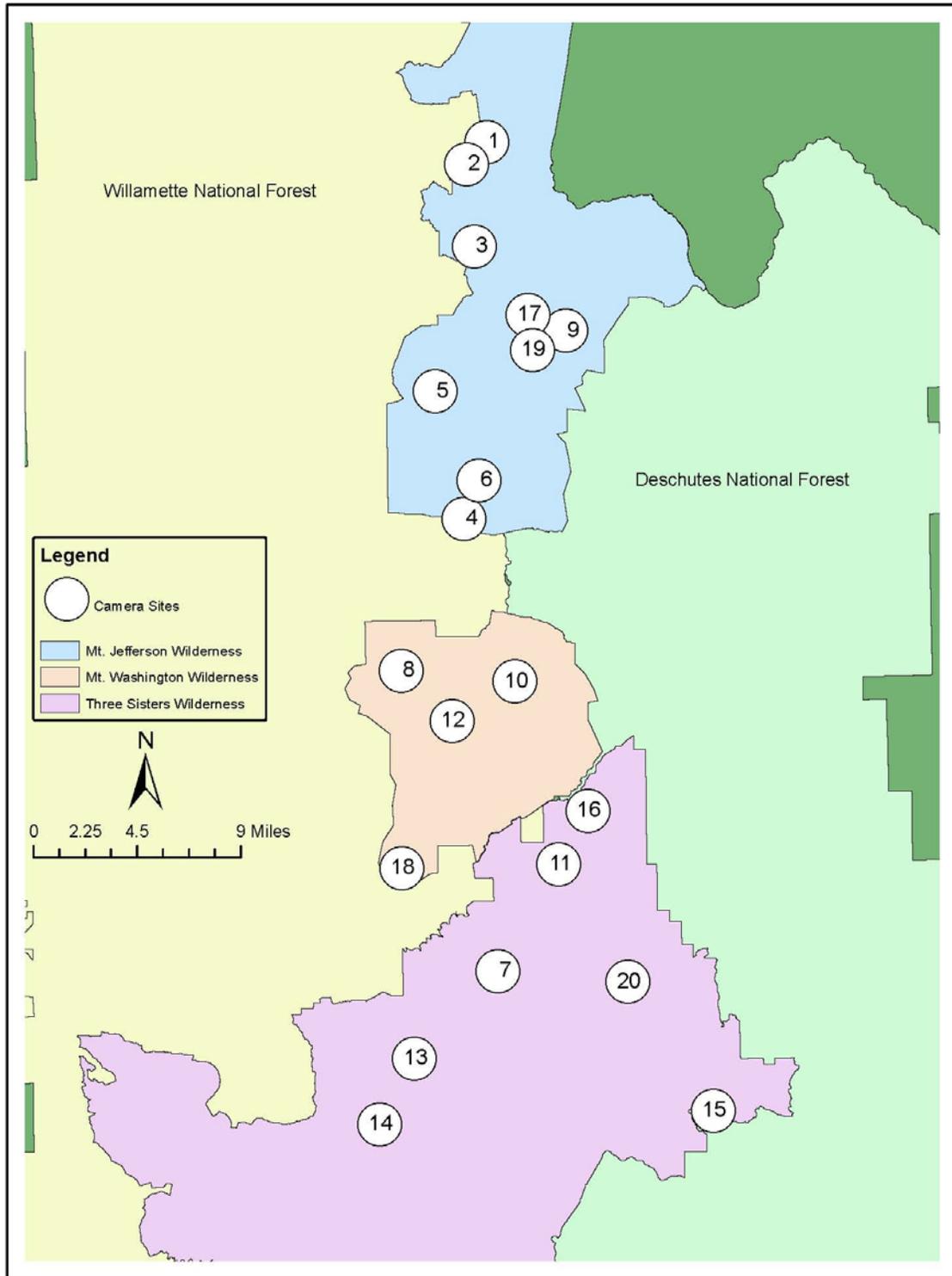


Fig. 1. General locations of baited camera stations for detection of wolverines and other forest carnivores in the Mt. Jefferson, Mt. Washington, and Three Sisters wilderness areas, northern Cascades of Oregon, USA, during fall 2012–spring 2013.



Fig. 2. Selected images from baited camera stations on wolverine-forest carnivore research project, northern Cascades of Oregon, USA, Oct 2012–Feb 2013, including (left to right, top to bottom) American marten, montane red fox, bobcat, coyote, black bear, and northern flying squirrel.

Table 1. Wildlife recorded on digital images at baited camera stations during wolverine-forest carnivore research project, northern Cascades of Oregon, USA, Oct 2012–Feb 2013.

Species	Number of sites with detections
American marten ( <i>Martes americana</i> )	15
Northern flying squirrel ( <i>Glaucomys sabrinus</i> )	3
Black bear ( <i>Ursus americanus</i> )	2
Bobcat ( <i>Lynx rufus</i> )	2
Red fox ( <i>Vulpes vulpes</i> )	1
Coyote ( <i>Canis latrans</i> )	1
Avian	9

### Future Plans

Baited camera stations will continue to be monitored until May 2013, at which time they will be deactivated. The second field season is scheduled to include similar efforts during October 2013 to May 2014, depending on funding levels, to meet project objectives. Project expansion into the southern Cascades of Oregon may occur for the second field season. Following completion of this study, analysis of data and preparation of manuscripts for submission to peer-reviewed scientific outlets will begin.

### Acknowledgments

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