

**Pacific Fisher Overwintering Distribution and Carnivore Monitoring Report,  
North Cascades of Oregon**

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Katie Moriarty<sup>1\*</sup>, Sean Matthews<sup>2\*</sup>, Ellen Pero<sup>3</sup>, Teri Lysak<sup>3</sup>, and Connor Morozumi<sup>3</sup>

<sup>1</sup> Pacific Northwest Research Station, USDA Forest Service ([kmoriarty02@fs.fed.us](mailto:kmoriarty02@fs.fed.us))

<sup>2</sup> Institute for Natural Resources, Oregon State University ([sean.matthews@oregonstate.edu](mailto:sean.matthews@oregonstate.edu))

<sup>3</sup> College of Forestry, Department of Forest Engineering, Resources, and Management, Oregon State University

\* Co-Principal Investigators

## **EXECUTIVE SUMMARY**

Fishers persist in two relatively small populations in southern Oregon and occurs in less than 50% of its historic range in three isolated populations in California. In addition to maintaining existing populations, one potential conservation measure for consideration is reintroductions to former portions of their range (Lewis et al. 2012, Facka et al. 2016). Such considerations may benefit from an understanding of whether residual populations persist and the genetic and functional consequence of those individuals (Vinkey et al. 2006, Manlick et al. 2016), and if sufficient habitat – including prey and lack of predators/competitors – is available.

We surveyed an area proposed for potential fisher reintroduction in the northern Oregon Cascades (Hiller 2015). We surveyed 32 sample units using 124 remote cameras, collecting data from fall 2015 through summer 2016 (>26,000 camera trap nights). Preliminary investigation of the 975,005 photographs did not reveal fisher. We minimally detected various bird species, small mammals (e.g., Douglas squirrel, northern flying squirrel, western grey squirrel), black-tailed deer, western spotted skunk, bobcat, coyote, American black bear, and mountain lion. Through more thorough investigation and data accumulation (e.g., adding detailed metadata for each image, “phototagging”) these photographs will be used to (1) provide georeferenced occurrence data for carnivores and potential prey in the surveyed area and (2) contribute to a data set investigating the efficiency of multi-species monitoring techniques. Final products in the way of a manuscript draft is expected by the end of 2017.

## **BACKGROUND AND OBJECTIVES**

Fishers (*Pekania pennanti*) were proposed for Federal listing under the Endangered Species Act as a West Coast Distinct Population Segment in 2014 following population reductions owed largely to anthropocentric influences (e.g. trapping and land-use changes). While Washington and California placed fishers under state protection, they are not protected by the Oregon Endangered Species Act (Oregon ESA), however, they are listed by ODFW in the Oregon Conservation Strategy as a Strategy Species, and are also considered a Sensitive

Species, Critical Category. Reintroduction efforts are proposed for Oregon (Hiller 2015), yet our knowledge of Oregon's fisher population and distribution (in and outside of potential reintroduction areas) is not comprehensive.

As our current understanding of fisher distribution throughout the state is incomplete, we set out primarily to determine overwinter fisher presence and distribution throughout potential reintroduction release areas in the southern Cascades (Hiller 2015). The overwinter sampling throughout the southern Cascades that this report references comprises just a subset of the full area targeted for distributional assessment across the PNW. In addition to the primary objective of fisher detection, a secondary objective of this pilot study is the development of a long-term multi-species carnivore monitoring protocol designed to be implemented across Oregon and Washington. Additional objectives include a community-wide survey emphasizing small mammal species that may serve as viable prey for fishers, as well as the empirical examination of various baits, lures, camera set types, and study designs that maximize fisher detectability while also allowing for a multi-species approach effective at large spatial scales.

## **STUDY DESIGN**

### **PRIMARY SAMPLE UNIT PLACEMENT IN THE FIELD**

Prior to deployment into the field, we randomly chose 39 sample units within the Mt. Hood National Forest and upper Willamette National Forest feasible release areas (Hiller 2015) following the protocol outlined in the Pacific Fisher Distribution and Carnivore Monitoring Protocol (Moriarty et al. 2015). Sample unit placement was modified from the Sierra Nevada Forest Carnivore Phase 2 protocol (Truex et al. 2013) and described in detail in the Pacific Fisher Distribution and Carnivore Monitoring Protocol (Moriarty et al. 2015). Briefly, primary sample units consisted of 3 baited stations set apart from each other in the shape of an equilateral triangle so that baited stations were approximately 1000 m apart. One trail set camera was placed on a trail on route to one of the 3 baited stations (located 50-150 m from the selected baited station).

### **STATION SETUP IN THE FIELD**

High camera sets (placed approximately 2 m off the ground) were used due to the possibility of snow through the winter months.

#### *Baited sets*

##### *Scent Lure--*

One olfactory lure (Commercial trapping lure GUSTO™, Minnesota Trapline Products, Pennock, MN, <http://www.minntrapprod.com/>) was used at each station in combination with glycerin (to prevent freezing) and distributed in film canisters nailed to trees.

##### *Bait types--*

Chicken: one drumstick of chicken

Cat food: one 5.5 ounce can of fish flavored cat food

Kitchen sink (Furnas 2013): an array of different baits, including Gusto™, chicken, catfood, apple, oats, peanut butter, and a salted wood plate (Pacific Fisher Distribution and Carnivore Monitoring Protocol, Moriarty et al. 2015).

Station sites were placed within a 100 m buffer of the preselected location to accommodate terrain, roads, minor private property adjustment, small meadows etc. (Pacific Fisher Distribution and Carnivore Monitoring Protocol, Moriarty et al. 2015).

- We identified a potential bait tree and a camera tree located approximately 3-4 m of each other. The camera tree generally faced north to reduce false triggers and backlit photos, and snags were avoided when possible.
- Combinations for each station number and bait type were randomized in Excel prior to deployment into the field (Pacific Fisher Distribution and Carnivore Monitoring Protocol, Moriarty et al. 2015).
- Cameras were attached to the selected trees using a camera strap and cable lock, while splints (sticks) were placed behind the camera to aim the field of view so that the bait was centered and some ground, a polyboard station ID sign, measuring strip, and some of the adjacent area were all captured in the frame (Pacific Fisher Distribution and Carnivore Monitoring Protocol, Moriarty et al. 2015).

#### *Unbaited trail set*

- One unbaited trail set was placed 50—150 m from the baited station select a hiking trail, game trail, overgrown road, or drivable dirt road with low traffic volume.

#### **SAMPLE UNIT ABANDONMENT/STATION RELOCATION**

Every effort was made to access the sample units, but some circumstances required offsetting stations from their original locations, or, in extreme cases, abandoning whole sample units. Reasons for entire sample abandonment included private property restrictions, unsafe terrain, or inadequate access (2+ km of off-trail hiking). In some circumstances, access was inhibited to a single station within a sample unit. These stations were moved in a random distance and direction according to the Pacific Fisher Distribution and Carnivore Monitoring Protocol (Moriarty et al. 2015).

#### **FALL SAMPLING EFFORTS**

Four technicians undertook surveying efforts in the Oregon Cascades throughout the fall of 2015. Technicians were stationed at the Detroit Ranger Station housing units and later in the season at the U.S. Forest Service Ripplebrook Ranger Station barracks. Field work commenced on 15 October 2015 in the lower Willamette National Forest and ceased on 11 November 2015 in the Mt. Hood National Forest.

We sampled 124 camera stations among 32 of 39 preselected primary sample units (Figure 1). Seven sample units were abandoned based on criteria listed under SAMPLE UNIT ABANDONMENT above and camera availability. Ten sample units were dispersed within Clackamas county (39 camera stations), 12 units within Linn county (46 camera stations), and 10 units were placed within Marion county (40 camera stations). Eight of the 39 sample units were partially or completely located in designated Wilderness areas (16 stations in Bull of the Wood Wilderness Area, 4 stations in Opal Creek Wilderness Area, 1 station in Middle Santiam Wilderness Area, and 1 station in Menagerie Wilderness Area). In addition to setting cameras and bait stations, we collected coarse data on habitat composition at each station within a sample unit.

Following deployment of the 32 sample units, we completed one week of station checks at a random subset of 6 sample units (2 units within Clackamas, Linn, and Marion counties) which were set for intervals of 1 to 3 weeks prior to checking. Bait at stations was replenished and cameras were repositioned as necessary. Preliminary assessment of data from these stations suggested a successful multi-species sampling approach. We detected avian (e.g. Stellar's Jay [*Cyanocitta stelleri*]), small mammal (e.g. Douglas squirrel [*Tamiasciurus douglasii*] northern flying squirrel [*Glaucomys sabrinus*], bushy-tailed woodrat [*Neotoma cinerea*]), and large carnivore species (bobcat [*Lynx rufus*], American black bear [*Ursus americanus*]) visiting camera stations. No fishers were detected in the initial station checks.

## PRELIMINARY RESULTS

Cameras were retrieved following the winter 2015-2016 deployment between 14 June 2016 and 3 July 2016 by two technicians, starting in the Mt. Hood National Forest and working south through the northern Willamette National Forest. Of the 124 cameras deployed in the fall, 120 (97%) were retrieved. One camera was torn off its mounting bracket, presumably by a bear, and lost over a 23-meter cliff. The camera was not found after 20 minutes of searching and was abandoned. Three of the missing cameras were located along hiking trails or abandoned roads, and were presumed to be stolen. One of these three locations had a tree with fresh axe marks on it, presumably from someone cutting through the cable lock.

Of the 120 cameras retrieved, 101 (84%) were still operating, and 19 (16%) were inoperable. Reasons for cameras being inoperable included full memory cards (n=8), dead batteries (n=3), full memory cards and dead batteries (n=3), camera physically damaged (n=2), internal camera failure (n=1), and unknown reasons (n=2). Ninety-three camera stations were baited and 31 were set unbaited along trails. Bait was completely consumed from 79 (85%) stations, partially consumed from 12 (13%) stations, and unknown at 2 (2%) stations. The 120 retrieved cameras took a total of 975,005 photographs (range 0 – 27,573 ).

We recorded species occurrence at 9 randomly selected stations each from a different sample unit. We detected a range of avian species (e.g., varied thrush [*Ixoreus naevius*],

American robin [*Turdus migratorius*], winter wren [*Troglodytes hiemalis*], grey jay [*Perisoreus canadensis*], Stellar's jay, dark-eyed junco [*Junco hyemalis*], northern flicker [*Colaptes auratus*], pileated woodpecker [*Hylatomus pileatus*]) and small mammals (e.g., Douglas squirrel, northern flying squirrel, western grey squirrel [*Sciurus griseus*]), black-tailed deer (*Odocoileus hemionus columbianus*), western spotted skunk (*Spilogale gracilis*), bobcat, coyote (*Canis latrans*), American black bear, and mountain lion (*Puma concolor*). No fishers were detected in our initial review of photographs.

Work is underway to continue data organization, species identification, photo tagging, and analyses. We will continue these efforts this winter in cooperation with our project partners and volunteers.

## ACKNOWLEDGEMENTS

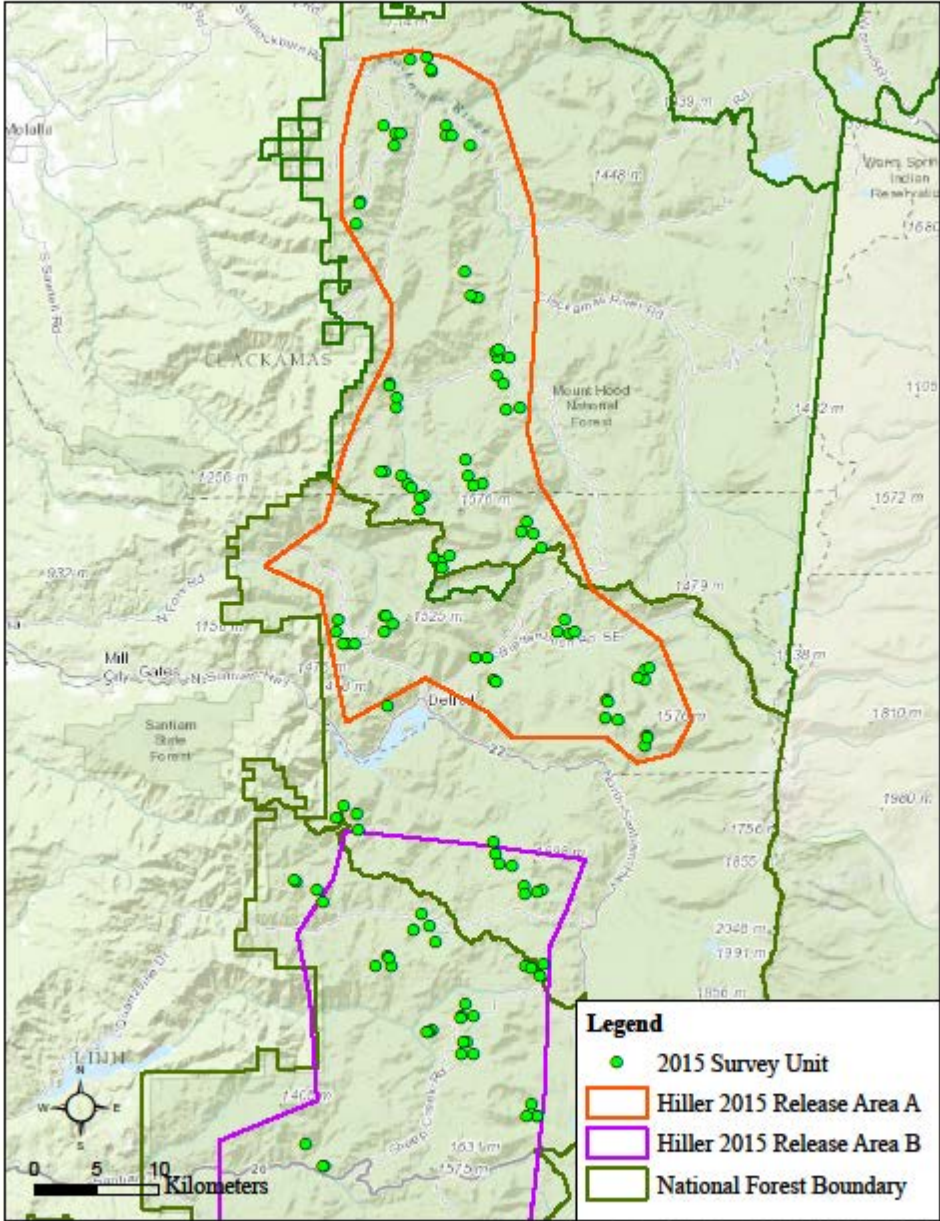
Survey efforts were largely funded by the U.S. Fish and Wildlife Service, Portland Office. Additional funds or logistic support (e.g., vehicle, barracks) were provided by the USDA Forest Service, Region 6, Mt. Hood, and Willamette National Forests (especially the Detroit and Ripplebrook Ranger Stations). Supplies and materials were contributed by U.S. Fish and Wildlife Service and the Pacific Northwest Research Station. Extreme thanks to all field crew leaders (Connor Morozumi and Matt Williams) and team members (Ellen Pero, Sandra Mayne, Clara Lebow, and Teri Lysak). This effort will be combined with larger fisher monitoring efforts – thanks in advance to Brent Barry and David Green for their help with data management and analyses, Jordan Ellison for coordinating phototagging, and the many volunteers that will help with the photos.

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### Oregon Cascades Fisher Survey Project - 2015 Survey Units



Sean Matthews INR OSU 9 Dec 2015