

Wolverine Tracking Project Grant Report to Oregon Conservation and Recreation Fund

The Wolverine Tracking Project is a community science project that trains and organizes volunteers to collect data on rare carnivores on the Mt Hood National Forest. The project has two main goals: to conduct long-term monitoring of rare carnivores (wolves, Sierra Nevada red fox, Pacific marten, and wolverine) to support and inform better wildlife conservation and management practices, and to connect Oregonians to the wildlife and wild places that makes Oregon such a special place to live. The project utilizes three different types of surveys: camera surveys, year-round; snow tracking, winter only; and scat surveys, summer only. This report documents activity from April 1, 2021 to January 2, 2022.

This time frame encompasses three of our seasons. The winter 2020-21 season ran from November 2020 to April 30, 2021. During this time, many COVID-19 restrictions were in place and we had to modify the surveys to accommodate these. In normal years, camera survey volunteers are divided into groups, with each group responsible for maintaining a camera or group of cameras for the entire season. This winter, however, we did not want to require people to take trips with others outside their own household or to come into our office to pick up gear. To make this possible, we required volunteers to apply together as a group and check out equipment for the season. More groups applied that we had cameras for, so we had to turn some people away. Although we had the same number of groups as before, group size was smaller, limiting the total number of people who could participate. Snow tracking surveys have a different structure. In normal years, trips are scheduled ahead of time and are lead by two volunteer Tracking Leaders who have at least two years training in wildlife tracking. Volunteer participants sign up for the individual trips they wish to help out on. This winter, we went ahead and planned for group trips to happen, with a smaller group size than normal, in hopes restrictions would ease. With the small group size, we were not able to take everyone who applied. Participants were trained, but since restrictions did not ease as hoped, we did not organize any group surveys. Instead, volunteers were encouraged to go out with members of their household on their own schedule, with online support provided to help them identify the tracks they found. In addition to limiting the number of people who could participate, these changes also limited the types of people who could participate as well, since everyone needed reliable transportation to the mountain in winter, winter gear, and, for the camera surveys, an outdoor space to store the stinky bait for the season. To engage more people, instead, we organized online “tracking challenges” each month, encouraging people to get outside, wherever they were, and look for signs of wildlife around them. April was the last of these challenges, with the theme of carnivores.

Summer 2021 season began in May 2021, and began a new survey year in our data recording. Things returned a bit more to normal this summer. For the camera surveys, we limited groups to people from no more than two households. This allowed more people to participate than in winter, but we still had an application system and had to turn people away. Scat surveys continued this summer as well. In normal years, scat surveys are self-organized, with volunteers deciding when, where, and with whom they go. This format worked well this summer, and we had the highest volunteer turnout ever. Trainings continued to be online, utilizing videos to show things we normally demonstrated in-person.

Winter 2021-22 season started in November 2021 and ran until the end of April 2022. This winter saw a great easing of restrictions. Although we did not do as much outreach as in the past in order to keep group sizes smaller, we were able to take as many people as applied. Group tracking surveys were still limited in size to four people, and additionally many of our Tracking Leaders did not participate this

year because of COVID. Due to these factors, our capacity for tracking survey volunteers was less than in the past, however, we also received less interest than in the past, so these factors balanced each other out. As in the previous winter, volunteers were encouraged to carry out tracking surveys on their own in order to make up for the low number of group trips we could offer.

Volunteer numbers

	Summer 2019 and Winter 2019-20 (for comparison)	Winter 2020-21	Summer 2021	Winter 2021-22
Camera survey volunteers	summer: 57 winter: 65 (9 people additionally came to the initial orientation)	32 (24 additional people applied)	39 (27 additional people applied)	75
Tracking survey volunteers	winter: 80	29 (17 additional people applied)	N/A	37
Scat survey volunteers	summer: 25	N/A	79	N/A

Volunteer numbers were lower than we would have liked, but reflected the constraints place on the surveys, as described above.

Survey effort

In spite of having fewer volunteers, we were still able to carry out close to the same amount of survey work. Camera surveys continued almost unaffected. The tracking surveys, which had depended on people going out groups, however, took a big cut. In spite of encouraging people to go out on their own, tracking is a skill that takes longer than a 3-part training to teach, and most people did not feel confident enough to carry out a survey themselves.

	Summer 2019 and Winter 2019-20 (for comparison)	Winter 2020-21	Summer 2021	Winter 2021-22
Number of cameras maintained	summer: 18 winter: 20	20	19	19
Miles of tracking surveys completed	winter: 47	15	N/A	14
Miles of scat surveys completed	summer: 250	N/A	183	N/A
Number of putative red fox and wolf scats collected	summer: 17 winter: 2	8	10	6

Surveys detected two of our target species during this time period. Red fox were detected at three camera sites during the winter of 2020-21 and three different camera sites during the winter of 2021-22. Three of these were sites where they had not been detected before, including an unexpected detection at a camera set at a lower elevation to target wolves. Pacific marten were detected at five camera sites and one tracking survey during this time as well. In addition, numerous other species were recorded to add to long term records.

Trips for non-regular volunteers

In addition to organizing regular volunteers, each year we also try to organize special trips for groups that don't usually have access to the outdoors. Much of this was put on hold, however, for this time period. In 2019, we had developed relationships with Cascade Education Corps, which provides job skills to at-risk teenagers; Refugee and Immigrant Student Empowerment, which provides academic and social support to students from refugee and immigrant families; Upward Bound, a program for high school students who are first in their family's history to go to college; and Saturday Academy, an enrichment program that provides science education programs for children and scholarships to their programs for low income families. In fall of 2021, we resumed conversations with all of these groups except Saturday Academy. A trip was done for Cascade Education Corps in February 2022 (after the timeline of this grant) and we are looking forward to resuming work with the others in the future. For many of the children involved in these programs, a trip with us is their first experience spending time in nature and we will continue to be committed to making these trips happen.

Social media and online engagement

With in-person activities limited during this time period, we spent energy instead focusing on online activities and online presence. Funding was used to hire a part time Outreach Coordinator to help carry out the tracking challenges, increase our social media presence, and help develop online communications with volunteers. We created a website specifically for volunteers, containing not only the information they needed to carry out the surveys, but lots of other information about our target species, map reading and navigation, and other helpful things for being out in the woods. We created weekly social media posts on facebook, instagram, and twitter, as well as monthly blog posts, and developed guidelines to facilitate these posts continuing in the future. Our facebook page now has over 2000 followers, with its latest post getting 146 views within its first day. Instagram is also doing well, with over 1600 followers; twitter, not so quite well, with only 200 followers.

Outreach efforts and events

During the timeframe of this grant, we did not want to expand our outreach too much due to the limited number of volunteers we could accommodate, even though one of our goals is to try and reach a more diverse audience, especially targeting underserved communities. No outreach events were done during this timeframe. Instead, we decided to use this time to focus on creating a solid background for this work. To this affect, we wrote an equity statement and land acknowledgement, had our board attend a diversity training, met with a representative of People of Color Outdoors, successfully applied for pro bono consulting to help develop a new strategic plan to incorporate this goal (carried out after the time frame of this grant), and included a section on respecting diversity to our Tracking Leader training manual. Research was done to identify new groups to reach out to or partner with, six were identified and this outreach was carried out in the recruitment for the summer 2022 season (after the timeframe of this grant). We hope to do more such targeted outreach in the upcoming year.

Research report

Each year at the end of the winter season, a research report is written and shared with the agencies and organizations who have expressed interest in the data. For the two years covered by this grant, these reports were shared with: Mt Hood National Forest, US Forest Service Pacific NW Research Station, Oregon Department of Fish and Wildlife biologists, Oregon Department of Fish and Wildlife Carnivore Research Group, OSU's Institute for Natural Resources, US Fish and Wildlife wolf biologists, Hood River County Forestry Department, Cascades Carnivore Project, Defenders of Wildlife, Bark, and Timberline Lodge.

Budget

	Projected annual budget	Winter 2020-21	Summer 2021	Winter 2021-22
Wolverine Tracking Project Coordinator Salary	\$24,000	\$10,000	\$11,000	\$11,000
Volunteer and Outreach Coordinator Salary	\$9,000	\$5,000	0	0
Supplies (replacement cameras, parking passes for volunteers, bait, batteries, misc supplies)	\$5,000	\$789	\$833	\$1164
Volunteer events	\$2,000	0	0	0

Not as much money was raised as anticipated, due to the fact that Patagonia ended their grants program and an anticipated grant did not come through. There was still sufficient money to carry out the program, however. Using funds from this grant, we were able to hire a part time Outreach Coordinator, who worked from December 2020 to October 2021, and who played an important role in the success of the program these years. The money was also used to pay part of the Coordinator's salary, without whom the project could not happen. We did not end up needing money for genetic sample processing, as originally anticipated, since we started collaborating with ODFW's Sierra Nevada red fox study and gave them our genetic samples for inclusion in this study.

Summary

We at Cascadia Wild are very grateful to the Oregon Conservation and Recreation Fund for selecting us as a grant recipient. With funds from this grant, we were able to continue to carry out the Wolverine Tracking Project, offering a chance to volunteers to interact with the natural world and learn about the wildlife of Mt Hood, while collecting important data on rare carnivores. Although in-person volunteering was more limited in scope than in previous years, many more people were engaged online and our organization is in a stronger place to do more targeted outreach in the upcoming years to communities that don't usually have access to the natural world. We are looking forward to the challenges that lie ahead.









Wolverine Tracking Project 2021-22 Annual Report

The Wolverine Tracking Project is a grassroots community science project in which trained volunteers conduct surveys for rare carnivores in the Mt Hood National Forest. The project has three objectives: to collect data on the occurrence of target rare carnivore species in the Mt Hood National Forest, to get people involved in their local national forest, and to teach participants about wildlife and the natural world. This report documents the summer and winter survey seasons, running from May 2021 through April 2022.

Project Description

Primary target species of the project are wolverine, gray wolf, Sierra Nevada red fox, and Pacific marten. Information is also collected on all mammal and select bird species detected, with emphasis on carnivores. This project collects data from three kinds of surveys: camera trap surveys, year-round; snow tracking surveys, during the winter season; and scat surveys done by volunteers while hiking or driving along dirt trails and roads, mostly during the summer season. Genetic samples of gray wolf and Sierra Nevada red fox are collected when encountered on all surveys. Surveys followed similar protocols to previous years; however, due to social distancing restrictions resulting from the COVID-19 virus, the number of volunteers involved in the summer surveys was limited. See Appendix A for survey details.

2021-22 Results

SURVEY EFFORT

Camera surveys

Camera sites were divided into two general areas, as in previous years: those near Mt Hood targeting Sierra Nevada red fox, and those near the eastern edge of the National Forest boundary targeting wolves.

Summer: Twelve cameras were placed on the northeast side of Mt Hood, continuing a multi-year focus in this area that began the previous winter. Seven cameras were placed along the eastern edge of the Forest. Due to fire damage, much of the eastern edge of the forest was closed to public entry, so camera placement focused on the northeast portion of the Forest. In addition to these cameras, one volunteer donated the use of his four personal cameras and another volunteer donated the use of his five cameras to help monitor wolves in their area of known activity and nearby areas. Two cameras were additionally retrieved this summer that had been up for over a year because they could not be accessed due to fire and windstorm damage. Hair snaggers were placed at four of the higher elevation camera in hopes of collecting genetic samples. Two different types were tried, nail gun nails attached to a wood plate and wool carding brushes. No hair samples were found.

Winter: Many cameras were placed in similar areas as summer, moved small distances to allow access during the winter or to accommodate the different winter bait set up. Thirteen cameras were placed around the northeast side of Mt Hood again, six were placed along the eastern side of the forest, and the volunteer owned cameras continued as well. Two of the cameras were part of a regional study for wolverine that ODFW was participating in and were baited with deer meat and a special scent lure.

Winter and summer camera survey locations are shown in Figure 1.

Scat surveys

Scat survey volunteers hiked, biked, or drove dirt trails and roads looking for scat, which they identified using visual characteristics. Surveys took place in the same two broad areas as the camera surveys. Those targeting Sierra Nevada red fox occurred primarily at elevations above 4000 ft, and those targeting wolves occurred over a very broad area covering the eastern edge of the National Forest and likely dispersal routes. In addition to searching for scat, volunteers had the option of doing a complete species survey, recording all tracks and sign seen, following the same protocols as the snow tracking surveys; however, this year none of these complete species surveys were done. Volunteers carried out 44 miles of fox surveys and 139 miles of wolf surveys and found 10 potential scats. Scat survey locations are shown in Figure 2.

Tracking surveys

Tracking survey volunteers went out in groups on snowshoes, documenting all tracks and sign encountered. Fourteen surveys occurred from December through March. They covered 12 miles while following a transect, plus an additional 2 miles off-transect. Eight of the 12 transects were surveyed. Tracking survey locations are shown in Figure 3.

Genetic Samples Collected

Genetic samples of gray wolf and Sierra Nevada red fox were collected when found on each camera, scat, and tracking survey. Fourteen putative red fox samples were collected, 5 from scat surveys targeting red fox, 4 from scat surveys targeting wolves, 4 during camera maintenance visits, and one during a snow tracking survey. Two putative gray wolf scat samples were collected, one during a wolf scat surveys and one during a camera maintenance visit. No hair samples or urine samples were collected. Samples were given to Oregon Department of Fish and Wildlife (ODFW) for analysis. A summary of the genetic samples collected is presented in Table 1.

FINDINGS

Sierra Nevada red fox were detected at three different camera sites, all during the winter season. One location was in the subalpine forest zone, near where previous detections have occurred in the past. The other detections were lower, one at 4654 ft elevation, in the middle of a 14-year-old burn, and the other at 4424 ft elevation, near the lower edge of the burn.

Pacific marten were also detected at three camera sites. All detections were at elevations above 5700 ft elevation and in areas where they have been detected previously.

Many non-target species were also recorded including coyote, cougar, bobcat, black bear, weasel, striped skunk, deer, elk, and many hares, squirrels, and small mammals. Deer and coyote were the most abundantly detected species on the camera surveys; snowshoe hare and Douglas squirrel were most abundant in the snow tracking surveys.

Results from all the camera surveys are given in Tables 2 and 3, results from the scat surveys are given in Table 4, and results from the snow tracking surveys are given in Table 5.

VOLUNTEERS

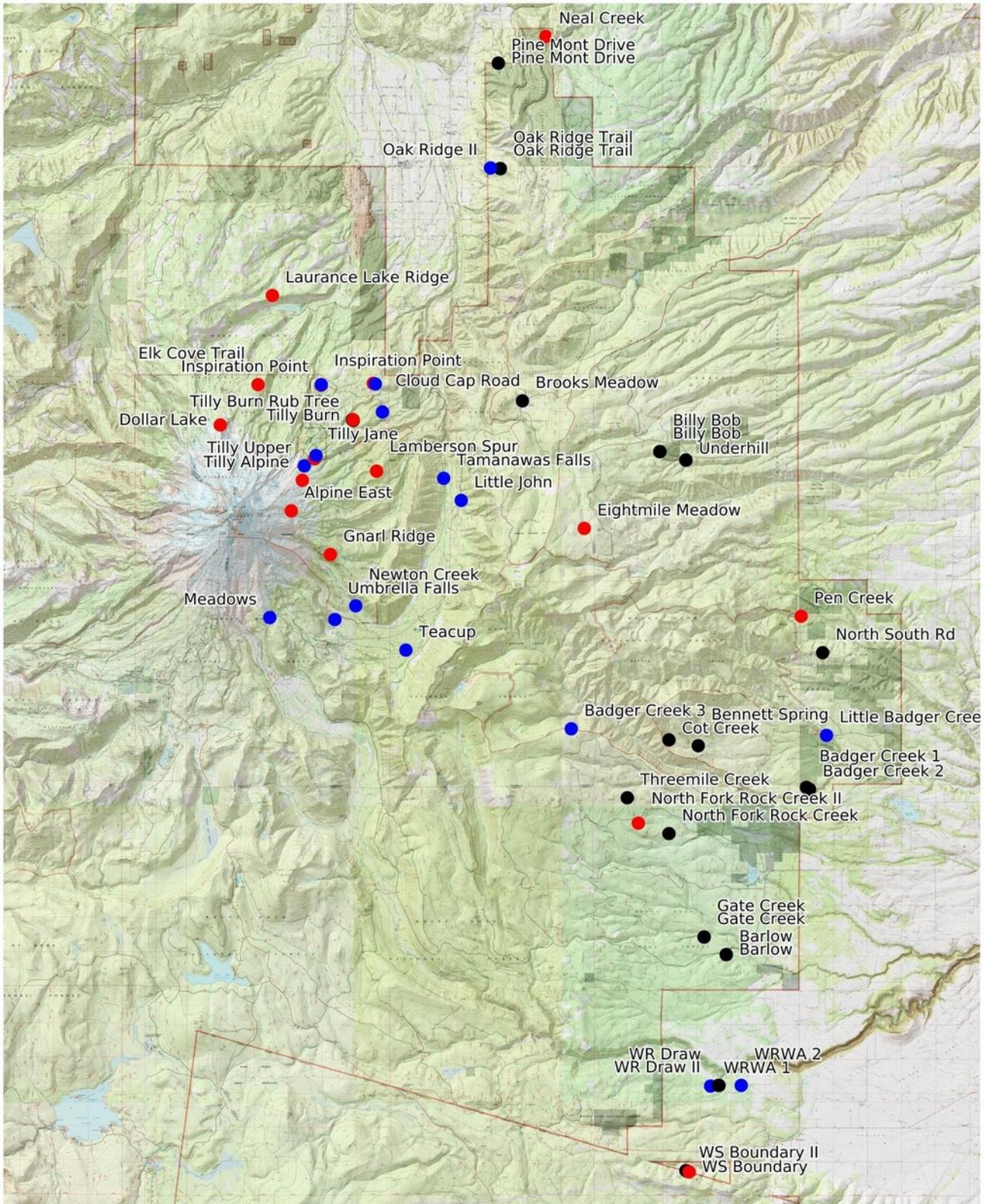
A total of 206 volunteers were involved in the surveys. Volunteers put in over 4000 hours, contributing over 2737 hours for the camera surveys, 148 hours for the fox scat surveys, 466 hours for the wolf scat surveys, and 679 hours for the tracking surveys. Two project support volunteers also assisted this project, putting in an additional 915 hours. The level of enthusiasm and commitment from volunteers is what continues to make this project a success.

Acknowledgments

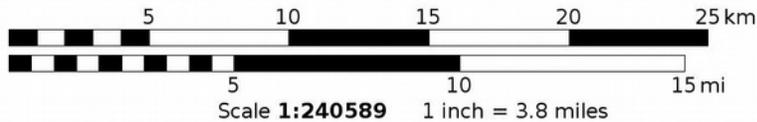
Cascadia Wild would like to thank the Mt Hood National Forest, Defenders of Wildlife, Oregon Recreation and Community Fund, and the Sweetgrass Foundation for their funding and support, without which this project could not happen.



Figure 1: Camera survey locations Summer through Winter 2021-22
 Red = summer only; Blue = winter only; Black = all year

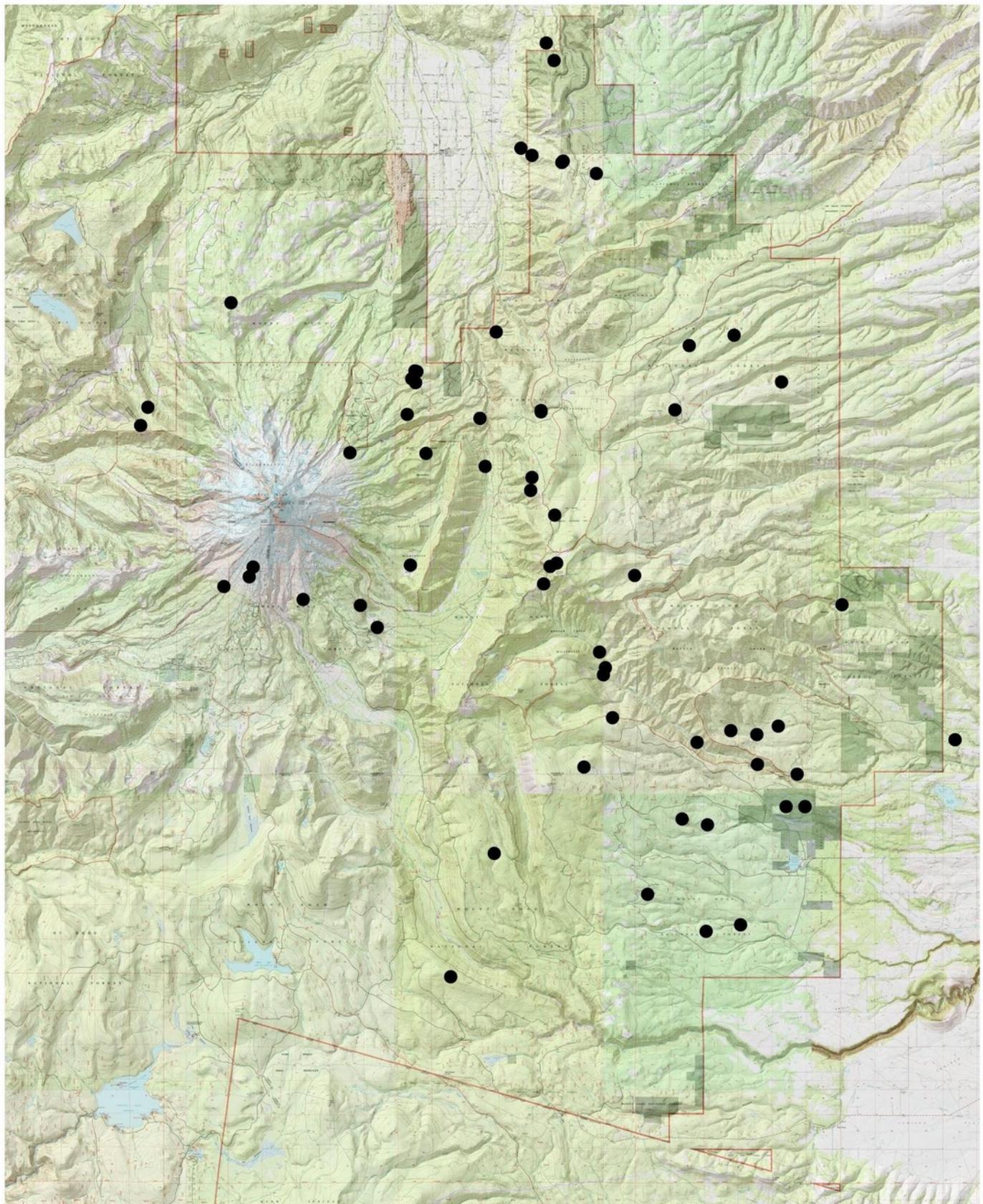


Mercator Projection
 WGS84
 UTM Zone 10T

MN
 14.7°

Figure 3: Scat Survey Locations Summer through Winter 2021-22



Mercator Projection
WGS84
UTM Zone 10T

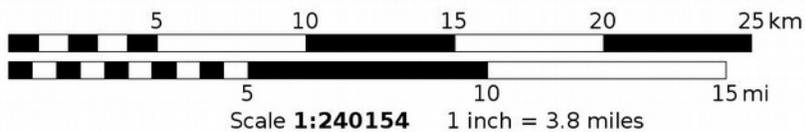



Figure 4: Tracking Survey Locations Winter 2021-22

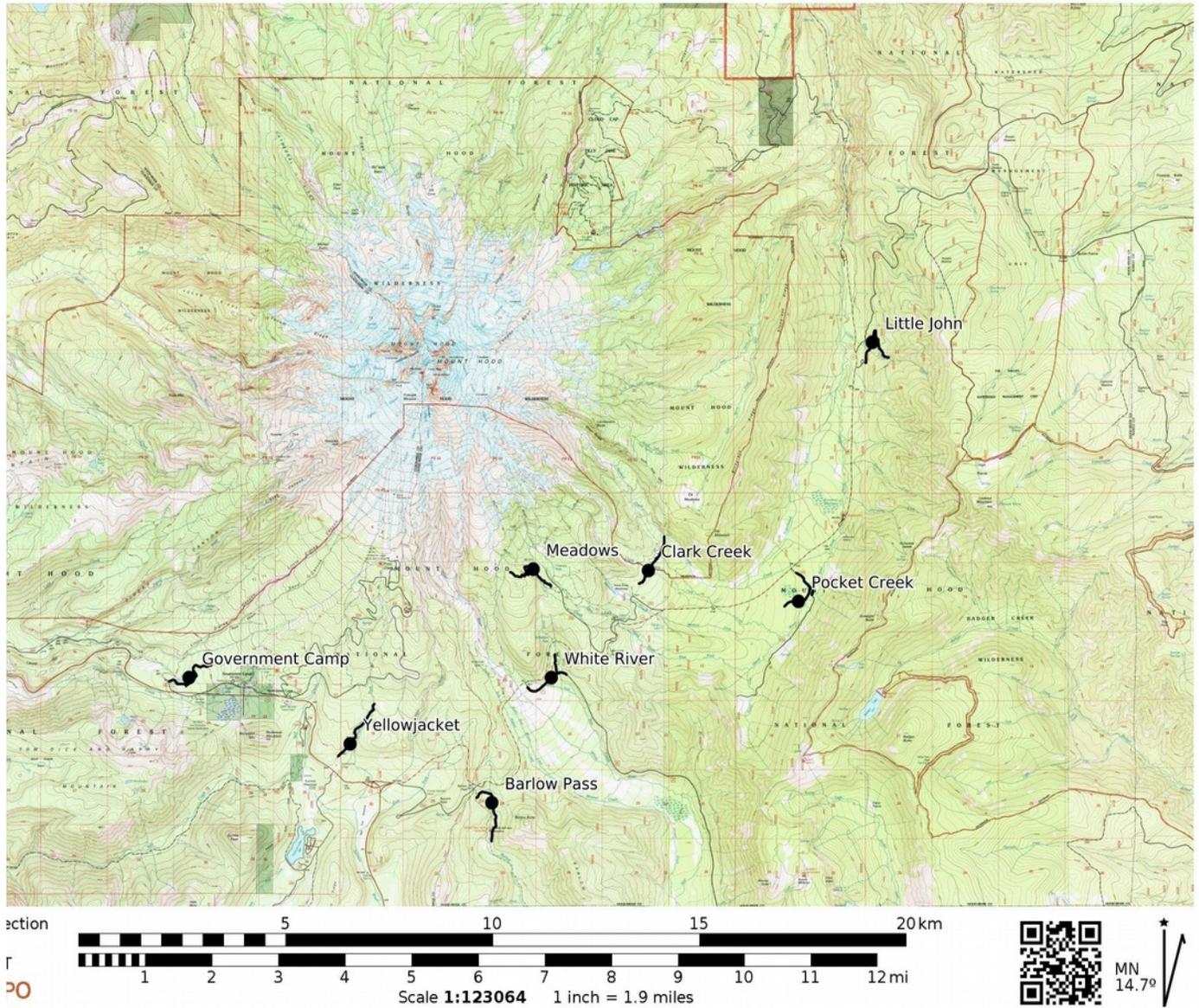


Table 1: Genetic Sample Collection Results Winter through Summer 2020-21

Genetic Samples Collected		
Survey Type	Fox	Wolf
Camera	4	1
Fox	5	-
Wolf	4	1
Tracking	1	-
Incidental	-	-
Total	14	2

Table 2: Camera Survey Results Summer through Winter 2021-22: Mt Hood area

Red = summer, Blue = winter, Gray = multi-season, Yellow = retrieved from previous summer

	End	Start	Location
	10/8/2021	6/28/2021	Alpine East 2021
	10/9/2021	6/22/2021	Tilly Alpine 2021
	4/23/2022	11/25/2021	Tilly Upper 2021-22
	9/3/2021	7/23/2020	Yocum Ridge
	10/18/2021	6/20/2021	Gnarl Ridge 2021
	10/21/2021	7/24/2021	Dollar Lake 2021
	10/9/2021	4/11/2021	Tilly Jane 2020-21
	4/30/2022	10/21/2021	Tilly Jane 2021-22
	4/2/2022	11/28/2021	Meadows 2021-22
	11/6/2021	6/1/2021	Lamberson Spur 2021
	4/23/2022	11/21/2021	Umbrella Falls 2021-22
	9/5/2021	6/12/2021	Tilly Burn Extra 2021
	4/16/2022	9/5/2021	Tilly Burn Rub Tree 2021-22
	4/16/2022	5/17/2021	Tilly Burn 2021-22
	11/1/2021	6/6/2021	Elk Cove Trail 2021
	4/15/2022	11/21/2021	Newton Creek 2021-22
	10/6/2021	5/9/2021	Inspiration Point 2021
	4/17/2022	1/2/2022	Inspiration Point 2021-22
	4/23/2022	10/31/2021	Cloud Cap Road 2021-22
	11/17/2021	5/9/2021	Cloud Cap 2021
	Pending	11/17/2022	Cloud Cap 2021-22
	4/13/2022	10/31/2021	Teacup 2021-22
	10/10/2021	5/16/2021	Laurance Lake Ridge 2021
	4/10/2022	10/21/2022	Little John 2021-22
	4/1/2022	11/24/2021	Tamanawas Falls 2021-22
Elev (ft)	7454	6682	6286
	6188	6145	6051
	5926	5793	5765
	5200	4841	4660
	4654	4645	4612
	4583	4438	4424
	4027	3970	3970
	3930	3801	3507
	3210		
Days Operational	101	75	147
	200	120	63
	159	191	125
	153	153	79
	105	190	148
	136	134	105
	172	157	119
	145	147	171
	105		
Species Detected			
Red fox			X
Coyote	X		X X
Mountain Lion			X
Bobcat	X		X X
Black Bear			X X X
Pacific Marten		X	X
Spotted Skunk			
Striped Skunk			X X
Weasel			X X
Deer	X		X X X X X X
Elk			X X
Rabbit / Hare			X X
Yellow-bellied Marmot	X		
Douglas Squirrel		X	X X X X
Northern Flying Sq			X
Golden Mantled Ground Sq	X X		X X
CA Ground Sq			X X
Chipmunk			X X X X
Bushy tailed Woodrat			X X
Mouse			X
Raptor	X		X X X
Grouse	X		X
Unknown Mammal	X		X X X X X X

Table 4: Scat Survey Results Summer through Winter 2020-21

Location	Date	Survey Type	Method	Distance	Red Fox			Wolf			
					Scat	Track	Other Sign	Scat	Track	Other Sign	
Mt. Hood	Umbrella Falls	7/17/2021	Fox	Hike	1.92						
	Sahale Falls Trail	7/17/2021	Fox	Hike	3.5						
	Mountaineer Trail	8/1/2021	Fox	Hike	3.13						
	Old Vista Ridge	9/2/2021	Fox	Hike	4.76	1					
	Timberline Trail	9/11/2021	Fox	Hike	3.02						
	Timberline Trail	9/12/2021	Fox	Hike	1.55						
	Mt. Hood Meadows	9/29/2021	Incidental	Hike	0		1				
	Top Spur Trailhead	9/29/2021	Fox	Hike	0.97						
	McGee Creek Trail	10/16/2021	Fox	Hike	1.65						
	Timberline Trail	10/18/2021	Incidental	Hike	0	1					
	Tilly Jane Trail	10/30/2021	Fox	Hike							
Cloud Cap	2/13/2022	Incidental	Hike	0	1						
Mt. Hood East	Elk Meadows Trail	8/22/2021	Fox	Hike	2.39						
	Elk Meadows South	8/29/2021	Fox	Hike	2.56						
Surveyors Ridge	Surveyors Ridge Trail	5/16/2021	Fox	Hike	0.86	2					
	Dog River Trail	6/6/2021	Fox	Hike	2.48						
	Unknown	6/16/2021	Wolf	Car	18.54						
	Oak Ridge Trail	6/22/2021	Fox	Hike	4.69						
	Horkelia Meadows	8/21/2021	Fox	Hike	1.14						
	Rd 631	9/19/2021	Fox	Hike	0.89						
	Oak Ridge Trail	11/24/2021	Wolf	Hike	1.7						
	Oak Ridge Trail	1/27/2022	Wolf	Hike	1.48						
Oak Ridge Trail	2/26/2022	Wolf	Hike	8.12	1						
Rd. 44	Forest Road 4431-120	5/3/2021	Wolf	Bike	2.38						
	Fivemile Butte	6/5/2021	Wolf	Hike	6.29						
	Road 4460	6/20/2021	Wolf	Hike	2.29						
Lookout Mountain	Lookout Mountain Road	5/30/2021	Wolf	Bike	5.56						
	Gumjuwac Trail	6/4/2021	Fox	Hike	4.62						
	Lookout Mountain	7/24/2021	Wolf	Hike	1.5						
	Lookout Mountain	7/25/2021	Wolf	Hike	1.6						
	Fret Creek Trail	8/29/2021	Fox	Hike	2.51						
	Trail 479	9/24/2021	Wolf	Hike	12.88						
	Badger Lake	9/25/2021	Wolf	Hike	0.79						
	Trail 479	9/26/2021	Wolf	Hike	3.89						
Trail 467	9/27/2021	Wolf	Hike	1.63	2						
Trail 479	9/27/2021	Wolf	Hike	6.83							
Badger Creek Lower	Bennett Spring	5/28/2021	Wolf	Hike	1.46						
	Happy Ridge	5/29/2021	Wolf	Hike	1.64						
	Pen Creek	5/29/2021	Wolf	Hike	0.67						
	Bennett Spring	7/10/2021	Wolf	Hike	5.62						
	Bennett Spring	7/11/2021	Wolf	Hike	3.93						
	Trail 2710	8/21/2022	Wolf	Hike	4.98						
	Trail 479	9/9/2021	Wolf	Hike	1.54						
	Trail 479	9/10/2021	Wolf	Hike	4.17						
	Dodson Road	9/11/2021	Wolf	Hike	5.82	1					
	Threemile Creek	9/11/2021	Wolf	Hike	2.95						
Rocky Butte	Rock Creek Headwaters	5/28/2021	Wolf	Hike	2.89						
	Threemile Trail	9/28/2021	Wolf	Hike	0.98						
Bonney Meadows	FS Rd. 4890, 4881	6/8/2021	Wolf	Car, Hike	17.15						
Gate Creek	NF4810-160/140	5/22/2021	Wolf	Hike	3						
	North Fork Rock Creek	5/27/2021	Wolf	Hike	1.58						
	Forest Road 4830-130	7/25/202	Wolf	Hike	0.92						
	Road 4840	8/22/2021	Wolf	Hike	3.81						
Tamanawas Falls	Tamanawas Falls	11/24/2021	Wolf	Hike	1.74						
				Totals	182.97	9	1	0	1	1	0

Appendix A: Project Description

SURVEY STRUCTURE

Camera Surveys:

Wildlife camera surveys are carried out year-round, divided into a summer season and a winter season. Camera site locations are selected based on accessibility, habitat suitability for target species, previous detections or known habitat use, and/or to collect data for under-surveyed areas. Due to seasonal changes in access and in bait setup, most camera sites are moved between the summer and winter survey seasons, while some sites are maintained throughout consecutive seasons or years.

Bait for the camera sites varies with the season and target species. On most camera set ups, two different baits and lures were used: a long-range scent lure designed for canines and mustelids (Caven's Gusto) and a commercial bait (Hiawatha Valley Predator Bait or Canine Force). During the summer, the baits were placed under a down log, and during the winter they were placed in a small wooden box nailed to a tree approximately three feet off the ground or snowline to keep them above the snow. Camera sites were generally visited approximately every 4 weeks to replenish the baits, retrieve memory cards, ensure the camera was still operating, and collect any genetic samples at the vicinity of the site.

Every mammal, ground bird, and bird of prey detected at a camera site is recorded, including domestic animals, unidentified humans, and unidentifiable animals. For each detection, the following data is recorded: date; time; species; number of juveniles, yearlings, or adults (if identifiable); number of males and females (if identifiable); and any relevant behavior or reaction to the bait.

Tracking Surveys:

Snow tracking surveys are carried out on snowshoes along designated, one mile-long transects. Every animal trail that crosses the survey path is recorded with a GPS waypoint, and additional written documentation and pictures are taken for all carnivore trails and a subset of other trails. Transects were chosen to cover as many different habitats as possible within the snow zone and generally follow recreational trails or closed roads. Survey dates were decided at the beginning of the season; therefore, snow track quality (the ability of the snow to record clear tracks) is variable and a snow track quality rating is also recorded.

Scat Surveys:

Scat surveys are conducted during the summer when the snow is gone, or in the winter at lower elevation areas that do not receive snow. Volunteers choose where, when, and how far to survey; recommended survey locations are provided based on habitat suitability or known use by a target species. Most surveys are done on foot, with volunteers continually keeping an eye out for scat samples as they walk. Samples are photographed and collected in a paper bag. The samples and photographs are reviewed and assessed by Cascadia Wild for species confirmation.

Two types of scat surveys are carried out. Sierra Nevada red fox scat surveys are done June to October, in the vicinity of Mt Hood above 4000 ft elevation, mainly centering on the Timberline Trail and its connecting trails or offshoots. Gray wolf scat surveys are done year-round, around the eastern boundary of the Mt Hood National Forest and along likely dispersal routes.

VOLUNTEER INVOLVEMENT

Camera Survey Participants - "Camera Crew":

Camera survey volunteers are divided into groups of 3-8 people, with each group responsible for maintaining a camera site for the season (summer or winter). This year, instead of the usual orientation and field training, volunteers were given a 2 hour on-line training, plus, for the winter season, an optional short field training in a local Portland park. Volunteers were trained in camera check procedures as well as in using a GPS and basic navigation skills. For the summer season, due to COVID-10 restrictions, we limited the number of volunteers we could take so that members of no more than two household would have to

come together for a trip, had volunteers check out equipment for the season, and required volunteers to supply some of their own equipment. For the winter season, as restrictions eased, we were able to take everyone who registered and were able to allow volunteers to pick up equipment in the office again.

Tracking Survey Participants - “Tracking Teams” and “Tracking Leaders”:

Tracking surveys are done in groups of up to 10 people, including one to two tracking trip leaders. Leaders have a minimum of two seasons tracking experience and must pass written and field evaluations before being qualified to lead. This not only helps ensure the quality of the data collected, but also allows new participants to be further mentored during the surveys themselves, not only in animal tracking but also in related topics, such as natural history, awareness activities, and wilderness survival. The aim of this blend of topics is to increase not only participants' knowledge but also their feelings of connection to their local area. In normal years, survey participants attended a two-part training, two hours in the classroom and three hours in the field; this year, the training moved on-line with an optional field session.

Scat Survey Participants - “Scat Surveyors”:

Scat survey volunteers go out on their own, provided with a detailed instructional booklet on scat collection and identification, scat collection supplies, and maps. Scat survey volunteers attend a 1 ½ hour on-line training to learn about scat identification and collection procedures. Fox scat surveys are open to anyone; wolf scat surveys are limited to returning volunteers due the sensitive nature of the data.