

Cascades Wolverine Project: Winter 2018-2019 Report

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Introduction

The wolverine (*Gulo gulo*) is a rare snow-obligate weasel. Populations are slowly recovering in the Cascade Mountains, following near-extirpation during the 20th century. Wolverines have naturally recolonized part of their former range in Washington State by dispersing from British Columbia. Presently, biologists estimate the population to be 30-40 individuals within the North Cascades, approximately 25% below carrying capacity. The number of wolverines across the contiguous United States is estimated to be less than half of carrying capacity. Primary threats to this species include reduced spring snowpack, increased average maximum summer temperature, and habitat fragmentation. Federal funds for monitoring and protection under the Endangered Species Act remain uncertain.

Winter recreation has the potential to impact wolverine recovery. A recent study in the US Rocky Mountains found effective habitat loss where winter recreation was relatively high. Currently, winter recreation is rapidly increasing in the North Cascades. Engaging with winter recreationists may support wolverine recovery by gathering valuable data through citizen science, and developing conservation based best practices while recreating in the mountains.

Cascades Wolverine Project is a Methow Valley based effort to support wolverine recovery through winter monitoring, visual storytelling, and backcountry community science. The field team includes photographer and field biologist David Moskowitz, and field biologist and mountain guide Steph Williams, along with many skilled volunteers. We work in collaboration with Conservation Northwest (CNW), Cascades Carnivore Project, Woodland Park Zoo, the U. S. Forest Service (USFS), and Washington Department of Fish & Wildlife (WDFW). Funding has been provided by Patagonia's Environmental Programs Department, in addition to individual donations.

Methods

Objective 1: Wolverine Monitoring

Monitoring area – Our remote-camera sites were located in the eastern portion of the North Cascade Range within the Chelan and Methow watersheds and Okanogan-Wenatchee National Forest. In collaboration with John Rohrer (USFS), Scott Fitkin (WDFW), and CNW Science Director Dave Werntz, we chose specific drainages based on findings of the now concluded North Cascades Wolverine Study (2005-2015), and current efforts by Woodland Park Zoo Senior Conservation Scientist Dr. Robert Long with North Cascades Wolverine Project (2013-present.) We targeted areas where wolverine are known to occur, but currently lack winter monitoring. All sites fell within the bioclimatic envelope as described by Copeland, et al. (2010), and were accessible within a day by snowmobile and ski from the Methow Valley, or the village of Holden.

Methods – We installed and maintained seven remote-camera stations baited with Gusto scent lure (a skunk and beaver castor-based attractant), as well as parts of road-kill deer. Five stations (Hairpin, Pine Creek, West Fork Methow Confluence, Copper Basin, Railroad Creek) included motion-triggered DSLR cameras with supplemental flash lighting, in addition to motion-triggered trail cameras. Two stations (West Fork Methow Bench, and Silverstar Creek) did not include a DSLR camera-trap. We suspended bait two to three meters above the snow surface by cable strung between trees at all stations except Silverstar Creek where bait was attached directly to a tree and above the snow surface. We maintained stations every three to four weeks between January and April 2019, with the exception of Silverstar, which volunteers installed and removed without further maintenance. We entered data and photo-captures into Conservation Northwest’s Citizen Wildlife Monitoring Program database, and sent field updates directly to biologists John Rohrer and Scott Fitkin. Currently all stations have been removed.

Objective 1b: Wolverine Monitoring Citizen Science Track Reports

Monitoring Area: Through social media, our website, public events, project partners, and personal correspondence, the project recruited observations of potential wolverine tracks and live sightings of wolverines from backcountry recreationists across the Washington Cascades.

Methods: Photographs of tracks and animals were submitted to the project via social media and email, along with location information and a narrative summary of the encounter. This information was evaluated for accuracy of wolverine identification and catalogued along with track observations made directly by project members over the course of winter field work.

Objective 2: Engaging Images

Five of our stations included remotely triggered DSLR camera kits assembled and operated by David Moskowitz. During the field season we shared relevant images with collaborators, and we publicly shared select images on social media, and/or our website cascadeswolverineproject.org. Publication of images from the project in print and online media further increases the profile of wolverine ecology and conservation.

Objective 3: Winter Recreation Community Outreach

We connected with backcountry skiers and snowmobilers through five public talks, social media engagement, working with volunteers in the field, and direct engagement with backcountry skiers and snowmobilers in the field. We interviewed for an article by Mount Baker Experience magazine, and designed a wolverine quick guide to help citizen scientists identify and report wolverine tracks.

Results

Objective 1: Wolverine Monitoring

Of seven stations, four detected wolverines (see Table 1 & Figure 1). One series of wolverine images taken at Pine Creek included multiple partial views of the animal's chest blaze. Based on matching patterns this individual is likely a female known as Stella by the USFS who was detected by the North Cascades Wolverine Study in 2015 at the Rattlesnake site approximately 15km to the north, in 2016 at the Cutthroat site 3km to the southwest, and also in April 2018 at the CWP Hairpin station about 8km to the south. Interestingly, a wolverine was photo-captured at Silverstar station on January 17, 2019 a few hours before the Pine Creek detection. Given the low density of wolverines, and that the stations were approximately 3km apart within the same watershed, it is more likely to be the same animal detected at both stations, rather than two individuals. Videos and photos taken at Silverstar and Pine Creek require further analysis.

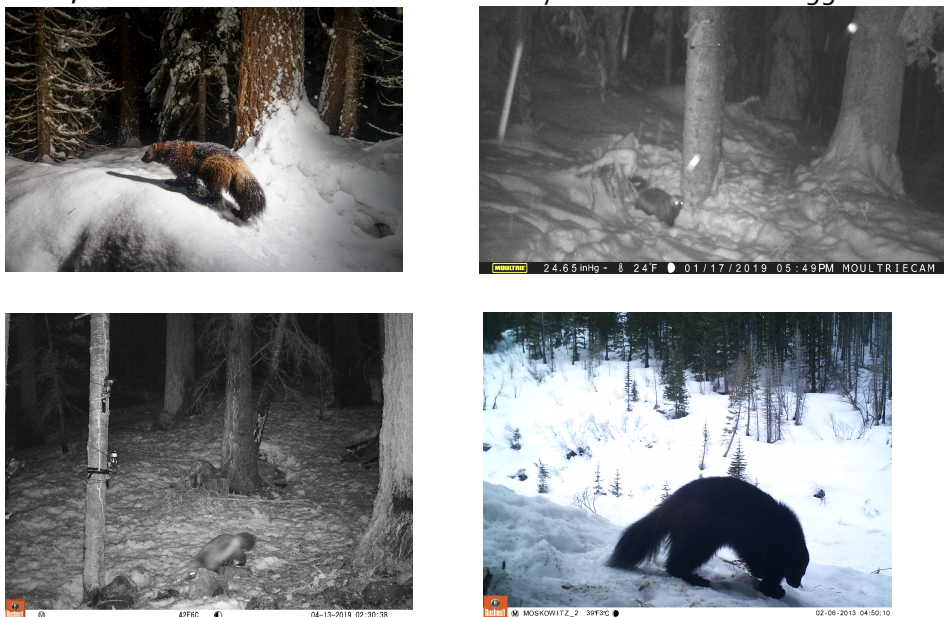
Table 1. Wolverine detections from Winter 2019 camera-trapping season collected from seven remote camera stations on the east side of the North Cascades Ecoregion.

Camera Station	
Winter 2019	Silverstar Creek Pine Creek Hairpin WF Methow Confluence WF Methow Bench Copper Basin Railroad Creek
Elevation (meters)	1463 1146 1738 914 836 1284 1117
Run period*	Jan-Apr Jan-Apr Jan-Apr Jan-Apr Jan-Apr Jan-Apr Jan-Apr
Wolverine detections	1 1** 0 0 0 1 1

*Winter field season data, including trap nights and number of wolverine photographs and non-target species events, is currently being processed by Conservation Northwest Citizen Wildlife Monitoring Program, and will be made available in their annual report, or by request.

**Based on chest blaze patterns, this individual is likely a female named Stella, who was first detected at a run-pole and hair snag station in 2015 by the USFS North Cascades Wolverine Study, and in 2018 at the CWP Hairpin station.

Figure 1. During winter 2019 we had four wolverine detections by remote cameras. Sample photos were taken from stations listed clockwise from upper left: Pine Creek, Silverstar, Copper Basin, and Railroad Creek. At Pine Creek only the DSLR camera triggered.



Objective 1b: Wolverine Monitoring Citizen Science Track Reports

In the 2018-2019 winter field season, the project received multiple observations which we determined to be at least highly likely wolverines from the following general areas: Mount Baker/Mount Shuksan, Cascades Pass, Railroad Creek/Holden Village, and Mount Rainier National Park. The summary of observations (see Table 2) is based on an initial review of the observations by the authors. We excluded reported observations of tracks which were not accompanied by photographs.

Table 2: Summary of track and live sighting reports

Year	Live Sighting: with photographic verification	Tracks: Highly Likely Wolverine	Tracks: Ambiguous, Possible wolverine	Tracks: Definitively not wolverine
2017-2018	1	3	1	1
2018-2019	1	9	6	1

During the 2017-2018 winter the project received 7 observations of potential wolverine tracks or live sightings in the Cascades. In 2018-2019 that number jumped to 19 observations. Additionally, tracks were documented directly by the project on several occasions during the course of winter field work this winter. See photographs in appendix for examples.

About half of all submitted observations were either clearly not tracks of actual wolverines, or did not provide enough evidence for definitive identification. However, the remaining observations include collections of photos which show all of the features of wolverine tracks in foot morphology, track pattern, and size and were taken in habitat typical for wolverines but in locations where definitive documentation of this species has not been made in recent history. We have currently classified these observations as “highly likely wolverine”. These observations could add valuable information to our current understanding of wolverine distribution in the Cascades and influence future camera trapping and genetic sampling field work.

Objective 2: Engaging Images

We collected remotely triggered DSLR photographs of wolverines in addition to a variety of non-target species such as Clark's Nutcracker, short-tailed weasel, Pacific marten with red squirrel prey, cougar, coyote, and snowshoe hare. During the season we contributed photographs to North Cascades National Park, North Cascades Institute, Conservation Northwest, and we have offered the use of photographs to WDFW and USFS biologists in the North Cascades.

Mount Baker Experience Magazine published a piece on the project in November 2018 (<https://www.mountbakereperience.com/the-secret-life-of-wolverines/>). In the spring of 2019, two images from the project were published in an article by Paula Mackay in the *Earth Island Journal* (<http://www.earthisland.org/journal/index.php/magazine/entry/tale-of-three-weasels-wolverines-fishers-martens-washington>). A short film is currently in the works by Wild Confluence Media.

Images from the winter field season can be found on the project website at: <https://cascadeswolverineproject.org/gallery/> and on the project Instagram page at: https://www.instagram.com/cascades_gulogulo/.

Objective 3: Winter Recreation Community Outreach

We presented in November 2018 in Winthrop, WA for the Methow Conservancy, as well as talks in January, February and March 2019 at Holden Village, and in February at the Methow Valley Elementary School to the school's second graders. We will be presenting September 2019 in Ballard at the Patagonia Store, and in December at the Wenatchee River Institute in Leavenworth, Washington. Our following on social media @cascades_gulogulo at Instagram has grown to well over a thousand people, nearly tripling in size since 2018. We collated more than two-dozen citizen science reports submitted to our website or directly to the project team. We provided images and content to two publications, with a third publication in progress. A short film on the project is underway, which could engage more of the backcountry ski community. Furthermore, the project has gained support from the Methow Valley Trails Collaborative to design and install an educational wildlife sign at a snow park slated for construction spring of 2020 at Silverstar creek along HWY 20.

Discussion

This winter the project received a substantial increase in the number of observations recruited from the general public. The possibility of a much larger scale effort to recruit citizen observations holds the potential to expand our understanding of wolverine distribution in the Washington Cascades. Given the source of these observations, it would specifically help provide information on wolverine occurrence in areas receiving winter recreational use, a topic of conservation interest given the recent study on this subject from the Rockies suggesting a potential significant impact from high levels of certain types of winter recreation.

The efficacy of definitive identification of mammals through tracks and signs has been tested in various settings in the past with mixed results in regards to observer reliability. Some studies, relying on local experts with a high degree of training documented a high degree of reliability. Other studies documented a very low degree of observer reliability. Developing a systematic way to review and categorize these observations will be critical to the value of these observations. Prior to the winter of 2019-2020, in addition to actively working to increase the number of reports we receive, the project will carry out a literature review on this subject, develop a strategy for evaluating and ranking the track observations submitted, and a reporting strategy for these observations.

Along with the use by project partners of images from the project for educational and outreach purposes, journalistic use of these images represents a key next step for the project's goal of using high quality images to help increase the profile of wolverine conservation in the North Cascades.

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Appendix 1: Examples of Citizen Science Observations Submitted to the Project

Photo 1: Tracks showing all of the typical features of wolverine tracks. The hand is placed next to a left front track. The top of the frame has a left hind below and slightly covering a right front in the typical spacing and arrangement for a fast lope ("1-2-1" pattern) commonly used by wolverines when traversing firm snow. Isolation Traverse, North Cascades National Park. Photo by Sam Naney. June 25, 2019.



Photo 2: Typical loping pattern of a wolverine found above treeline close to Mount Baker, Mount Baker-Snoqualmie National Forest. Tracks posted on Instagram. Photo by Sammy Davis, January 27, 2019.



Photo 3: Track showing all the typical features of the right foot of a wolverine footprint. June 28, 2019. Mount Rainier National Park. Photo by Brian Booth.



Photo 4: Photograph of a wolverine traversing a snow slope close to Itswoot Ridge in the Glacier Peak Wilderness. May 30, 2019. Photo by Marty Schnure.

