

2021 Cascades Wolverine Project Progress Report

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Introduction

Based in the Methow Valley of North Central Washington, Cascades Wolverine Project aims to support wolverine recovery in the Cascade Mountains through monitoring, community science, and storytelling. The project team includes David Moskowitz, Drew Lovell, and Steph Williams, along with many skilled volunteers including a dedicated crew: Jesse Snyder, Nick March, Jack McLeod, Peter Loft, Alyssa Lovell, and Holden Village staff. Anna Machowicz assists with research, and Claire Waichler contributes to data management. We work in collaboration with Conservation Northwest (CNW), Wildlife Conservation Society Canada (WCS), University of Utah (UU), Laboratoire des Sciences du Climat et l'Environnement, France (LSCE), Woodland Park Zoo (WPZ), Pacific Northwest Research Station (PNW), U. S. Forest Service (USFS), Washington Department of Fish & Wildlife (WDFW), and Cascades Carnivore Project (CCP). Funding has been provided by Patagonia's Environmental Grants Program, private donations, corporate match donations, and Conservation Northwest.

Methods

Objective 1: Monitoring

Monitoring area – We installed remote-camera stations within the northern and eastern portions of the North Cascades Ecoregion, specifically in the Chelan and Methow watersheds of Okanogan-Wenatchee National Forest, and the North Fork Nooksack watershed of Mt. Baker National Forest. In collaboration with John Rohrer (USFS), and Scott Fitkin (WDFW) we chose specific drainages based on findings of the North Cascades Wolverine Study (2005-2015), and current efforts by Woodland Park Zoo Senior Conservation Scientist Robert Long with North Cascades Wolverine Project (2013-present.) We targeted areas where wolverines are known to occur, but currently lack consistent 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 eleven remote camera stations baited with Gusto scent lure (a skunk and castor-based attractant) and road-kill deer. Additionally, each station included a hair sampling device to collect genetic data. Two stations utilized run-poles for genetic sampling (Twisp River-2020-1, Holden-2019-1), while all other stations were each equipped with a gun-brush hair snag strap attached to a tree. We co-managed three stations with CNW volunteers (Holden-2019-1, Ptarmigan-2021-1, Lake

Ann-2021-1). Three stations were installed and removed by CWP and CNW volunteers (Ptarmigan-2021-1, Lake Ann-2021-1, Silver Star-2020-1). At six stations we suspended bait two to three meters above the snow surface with cable hung between trees: Holden-2019-3, Holden-2019-2, Twisp River-2020-1, Early Winters-2017-3, Early Winters-2017-2, Holden-2019-1. At all other stations we attached bait directly to a tree.

We maintained stations every three to four weeks between January and July 2021 (see Table 1). We entered data into the CWMP database, and sent field updates directly to biologists Cathy Raley, John Rohrer, and Scott Fitkin, as well as to Mt. Rainier National Park and Jocelyn Akins of CCP whenever relevant to their study areas. Genetic samples were mailed to Cathy Raley (PNW) who then shipped them to the National Genomics Center for Wildlife and Fish Conservation at Rocky Mountain Research Station. Data from our project (2017-present) is currently being uploaded and processed on Wildlife Insights, a cloud-based platform which utilizes artificial intelligence to identify species detected by remote camera traps.

Objective 2: Community Science – Public Incidental Wildlife Observations

Study Area: Washington Cascades and beyond.

Methods: Through regional and national news, social media, our website, public events, project partners, and personal correspondence, we gathered public observations of wolverines and other rare wildlife, and wildlife tracks. This information was evaluated for accuracy and catalogued along with track observations made directly by project members over the course of winter field work. In collaboration with research partners, we have developed a test to measure observer reliability using CWP methods for identifying and classifying tracks using photographs submitted to us by the public. The test is currently underway and slated to be completed by year's end 2021.

Objective 3: Conservation Messaging

A third objective of CWP is to create and disseminate visual content and narratives designed to engage and educate the public about wolverine conservation on a regional and national scale. Photographs and “stories from the field” are shared via social media, e-news, and partner organizations. CWP also contributes images to journalism and invites media coverage of wolverine conservation. We amplify work from other organizations that benefit wolverine conservation, including for example Conservation Northwest's campaign to pass the Recovering America's Wildlife Act. We do multiple talks each year at schools, outdoor retailers and outfitters, and conservation organizations.

Results

Objective 1: Monitoring review

Of eleven stations, four stations detected wolverines. Unlike last year, we detected no other rare wildlife, such as wolf, fisher, or lynx. Consistent with past winters, sites near Holden Village produced the most frequent wolverine detections, with a total of nine detection events at Holden-2019-3 (see Table 1 & 2), two at Holden-2019-2, and one at Holden-2019-1. For the second consecutive year we did not detect wolverines in the Early Winters watershed.

This year we dispatched volunteers to install a station near Mt. Baker (Ptarmigan-2021-1) where we had received a cluster of public wolverine track observations submitted via the community science program. We are very pleased to have detected a previously unidentified wolverine, confirmed with a hair sample that provided the genotype for this new male wolverine, recorded officially as Washington Gulo ID: WAGU-38. The project is currently in conversation with the Nooksack Tribe, on whose aboriginal territory the wolverine was observed, to help name this animal and incorporate the tribe's input into our ongoing research in this area.

Table 1. 2020-2021 CWP wolverine photographic detection events across all stations

	Camera Station ID	Installed	Removed	Elevation (m)	No. of Events
<i>1</i>	Silver Star-2020-1	12/5/2020	7/4/2021	1576	-
<i>2</i>	Ptarmigan-2021-1	1/9/2021	5/1/2021	1488	1
<i>3</i>	Lake Ann-2021-1	1/29/2021	5/8/2021	1540	-
<i>4</i>	Holden-2019-3	1/6/2021	4/17/2021	1117	9
<i>5</i>	Holden-2019-2	1/7/2021	4/18/2021	1284	2
<i>6</i>	Holden-2020-2	1/7/2021	4/15/2021	1106	-
<i>7</i>	Twisp River 2020-1	1/11/2020	6/9/2021	1093	-
<i>8</i>	Early Winters-2017-3	1/10/2021	5/11/2021	1738	-
<i>9</i>	Early Winters-2017-2	1/9/2021	5/7/2021	1152	-
<i>10</i>	Rainy Pass-2021-1	1/9/2021	5/7/2021	1479	-
<i>11</i>	Holden-2019-1	1/9/2021	N/A	1084	1

Table 2. 2020-2021 Wolverine photographic detection events in chronological order.

	Date	Station ID	Species
1	1/13/2021	Ptarmigan-2021-1	Wolverine*
2	1/16/2021	Holden-2019-3	Wolverine
3	1/16/2021	Holden-2019-3	Wolverine
4	1/17/2021	Holden-2019-3	Wolverine
5	1/29/2021	Holden-2019-3	Wolverine
6	1/29/2021	Holden-2019-1	Wolverine**
7	3/6/2021	Holden-2019-3	Wolverine
8	3/21/2021	Holden-2019-2	Wolverine
9	3/21/2021	Holden-2019-3	Wolverine
10	4/3/2021	Holden-2019-3	Wolverine
11	4/5/2021	Holden-2019-3	Wolverine
12	4/9/2021	Holden-2019-2	Wolverine
13	4/14/2021	Holden-2019-3	Wolverine

Note: Multiple events are listed as a single event whenever photo-captures occurred within one hour.

* The genetic sample obtained from this station produced a genotype for a previously unidentified wolverine; the official Washington Gulo ID for this individual is **WAGU-38**.

** The genetic sample obtained from this station produced species identification as wolverine



Photo 1. New male wolverine WAGU-38 in Mt. Baker National Forest. The station location was determined using a cluster of wolverine track observations submitted by community scientists. Station maintained by Nick March and Jane Hosman.

Objective 2: Community science review – public wildlife observations

In 2020-2021 we saw a decrease in the number of public observations, and an increase in the number of verifiable wolverine sightings. Notably, on three occasions, groups of three wolverines were observed by recreationalists at Mt. Rainier National Park (see Photo 2); and in Glacier Peak Wilderness a group of two, and a group of three wolverines were observed by recreationalists on separate occasions. We received our first verifiable report of Canada Lynx. Most observations submitted to CWP were animal tracks only. Table 3 summarizes public observations submitted per year, including verifiable sightings.

In collaboration with researchers Matthew Scrafford, PhD (Wolverine Conservation Scientist, WCS), Jeff Rose, PhD (Assistant Professor, Parks, Recreation, & Tourism, UU), Philippe Naveau, PhD (Senior Research Scientist, Laboratoire des Sciences du Climat et l'Environnement, UVSQ), Dave Werntz (Science and Conservation Director, CNW), and Anna Machowicz (Biologist, Home Range Wildlife Research), we designed an observer reliability test for classifying and quantifying track observations. The test is currently underway and slated to be complete by year's end 2021. The results from the test will help guide and refine our community science methods moving forward. We hope that lessons learned will contribute to and inspire future community wildlife science and conservation.

Table 3. Community science program: public incidental wildlife observations received per year

Year**	No. of observations	Verifiable sightings*			Region
		Wolverine	Lynx	Cascade red fox	
2017-2018	12	1	0	0	NCE
2018-2019	27	3	0	0	NCE
2019-2020	93	8	0	2	NCE & SCE
2020-2021	57	19	1	0	NCE & SCE
Total	189	31	1	2	

*Verifiable sightings must include diagnostic photographs or videos of animals. The total number accounts for individuals sighted. Verifiable sightings do not include track observations alone.

** October 1st through September 30th



Photo 2. Three wolverines at Mt. Rainier National Park, summer 2021, left photo by Nancy Cales, right image from video by Betsy Bertiaux (note upper wolverine feeding on unidentified prey)

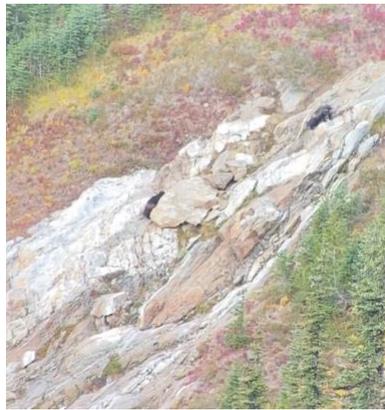


Photo 3. Two wolverines in Glacier Peak Wilderness, summer 2021, image from video by Caylen Wojcik. One other community science report of three wolverines came from this area, in addition to a similar report submitted to USFS biologist Aja Woodrow.



Photo 4. Two lynx sightings submitted to our community science program within and near the Pasayten Wilderness. Left photo by CB Thomas summer 2021, right photo by Jason Paulsen autumn 2021.

Objective 3: Conservation messaging review

During the 2020-2021 we adjusted to COVID-19 restrictions by offering virtual talks. We were able to host one live event outdoors in September 2021, during which we released *Finding Gulo* a short film we produced with the Wilder Studio and Wild Confluence Media. This is a documentary aimed at addressing the current plight of wolverines and is intended to spark greater understanding and conversation around the link between wildlife and climate change. A link to the trailer and screenings is here: www.cascadeswolverineproject.org/film

In addition to being featured in the film, photography from the project continues to be made available for media and conservation organizations dealing with issues related to wolverines, climate change, and winter recreation. A collection of new photography from the winter season can be viewed in Appendix 2.

Table 4. Annual summary of public outreach

Presentations	<ol style="list-style-type: none"> 1. 1/2021 Methow Conservancy First Tuesday Presentation – Virtual Event 2. 1/2021 Holden Village Virtual Presentation: CWP Update 3. 2/2021 Holden Village Virtual Presentation: Mountain Snowpack & Ecology 4. 9/2021 Goat’s Beard Mountain Supplies in Mazama, WA – Live Event
Media	<ol style="list-style-type: none"> 5. CWP e-news launched December 2020 6. <i>Spokesman-Review</i>, June 15, 2021, “Community science is helping track wolverines in the Cascades” 7. <i>The Holden Podcast</i>, Feb 2021 “Cascades Wolverine Project & Winter Snowpack” 8. <i>Oregon Field Guide</i>, Oregon Public Broadcasting. Filmed March 2021 for the television series, scheduled for release 2022 9. Wolverine ID webpage, launched 9/2021, new resource for CWP’s mountain wildlife observation program 10. <i>Finding Gulo</i>, documentary film by the Wilder Studio & Wild Confluence Media: <ol style="list-style-type: none"> a. Mazama, WA 9/2021 Local Premiere b. Banff Film Festival 10/2021 Virtual World Premiere c. Backcountry Film Festival 2021-2022 Live & Virtual Events d. Wild and Scenic Film Festival 2022 Live & Virtual Events e. University of Vermont 12/2021 Feature Film & Discussion f. Liberty Bell Junior High School 12/2021 Classroom Screenings

Discussion

The COVID-19 pandemic continued to affect logistics for the 2021 field season. Despite this the project was able to meet all its core objectives for the season including survey effort and locations. Once again, we limited the number of volunteers in the field with us to reduce issues of Covid-19 transmission. We successfully continued research out of Holden Village despite their shut-down to the public. We carried out several virtual presentations, and a socially distanced outdoor event. We continued to observe elevated winter recreation within the study area, likely due to pandemic restrictions on other activities as well as ongoing general increases in this sort of recreation.

With a similar survey effort to years past, verifiable wolverine sightings more than doubled this year, due in part to multiple sightings of groups of two or three wolverines reported through our community science program. Unlike the past several years we had no other rare wildlife detections.

Our community science effort continued to grow and develop over the year. A genetic sample collected by one of our volunteers in the western North Cascades led to the confirmation of previously unidentified male wolverine. The sample provided a full genotype for the individual. The location for the station was based on track observations submitted by public observers and the entire camera trap effort was carried out by a long-term project volunteer. We are now engaging with the Nooksack tribe, in whose aboriginal territory the animal was documented, to name the wolverine and explore opportunities to engage with the tribe's wildlife department with regard to our work in this region.

With most of our community science reports continuing to be reports of tracks, we have launched an observer reliability test to determine the efficacy of our expert review process for these observations. The results of this test will help with our analysis of community science data and will help us determine the best way to utilize these track observations. Depending on the findings of our test, there may be also broader implications for community science efforts which crowdsource wildlife track observations.

The release of *Finding Gulo* was the primary conservation messaging event of the past year. The film is currently touring with Banff Mountain Film Festival, Wild and Scenic Film Festival, and Backcountry Film Festival. Local and regional screenings are ongoing. In addition to the short film, Oregon Public Broadcasting filmed our work for their Oregon Field Guide television series. The episode is tentatively scheduled for release in 2022.

The October 2020 United States Fish and Wildlife Service decision not to list wolverines in the contiguous United States through the Endangered Species Act means that a nationally coordinated and consistent approach to wolverine conservation is not likely anytime soon. Yet wolverine research, monitoring, and conservation remains essential to wolverines' long-term survival given the projected combined impacts of reduced spring snow and increasing pressure from human land use, specifically roads and recreation. Without continuous committed effort to better understand wolverine habitat

relations, critical habitat, best practices for recreation, and action to reduce the worst impacts of the climate emergency, we may unwittingly reverse the current positive trend in wolverine recovery.

Acknowledgments

Cascades Wolverine Project is a community-led effort made possible by generous support from volunteers, contributors, collaborators, and partners in the North Cascades Ecoregion and beyond. Our study area in the North Cascades falls within the traditional territories of several indigenous peoples, most prominently the Methow, Chelan, and Nooksack Tribes. We are wholeheartedly grateful to live and work within these extraordinary mountains along with indigenous communities of the North Cascades.

We are grateful to colleagues and partners in wildlife management, research, and conservation: Dave Werntz, Chase Gunnell, Laurel Baum, and Kurt Hellmann of CNW; Cathy Raley and Keith Aubry of the PNW Research Station; Anna Machowicz of Home Range Wildlife Research, Matthew Scrafford of WCS, Jeff Rose of University of Utah, Philippe Naveau of LSCE, John Rorher of the USFS, Scott Fitkin of the WDFW, Paula MacKay and Robert Long of WPZ, Andrew Shirk of University of Washington's Climate Impacts Group, Carly Vynne of Osprey Insights, and Jocelyn Akins of CCP. We are honored to have collaborated on art, and media with Hannah Vianno, Colin Arisman of Wild Confluence Media, Tyler Wilkinson-Ray of the Wilder Studio, Ian McCluskey and Jim Aikman with Oregon Public Broadcasting (OPB), and Leo Kleine. Jesse Snyder designed our website and has been an instrumental, highly skilled volunteer. Thanks to certified Track and Sign Specialists Marcus Reynerson, and Brian McConnell for their expert track review, and to all the community scientists who offered their wildlife observations.

A hardy, fun, and dedicated team of field volunteers made last winter's monitoring a success: Erica Engle, Peter Loft, Nick March, Jane Hosman, Jack McLeod, Jonah Jensen-Young, and Steve and Amy Tongue. Thanks to guides Forrest Madsen and Kelsey McLean for keeping the OPB film crew safe in the mountains. We are grateful to Alyssa Lovell for her enduring support, many hours of data management, and thoughtful feedback. Thanks to Claire Waichler for her splendid wolverine artwork and data processing. Thank you to event hosts and volunteers: Holden Village, Methow Conservancy, Goats Beard Mountain Supplies, North Cascades Mountain Hostel, Joel Forrest, Claire LeDuc, Liza Bee Hodgins, and Paul Smotherman. Many thanks to the incredible staff at Holden Village for housing and feeding us deep in the rugged Cascades.

To CWP's donors we offer our sincere gratitude. Private donations from individuals form the bulk of our financial resources—we could not have done our work without a supportive community in addition to Patagonia and Conservation Northwest. To everyone supporting this project, thank you!

Appendix 1: Photography

All images by David Moskowitz. For an online gallery of images from the field season visit:

<https://cascadeswolverineproject.org/winter-spring-2021-field-season-in-photos/>



Wolverine at Holden 2019-3 station.



A separate detection event at Holden 2019-3 with the chest blaze of the wolverine showing.



Wolverine at Holden 2019-2 Station



Steph Williams preps a snowmobile for a day of field work in the Methow Valley where recreational use of wolverine habitat is increasing.



Steph Williams and project volunteer Erica Engle skin out to a survey location.



Erica Engle prepares a trail camera at a research station in the Twisp River watershed.



Steph Williams collects fur from a hair snagging device after reviewing photographs which showed a wolverine at the station.



A black bear makes a late season appearance at a research station in Early Winters Creek watershed in April shortly before the station was decommissioned for the year.



A bobcat visits a research station in the Lake Chelan watershed.



A Pacific marten at the same station in the Lake Chelan watershed.



Snowshoe hare at the same research station.



Clark's nutcrackers are a common visitor to CWP research stations, a species that, like wolverines, specializes in high elevations and maybe affected significantly by climate change.



Burned forest from the 2015 Wolverine Fire in the North Cascades. CWP research stations and community science observations document regular use of this landscape by wolverines.



Bonanza Peak seen through burned forest.



Sunset over the Liberty Bell massif in the Methow River watershed.