COMMUNITY WILDLIFE MONITORING PROJECT

2020-2021 WINTER FIELD SEASON REPORT

May 2021

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Cover photo: Wildlife tracks at Keechelus Lake, photo by CWMP volunteer Sydney Tomechko.

Executive Summary

The Community Wildlife Monitoring Project (CWMP) uses trained volunteers to record the presence and movement of wildlife through snow tracking surveys and remote camera installations in the Washington Cascades and other wildlands across Washington State and British Columbia. This report summarizes snow-tracking efforts along Interstate 90 in the Washington Cascades for the winter of 2020-2021. This field season marked the 15th winter of survey work in this study area.

This winter we had a slightly lower survey effort on our standard transects due to COVID related restrictions on volunteer management and several storm systems that shut down Interstate 90 during time periods when we had a large number of transects scheduled. We documented a typical suite of species along our transects.

This winter or field work included three components:

1. Completion of a 15th season of transects within the Snoqualmie East construction project.
2. Carrying out surveys specifically for American marten in locations adjacent to the Interstate 90 corridor around Snoqualmie Pass.
3. A second season and increased effort in surveying newly established transects west of Snoqualmie Pass in coordination with Washington State Department of Transportation (WSDOT).

Due to limitations created by the COVID-19 pandemic, we significantly limited our volunteer population and amended our field methods. However, our overall survey effort was on par with past seasons overall.

Project Overview

CWMP is a community science project led by Conservation Northwest in coordination with several project partners. The program utilizes remote cameras year-round to document rare and sensitive species throughout core areas in the Cascades, as well as for more common species in strategically important locations. During the winter months, trained CWMP volunteers use snow tracking to monitor the presence, location, and movement of wildlife near proposed or existing wildlife crossing structures spanning Interstate 90 (I-90) in the Washington Cascades east of Snoqualmie Pass. Since its inception, CWMP has remained an asset to wildlife agencies and professionals by providing supplemental monitoring efforts in areas identified as either potential core habitat or vital connectivity corridors between core habitats for some of our region's rarest wildlife. Our main project objectives are:

1. To engage and educate community members about the detection and monitoring of sensitive wildlife species and in critical habitat areas;

2. To record wildlife presence in the I-90 corridor and along the I-90 Snoqualmie Pass East Project in strategic locations and in core habitat through remote cameras and snow tracking;

3. To record the presence of rare and sensitive species that regional and national conservation efforts aim to recover including fisher, gray wolf, grizzly bear, lynx, and wolverine;

4. To facilitate the exchange of information about wildlife, including data from monitoring efforts, between public agencies, organizations, and interested individuals.

CWMP is designed to support the conservation of our region's wildlife and wildlands by enhancing our knowledge of wildlife-habitat connections in our region, supporting the monitoring and management efforts of transportation and wildlife agencies, and providing engaging educational field experiences for volunteers.

The winter portion of CWMP is focused on snow-tracking along a 15-mile corridor on I-90 and providing data for the I-90 Snoqualmie Pass East Project. The I-90 Snoqualmie Pass East Project is a 15-mile highway improvement project that includes measures for connecting wildlife habitat, such as the construction of wildlife crossings. Construction on a number of key parts of the I-90 Snoqualmie Pass East Project is completed. This includes broad underpasses and a conspicuous wildlife overpass that motorists drive under and wildlife travel across. Construction activities were not active during the snow tracking season.

In the past five years, CWMP has expanded its winter survey effort in the vicinity of Snoqualmie Pass. Track surveys for American marten north and south of I-90 are an effort to better understand the range of this species and impact of the highway and human development on the connectivity of their population. Additionally, in the past two years CWMP has established several new transects west of Snoqualmie Pass along the interstate, in conjunction with WSDOT. These are aimed at understanding landscape permeability along this stretch of the interstate.

A complete description of the Community Wildlife Monitoring Project's goals and methods, as well as a record of previous season reports, is available online at https://www.conservationnw.org/our-work/wildlife/wildlife-monitoring/

Methodology

Study Area

Snoqualmie Pass (3022 feet, 921 meters) is the lowest pass in the Washington Cascades. I-90 traverses the pass from west to east as a divided highway with two to four lanes of traffic in each direction throughout the study area. A large downhill ski complex sits at the summit of the pass, along with associated human infrastructure. A few miles east of the pass, a large irrigation water reservoir on the headwaters of the Yakima River fills much of the valley bottom. The human footprint at the pass along with the high speed and heavily trafficked interstate highway makes Snoqualmie Pass the most tenuous wildlife corridor in the Washington Cascades. Ongoing reconstruction by the WSDOT on I-90 east of Snoqualmie Pass has been designed to improve road safety for motorists and increase the permeability of the road for wildlife.

Field Methods

The winter portion of CWMP engages trained volunteers to walk transects adjacent to the interstate and document the tracks of wildlife. Set transects are monitored three times over the course of the winter on average and were established at locations where crossing structures either exist and are being improved or have been targeted for installation. Transects run parallel to the highway about 150 meters from the roadbed. Field teams document tracks and signs of any mammal species larger than a snowshoe hare found along the route. At least one set of tracks is trailed on each transect per visit in an attempt to document the animal's relationship to the interstate. Observations are photo-documented in the field and all photos are reviewed by expert observers out of the field to assess observer reliability. All species of high conservation value are thoroughly documented, including photo-documentation, to ensure the accuracy of identification.

American marten surveys are not along prescribed routes. Rather, survey areas are assigned to a field team with the goal providing data to fill in a more complete picture of landscapes currently occupied and unoccupied by the species adjacent to the highway corridor. This information will hopefully help identify any potential points of linkage for northern and southern populations and obstacles to connectivity for them. A route is selected based on access considerations and how to best cover the area. Teams record a GPS track of the route they take so that the project can document locations that have been surveyed and the amount of effort. Teams record tracks of American marten when they are detected as per the project protocol for on-transect surveys.

Transects established west of Snoqualmie Pass are at lower elevation where snowpack is less consistent. To increase the likelihood of snow cover during surveys at these transects, CWMP created a system for arranging survey dates on short notice when the forecast called for good conditions.

Results

Summary of 2020-2021 Transect Data

This winter yielded a relatively modest number of overall observations (n = 95, positively identified = 73) likely due to a slightly decreased survey effort due to a combination of the COVID-19 pandemic and adverse weather. Several transects were visited less than the targeted three times over the course of the winter. This was due to weather conditions which shut down travel on the interstate during several weekends where we had several transects scheduled, some of which were not able to be rescheduled.

All Transects:

This winter's field work identified a standard suite of wildlife in the study area for the winter. Volunteers detected 9 species across all transect sites (Figure 1), and coyotes continue to be the most frequently detected species (33%). For the second year in a row, bobcat detections were half of what they have been for most of the project (2021 = 3%, average = 17%). In contrast, elk were the second-most detected species (20% of detections), though some of this increase may be due to the addition of the new lower-elevation transects. This winter we had our first mink detection during the project period. This year also marks 9 years since a cougar was detected on the pass during the snow tracking season.

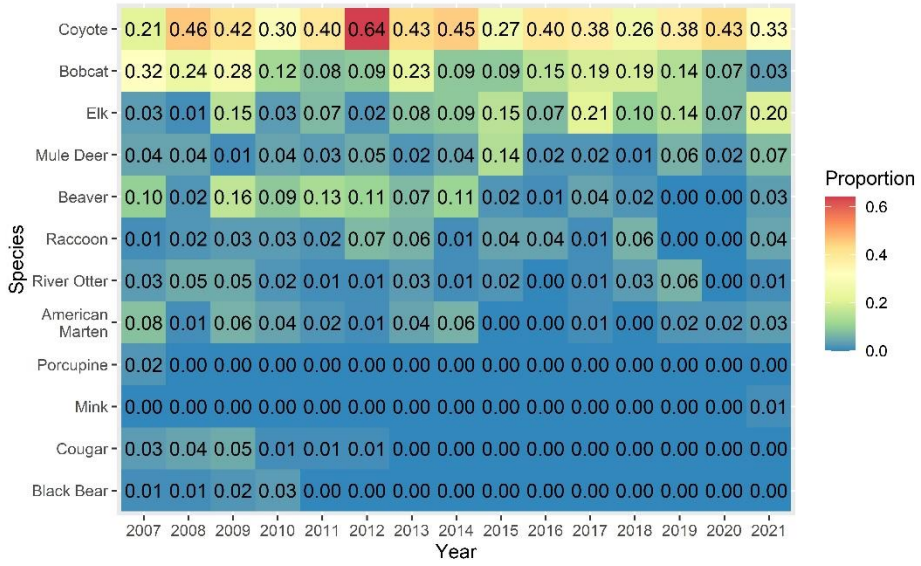


Figure 1. Proportion of year wildlife detections based on snow tracking across the I-90 Snoqualmie Pass corridor.

Snoqualmie Pass Transect: This transect was only surveyed twice due to some cancellations related to weather. Coyote, raccoon and American marten were the three species detected (Table 1). We detected no species attempting to cross the highway (Map A1). Species Detection and Trailing Maps are found in Appendix A.

Table 1. Number of species detections by year and side of I-90 at Snoqualmie Pass Transect, Snoqualmie Pass, WA

Side of I-90	Species	2014	2015	2016	2017	2018	2019	2020	2021
North									
	Bobcat			1	1	1	2	1	
	Coyote	10	10	5	3	5	5		3
	Elk			1					
	American Marten	6			1		4	3	1
	Mule Deer	2	2						
	Raccoon	12	2		2	2		1	
	Richness	*4*	*3*	*3*	*4*	*3*	*3*	*3*	*2*
South									
	Black Bear	4							
	Coyote		6	1	1	3			
	Raccoon		6	1		1			2
	Richness	*1*	*2*	*2*	*1*	*2*	*0*	*0*	*1*

Gold Creek Transect: This transect was surveyed five times, though the southern transect continues to be a challenge to complete due to the lack of solid ice to cross the creek. Access the east half of the south side by traveling from FS Rd 4832 under the crossing structure was identified as problematic due to the high recreational use on the 4832 road, and not wanting to leave footprints in a high visibility area. Volunteers detected three species (beaver, coyote, and river otter) during survey visits, and only coyote was detected on both sides of I-90 (Table 2). Trailing efforts suggest coyotes are using the undercrossing (Map A2).

Table 2. Number of species detections by year and side of I-90 at Gold Creek Transect, Snoqualmie Pass, WA

Side of I-90	Species	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
North																
	Beaver	4		3	4	7	2	9	6	14	1		1	3	1	3
	Bobcat	3				2	2		6	6			1		1	

	Coyote	6	3	1	5	5	1	8	26	15			1	5	2	10
	Elk									2						
	Mule Deer		1		1					2				1		
	Raccoon				1				2	4						
	River Otter	1	3	3		1		1	4	2					2	
	Richness	*4*	*3*	*3*	*4*	*4*	*3*	*3*	*5*	*7*	*1*	*0*	*3*	*3*	*4*	*2*
South																
	Beaver				6		2		4	4				1		
	Bobcat								2		1					
	Coyote	1	1	3	1	2	3	1	6	4	1			1	1	1
	Mule Deer					1	2			2				1		
	River Otter	1				1			2				1	2		1
	Richness	*2*	*1*	*1*	*2*	*3*	*3*	*1*	*4*	*3*	*2*	*0*	*1*	*4*	*1*	*2*

Price Noble Transects: Volunteers were able to successfully survey both sides of the highway three times, enabled by greatly increased ease of access following an arrangement with WSDOT and USFS for survey teams to access the area from a pull-off close to the west end of these transects, directly off of the eastbound lanes of the interstate, and use of one of the undercrossing structures to access the north side. Volunteers detected four species: coyote, elk, raccoon, and mule deer (Table 3). The proximity of trails towards the crossing structures, and presence of coyote and elk on both sides of the highway suggest both species are likely using crossing structures (Map A3).

Table 3. Number of species detections by year and side of I-90 at Price Noble Transect, Snoqualmie Pass, WA

Side of I-90	Species	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
North																
	Beaver					**2**	**1**	**1**								
	Black Bear		**1**													
	Bobcat	**9**	**4**	**14**	**5**		**3**	**11**	**6**	**2**	**1**	**2**	**4**	**3**	**1**	
	Cougar	**2**	**2**		**3**								**1**			
	Coyote	**4**	**7**	**13**	**6**	**5**	**6**	**13**	**22**	**10**	**3**	**2**	**1**	**8**	**5**	**3**
	Elk			**4**			**2**	**2**	**8**	**8**		**6**	**2**	**2**	**1**	**6**
	Mule Deer	**1**		**1**		**1**		**1**		**2**	**2**	**1**				
	Porcupine							**1**								
	Raccoon					**1**		**1**								1

	River Otter			**1**											**1**	
	Richness	***4***	***4***	***5***	***3***	***4***	***4***	***7***	***3***	***4***	***3***	***4***	***4***	***3***	***4***	***3***
South																
	Beaver	**3**			**6**		**7**	**5**	**6**	**10**	**1**					
	Black Bear	**1**														
	Bobcat	**5**	**13**	**4**	**2**		**2**	**3**	**2**	**8**	**1**	**2**		**2**	**1**	
	Coyote	**1**	**14**	**6**	**1**	**10**	**11**	**15**	**2**	**12**	**7**	**4**	**2**	**9**		1
	Elk			**8**		**3**		**5**	**4**	**10**		**1**		**5**	**2**	**4**
	Mule Deer	**2**			**1**			**1**	**2**	**12**				**2**		1
	Raccoon					**1**	**3**	**1**								
	River Otter		**1**	**1**			**1**				**2**			**1**		
	Richness	***5***	***3***	***4***	***4***	***3***	***5***	***6***	***5***	***5***	***4***	***3***	***1***	***5***	***2***	***3***

Easton Hill: This year the north transect was visited three times, though the south transect was only surveyed twice. Volunteers detected coyotes, bobcat, elk, and raccoon (Table 4), with no evidence of the species crossing the highway (Map A4).

Table 4. Number of species detections by year and side of I-90 at Easton Hill Transect, Snoqualmie Pass, WA

Side of I-90	Species	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
North																
	Bobcat	1	2	3	5	5	1	5	2	6	2	4	5	6		
	Cougar		1		1			1								
	Coyote		10	11	2	6	6	5	8	8	14	7	2	6	1	1
	Elk	2	1	6	2	4		3	2	10	6	1	2	2		1
	Mule Deer				1	1		1	6							
	Raccoon															1
	Richness	*2*	*4*	*3*	*5*	*4*	*2*	*5*	*4*	*3*	*3*	*3*	*3*	*3*	*1*	*3*
South																
	Black Bear						2		2							
	Bobcat	5	1	15				11	2	1	7		2			1

Cougar				1		1									
Coyote			17	8	1	22	15	22	4	4	1	4	3	8	1
Elk			1	1			1	6	8						
Mule Deer				1					16				1		
Porcupine							1								
Raccoon								2					1		
Richness	*1*	*1*	*3*	*4*	*1*	*3*	*4*	*5*	*4*	*2*	*1*	*2*	*3*	*1*	*2*

Monitoring for illegal access to Wildlife Closure Area: We documented only minor human use of the newly established wildlife closure area along the interstate adjacent to crossing structures. We only detected three instances of recreational activities within the closure area. At Gold Creek there were two detections of a snowshoer north of the highway within the closure area, and one on the south side of the highway. At Price Noble, volunteers detected the tracks of snowshoers, cross country skiers, and the tracks of a snowmobile along the southern transect.

Compared to the much larger human use of the crossing structures themselves documented in years past, our findings would suggest the closure is being respected by and large and is decreasing the likelihood of human recreation negatively influencing wildlife use of crossing structures. Along with documenting illegal use in the closure area, this winter CWMP coordinated with the USFS and WSDOT to manage our survey access points to avoid encouraging others to travel in the closure area. These measures appear to have been successful.

Low elevation westside transect and pilot transects: The lack of snow continues to be the primary challenge for volunteers in completing the low elevation transects west of I-90 including both the established Denny Creek, and the new transects we piloted in 2020. Additionally, this winter we continued our pilot of a new system for surveying these lower elevation sites which involved recruiting teams to survey them on short notice when the forecast indicated favorable tracking conditions. Further refinement to this system will be required to access a greater level of volunteer effort when conditions are good.

Table 5. Number of species detection in 2021 at five low elevation transects, Snoqualmie Pass, WA

Transect	Elk	Mule Deer	Bobcat	Coyote	Richness
Denny Creek North	2	1		1	3
Denny Creek South		1	1	1	3
Talus Slope North	2	3		2	3

John Wayne South			3	1
MP 47 North	2	1	1	3
MP 47 South			1	1

This year, volunteers were only able to survey each of the low elevation transects at least once (Table 5). Volunteers only detected elk, deer, and coyote on the North side of the highway (Map A5 and Map A6).

Summary of American Marten Survey Data

This season, five survey routes were completed, volunteers walked 34.4 km looking for American marten north and south of I-90. Volunteers detected two marten on the north side of the highway during marten-focused surveys, and one marten detection during general wildlife snow track surveys at the Snoqualmie Pass transect (Figure 1). Our marten surveys continue to show no evidence of connections between marten populations north and south of interstate 90. One significant hole in our survey effort is in quality habitat just west of Snoqualmie Pass. Limited access options and avalanche hazard makes surveying this area out of reach for our current volunteer effort. American marten survey maps are found in Appendix B.

Summary of 2019-2020 Trailing Data

Volunteers documented 11 trailing events of three species (bobcat: 1 event, coyote: 6 events, elk: 4 events) at all locations. We found evidence that coyotes are using the underpass at Gold Creek, and elk are using the crossing structures at Price Noble. At the low elevation sites, we found evidence that elk were attempting, but not crossing I-90.

Trailing maps can be found in Appendix A.

Citizen Science Effort

Summary of Winter 2020 -2021 Volunteer Participation

Number of Volunteer Team Leaders	10
Number of Volunteers Team Members	37
TOTAL PROJECT VOLUNTEERS	47
Number of Transect Field Days	26
Number of Transect Volunteer Days	83
Winter Training Team Leader Hours	70
Winter Training Team Member Hours	40
Project Leadership Volunteer Hours	50
Transect Survey Hours	533.5
Marten Survey Hours	206
TOTAL VOLUNTEER HOURS	901.5

Recommendations for Next Field Season:

1. Build on the revisions made this season to the scheduling system for transect dates and formation of volunteer teams to ensure a fair and efficient distribution of transect dates among team leaders and appointment of volunteers to teams.

2. The use of WhatsApp for coordinating rapid response teams was ineffective. Revert to an email system for notification of rapid response transects and consider strategies to increase survey effort. Look for ways to increase survey effort on these transects including possibly: (a) overscheduling the higher-elevation transects and then asking team leaders to switch to a rapid response transect on one of their other scheduled transect dates if snow conditions are favorable; (b) scheduling specific team leaders to be "on call" and hold dates open in case rapid response conditions develop in a given week; or (c) expanding our pool of team leaders for rapid response transects (e.g., we could invite past team leaders who are still in the area but not wanting to commit to a full season of volunteer work to take part in the rapid response effort).

3. Examine possibilities for outreach to demographics not currently well represented in the volunteer pool. While COVID restrictions stymied this goal in 2020-21, as the project reinitiates volunteer recruitment for winter 2021-22, explore avenues to actively recruit a more diverse volunteer pool. Consider a professional audit of the program from a specialist to better understand how to engage with this goal is an effective and respectful manner.

4. Increase engagement of partner organizations including Wilderness Awareness School and members of the Mountaineers with an ability to access difficult terrain. Consider inviting WAS staff and teaching assistants to participate in the team leader and general volunteer training, whether to come on board as “regular” project volunteers or take part in the rapid response effort. Work with team leader Brian Booth to tap into Mountaineers members with a stated interest in wildlife tracking excursions.

5. Provide ongoing training opportunities for volunteers (general and team leads), planned to accommodate their scheduling needs.

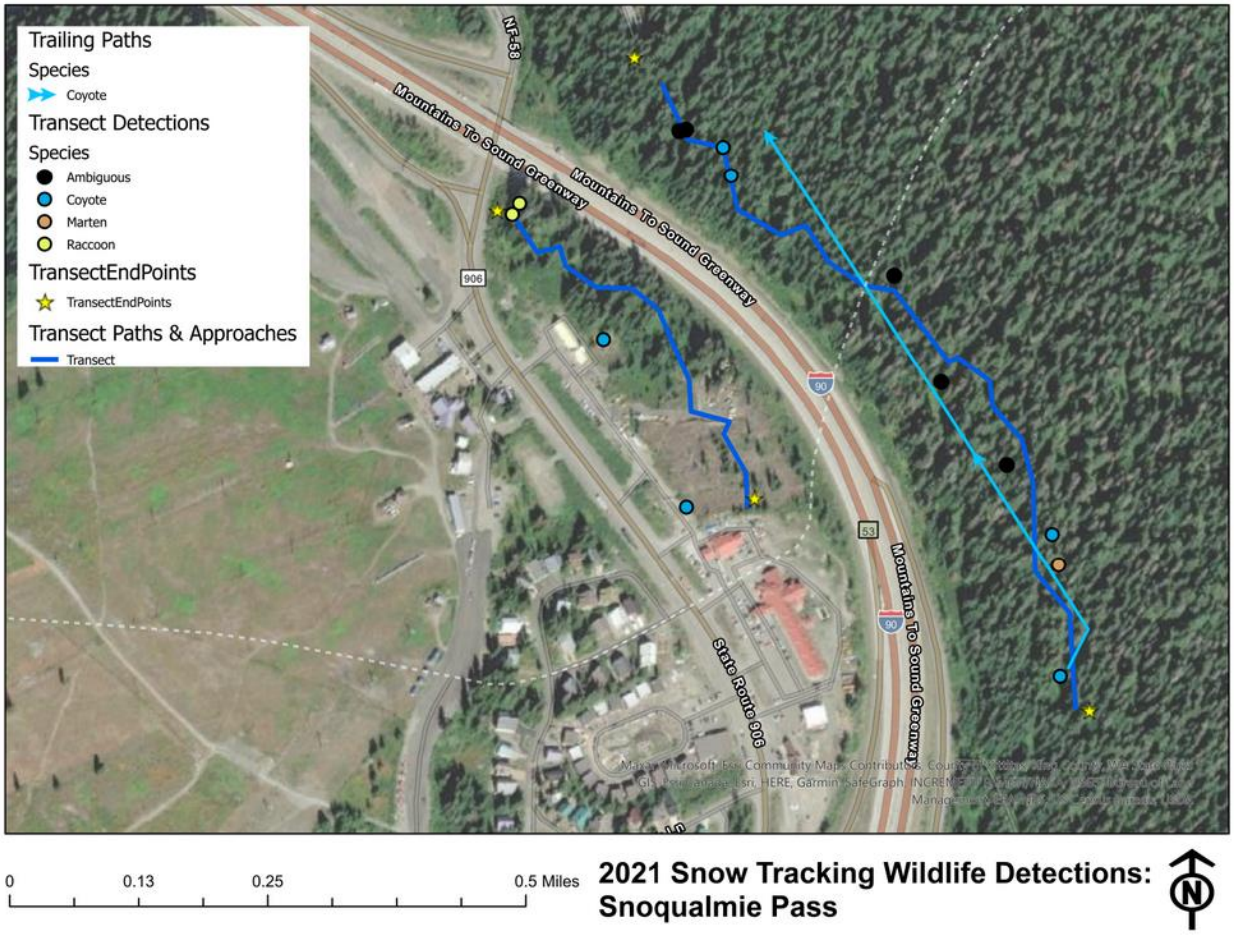
Acknowledgements: We want to thank our Team Leaders from the 20’-21’ season, whom without their enthusiasm for the project conducting these surveys would not be possible: Adam Martin, Brian Booth, Brooke Nelson, Christine Phelan, Evan Adkins, Mallory Clarke, Mark Kang O’Higgins, Laurel Baum, Logan Flanner, and Sophie Mazowita, and– we appreciate you all so much! Please continue to share your curiosity for the natural world with others, as it inspires and spreads hope in others.

To our general volunteers who joined us this year: Alex Bigby, Alia Richardson, Anthony Denice, Bob Margulis, Chad Sleeman, Chris Byrd, Christian Holtz, David Pagan, Gwen Shlichta, Jamie Schultz, Jennifer Brent, Kate Clabby, Kate Pfeilschiefter, Kira Davis, Kurt Hellmann, Lei Wu, Lightbird Vogl, Lucas Veverka, Luke Nalker, Lydia Cleveland, Makie Matsumoto-Hervol, Matthew Carruth, Mickie Centrone, Miles Currie, Neil Bresheare, Peter Clitherow, Raquel Naranjo, Ryan Stone, Ryan Summerlin, Samantha Montgomery, Samara Travella, Scott Pierson, Susan Hausmann, Sydney Tomechko, Ted Mack, Tony Hemrich, Tricia Cassels, we are so glad you were able to join the project and bring your own skills and enthusiasm to the group.

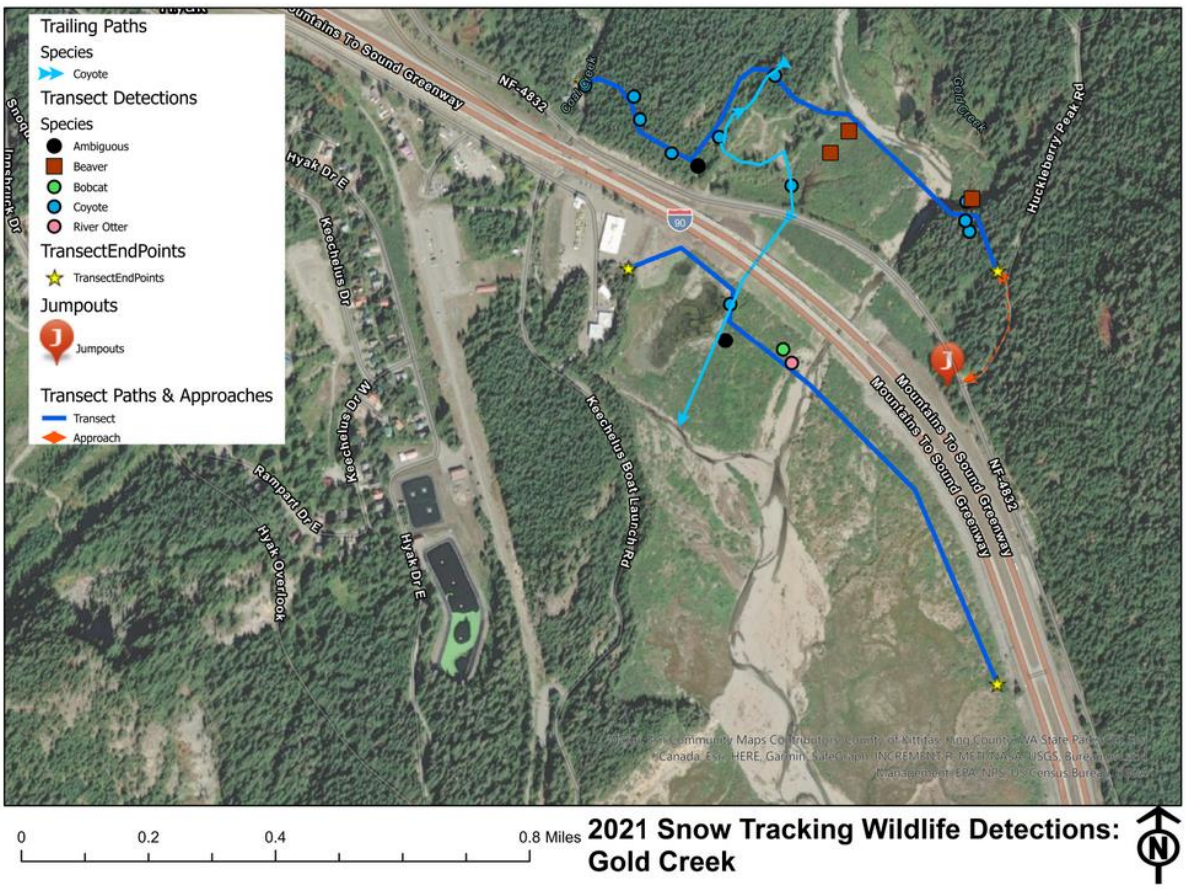
This past year, CWMP was also supported by James M. Lea Foundation, Aquatic Lands Enhancement Act (ALEA) Grant program and an anonymous foundation.

Appendix A: Species Detections and Trailing Route Maps

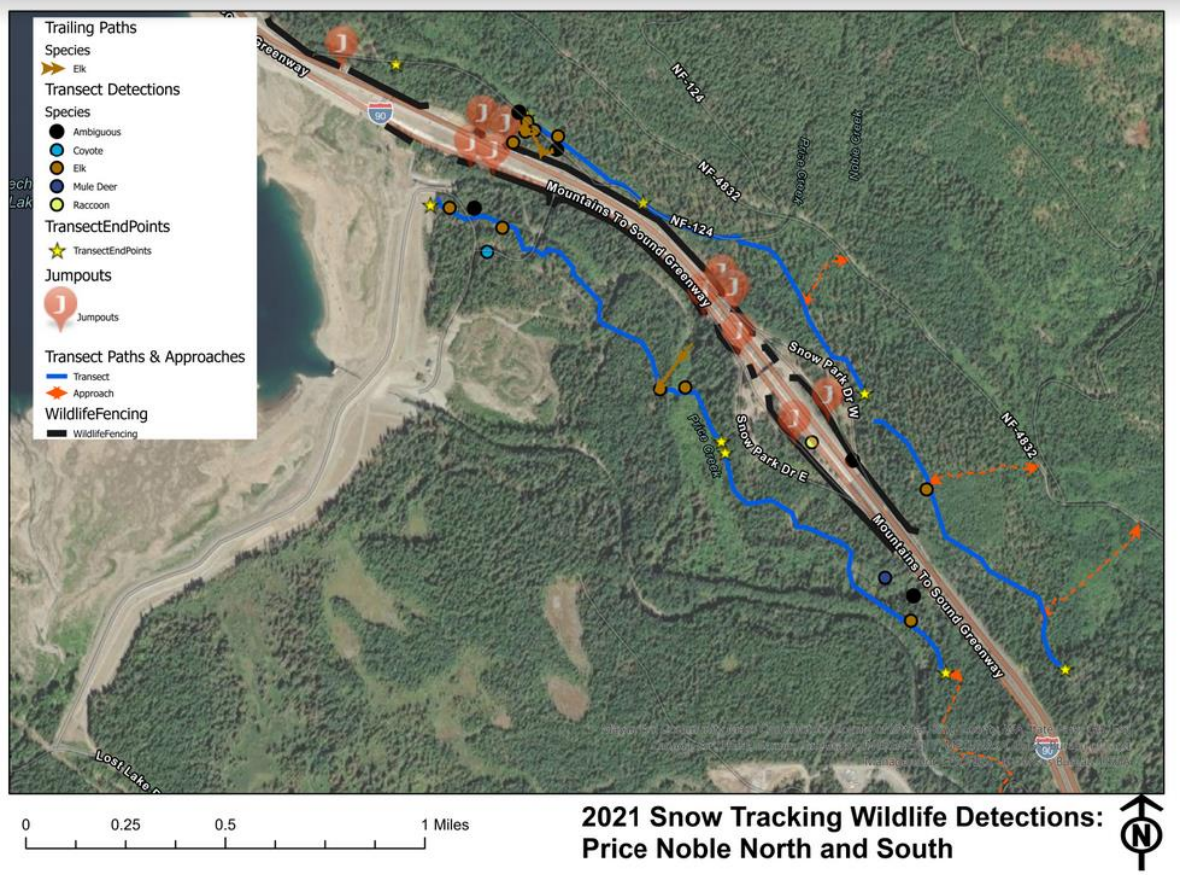
*Snoqualmie Pass Transect: (*Map A1)



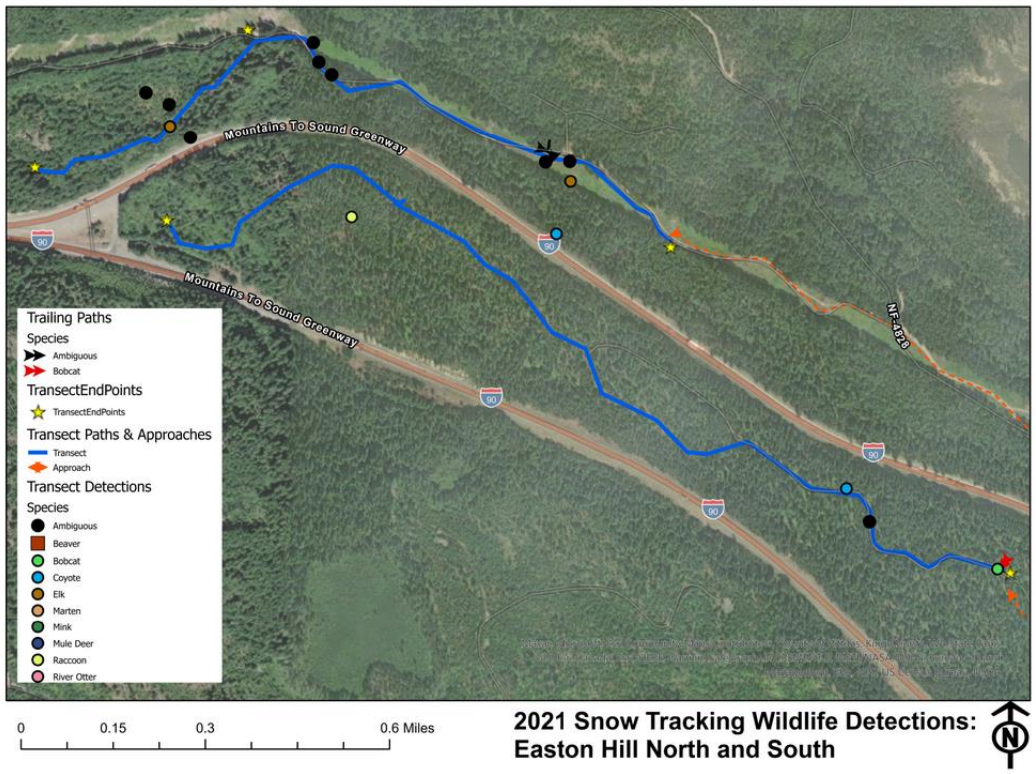
Gold Creek Transect: (Map A2)



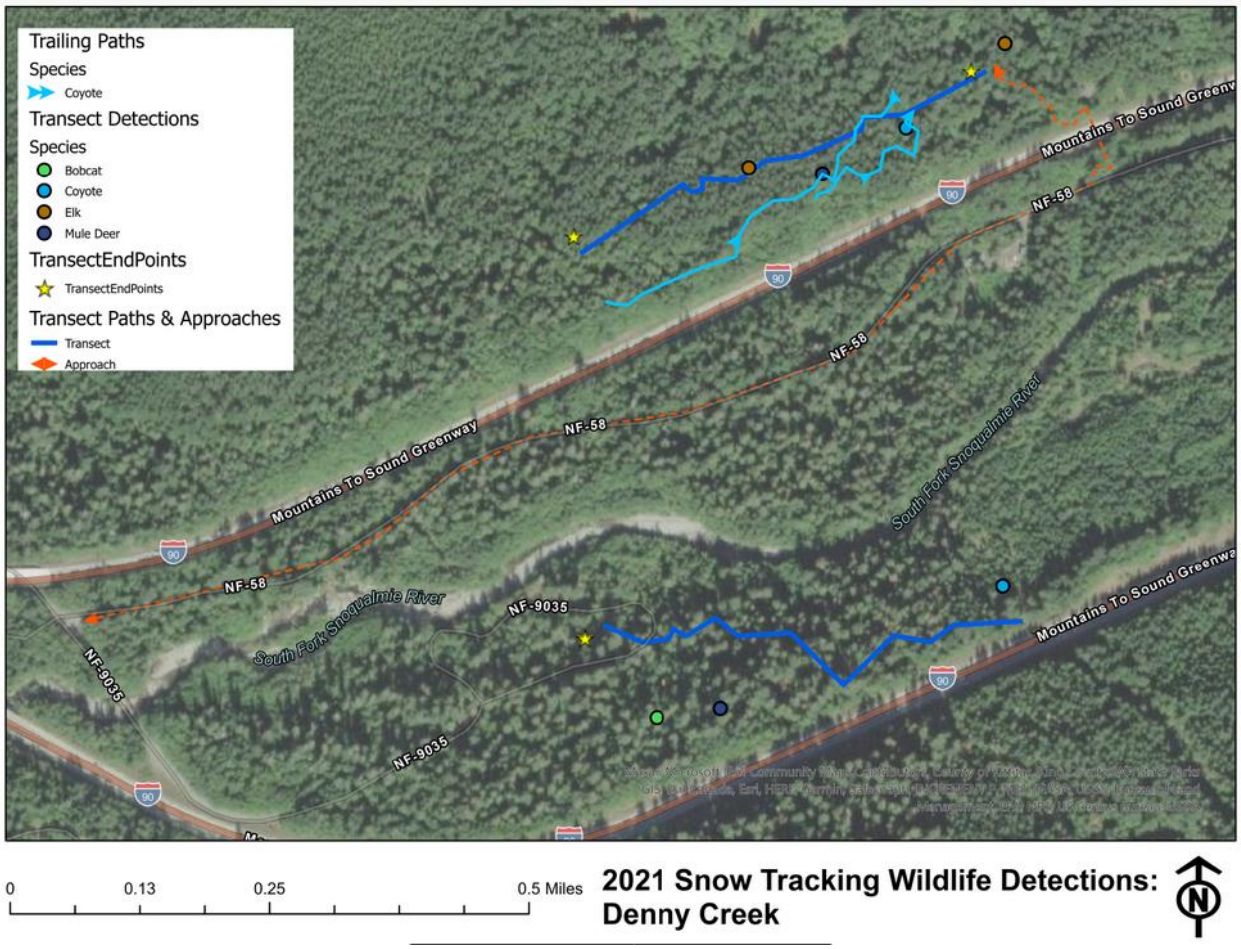
Price Noble Transect: (Map A3)



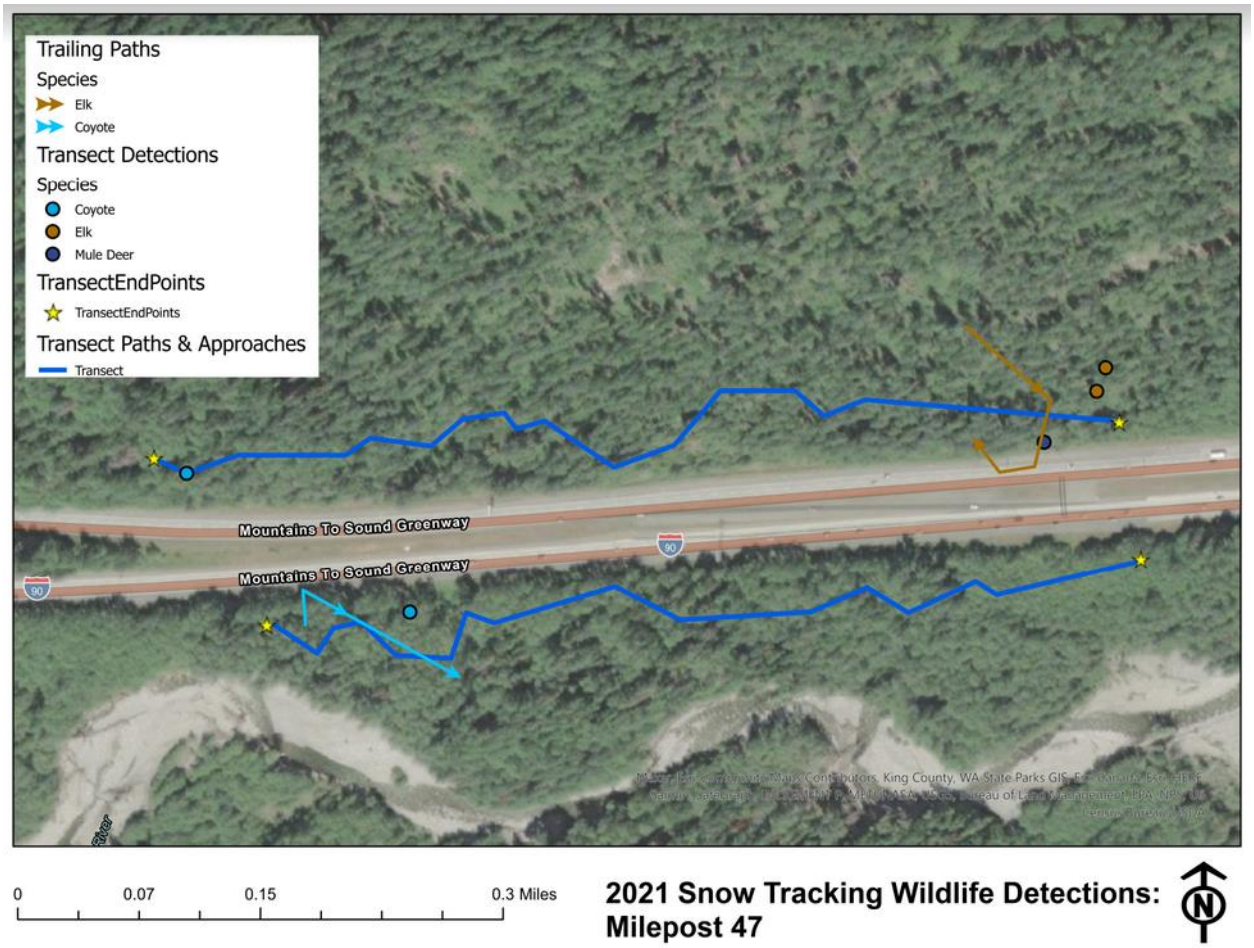
Easton Hill Transect: (Map A4)



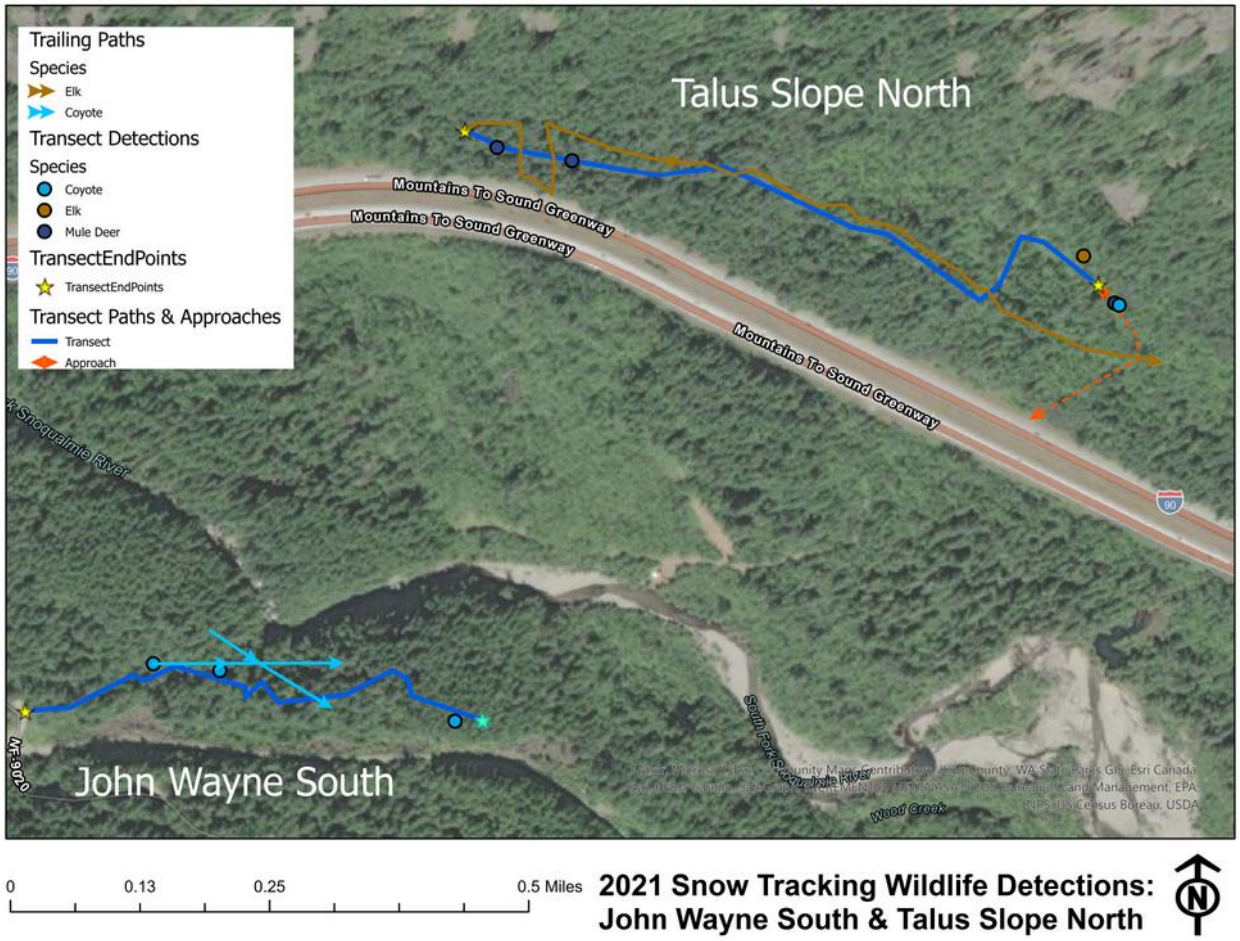
Denny Creek Transects: (Map A5)



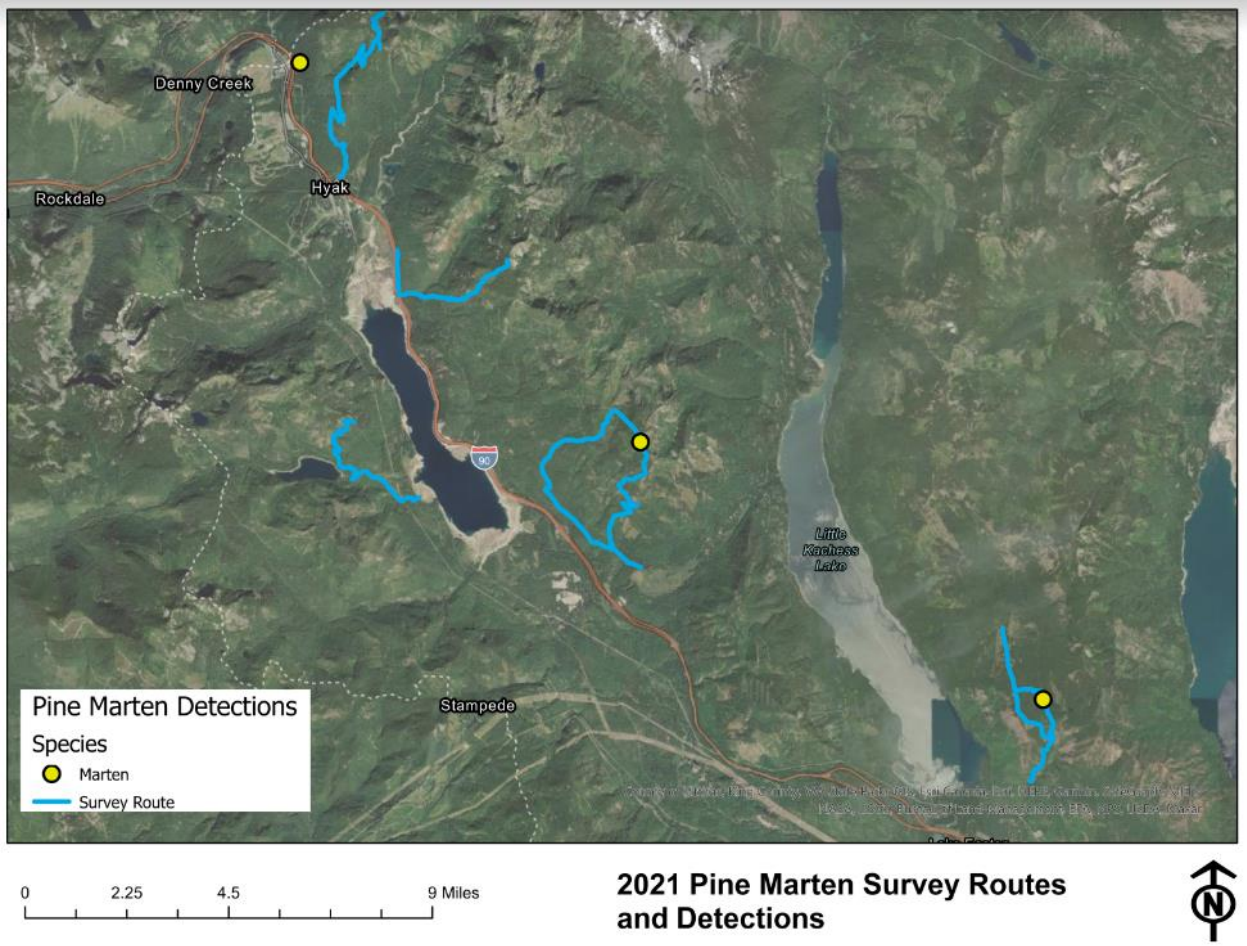
Milepost 47 Transects: (Map A6)



Talus Slope North & John Wayne South Transects: (Map A7)



Appendix B: American Martin Survey Maps



Appendix C: Advisory Council

(Cascades Carnivore Project) Jocelyn Akins;
(Gifford Pinchot National Forest) John Jakubowski;
(Mt. Baker Snoqualmie National Forest) Sonny Paz, Jesse Plumage;
(North Cascades National Park) Jason Ransom, Roger Christophersen,
(Okanogan-Wenatchee National Forest) Monte Kuke, Patty Garvey-Darda, Jesse McCarty, Jo Ellen Richards, John Rohrer, Aja Woodrow, Don Youkey;
(PNW Research Station, USDA Forest Service) Keith Aubrey, Cathy Raley;
(US Fish and Wildlife Service) Gregg Kurz;
(WA Conservation Science Institute) Bill Gaines;
(WA Dept. of Fish and Wildlife) Jeff Lewis; Ben Maletzke, William Moore, Scott Fitkin;
(WA Department of Transportation) Glen Kalisz, Mark Norman, Josh Zylstra;
(Washington State University) Dr. Dan Thornton;
(Woodland Park Zoo) Robert Long

Appendix D:

Species Priority List

Tracking priority for this study in descending order

Level 1: Wolverine, fisher, Canada lynx, wolf, American marten, grizzly bear, cougar, mountain goat

Level 2: Elk, mule deer, mountain red fox

Level 3: Black Bear, bobcat, coyote, raccoon, river otter, beaver, any other wild mammals larger than a snowshoe hare encountered in the field

Do Not Record: Snowshoe hare and smaller animals

KEY

Level 1 species should be trailed wherever possible. In the case of the top 5 species (wolverine, fisher, Canada lynx, wolf and American marten), these can be trailed even before a transect is completed because they are critical rare species.

Level 2 species should be trailed in the absence of Level 1 species, after completing the outward leg of your transect and where time is available.

Level 3 species should only be trailed if there are no Level 1 or Level 2 species present on the transect.