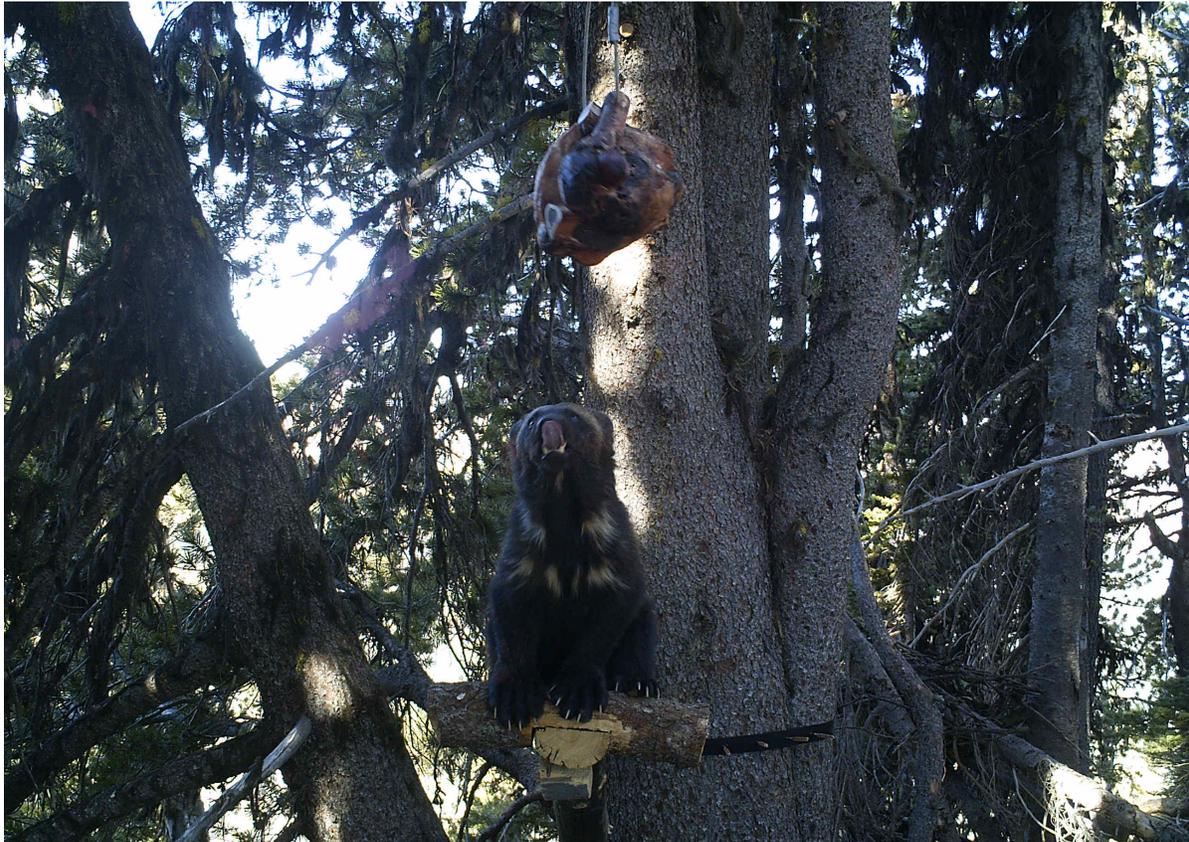


Citizen Wildlife Monitoring Project
2012 SPRING-FALL FIELD SEASON REPORT



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February 2013

Prepared by:

Kellene Collins, Project Intern

Kit McGurn, Project Volunteer and Data Coordinator
Conservation Northwest

Jen Watkins, Project Director
Conservation Northwest and I-90 Wildlife Bridges Coalition

Seattle, Washington

With contributions from Erin Moore, Editor, Conservation Northwest.

Image on cover: “Peg”, a wolverine documented this season in the Upper Icicle Valley south of Highway 2 on Bootjack Mountain. This wolverine was named during our season by the volunteer that first documented her earlier in 2012 at a nearby station in the Chiwaukum mountains.

Full report and appendices available online at <http://www.conservationnw.org/monitoring>

Our monitoring work in the Cascades is currently done through a partnership effort that began in 2006. The Cascades Citizen Wildlife Monitoring Project is collaboratively run by Conservation Northwest, I-90 Wildlife Bridges Coalition, and Wilderness Awareness School.



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I. EXECUTIVE SUMMARY

From April through November of 2012, over 100 volunteers with the Citizen Wildlife Monitoring Project deployed 36 cameras at 24 sites in Washington. Sites were located in northeast Washington and throughout the Cascades. The season's objectives were to: 1) Monitor the presence of gray wolves in both habitat where we knew they were established, and quality habitat where we expect them to recover; 2) Monitor the presence and collect genetic information on wolverines in the Cascades; and 3) Monitor all wildlife species present in key habitat connectivity areas east of Snoqualmie Pass along Interstate 90, where wildlife crossing structures are under construction.

In the Cascades, eighteen remote camera sites detected eleven species. The highlight of the season occurred just south of Highway 2 west of the city of Leavenworth, WA where we detected the presence of three individual wolverines previously undocumented prior to this year by state and federal wolverine researchers. One of the detections was the return of a female wolverine, dubbed "Peg" during our previous winter season, first recorded by our cameras on April 1, 2012. Two individuals in addition to Peg were recorded this season, and identified by their unique chest blazes. Additional highlights from our Cascades stations included wildlife visiting camera stations located in the approaches to wildlife crossing structures under construction along I-90, multiple young bear cubs visiting a station in the Chiwaukum Mountains, and a red fox on American Ridge Cascades in the William O Douglas wilderness.

In northeast Washington, six sites detected seven species. In July, one of our cameras recorded video of a gray wolf believed to be a young female of the Salmo pack. Since there was not a radio collar on any individuals within the Salmo Pack during this season, this video helped increase our understanding of their current territory use.

All of our season's results increased our understanding of wildlife presence on the landscapes that we monitored, and are a testament to the richness, diversity, and wildness of Washington. The images from this season place a face to these special places and underscore the importance of not only monitoring, but conservation efforts to make sure wildlife have places to thrive.

II. PROJECT OVERVIEW

Conservation Northwest originated the Citizen Wildlife Monitoring Project (CWMP) over a decade ago as a way to help wildlife agencies document and monitor the presence of rare carnivores by deploying remote cameras in potential core habitat. Since then, we have expanded and structured the project to include an overall Advisory Council and establish project partners. Our Advisory Council¹ is made up of project partner representatives, government agency biologists, and professional researchers. This council provides input and review of our protocols, techniques, site locations, and structure.

In the Cascades, we operate in collaboration with project partners on our year-round monitoring. In 2006, we formalized the Cascades Citizen Wildlife Monitoring Project in partnership with the I-90 Wildlife Bridges Coalition and Wilderness Awareness School. Through this collaboration, each organization has an area of the program where they take a leadership role: Wilderness Awareness School leads in snowtracking training and implementation, I-90 Wildlife Bridges Coalition leads in remote camera work along the I-90 corridor, and Conservation Northwest leads in all remote camera work outside of the I-90 corridor.

These collaborations with our project advisors and partners are important to inform our work, ensure coordination rather than duplication in monitoring efforts, and broaden the distribution of monitoring results. Working together helps fulfill our mission to protect and connect wildlife and habitat from the Washington Coast to the BC Rockies.

The Citizen Wildlife Monitoring Project has four main program objectives:

1. To engage and educate citizens on wildlife monitoring in the critical habitat areas;
2. To record wildlife presence along Interstate 90 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 exchange of information on wildlife, including data from monitoring efforts, between public agencies, organizations, and interested individuals.

The project operates on an annual cycle with our Spring-Fall season heavily focused on the utilization of remote cameras running April-November, and our Winter season combining snow tracking and remote cameras running December-March. Reports are prepared at the end of each season with all past reports available at <http://www.conservationnw.org/what-we-do/northcascades/cascades-citizen-wildlife-monitoring>

In 2012, twenty-four remote camera sites with thirty-six cameras were deployed throughout Washington.

¹ Members of our 2012 Advisory Council and site specific advisors are listed in the Acknowledgements section of this report.

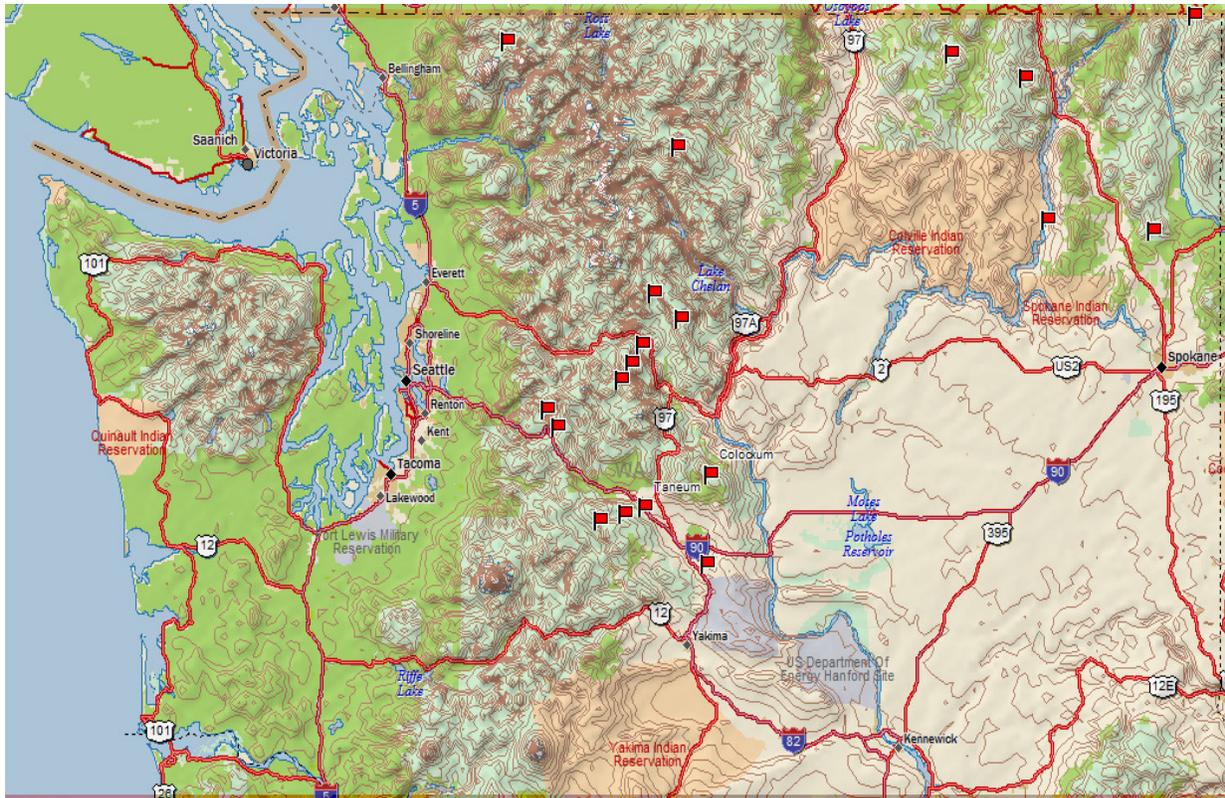


Figure 1. Map of all 2012 Citizen Wildlife Monitoring Project remote camera locations (indicated with a red flag).

This season’s specific monitoring objectives were to:

- 1) Monitor the presence of grey wolves in both habitat where we knew they were established in order to add documentation and range information to existing agency knowledge, and to monitor high quality habitat where we expect them to recover. Particular focus was paid to the Southern Cascade and Northwest Recovery Zones established in the Washington Wolf Recovery and Management Plan²;
- 2) Monitoring the presence and collecting genetic information of wolverines in the Cascades outside the geographic scope of the ongoing North Cascades Wolverine Study³;
- 3) Monitoring all wildlife species present in key habitat connectivity areas east of Snoqualmie Pass along Interstate 90, where wildlife crossing structures are either under construction.

Monitoring sites are divided between the Cascade Mountains and northeast Washington to reflect both the difference in ecosystems and the collaborative nature in which we operate monitoring in these areas as discussed above.

² See map of WA state wolf recovery zones here:

http://wdfw.wa.gov/conservation/gray_wolf/packs/packs_map_20121004.pdf

³ North Cascades Wolverine Study. LEAD PRINCIPAL INVESTIGATOR: Keith Aubry (USDA Forest Service, Pacific Northwest Research Station, Olympia, WA).

In the Cascade Mountains, our sites are broken into 4 categories:

- North Cascades – North of US 2 and west of US 97
- Central Cascades – Between I-90 and US 2
- I-90 corridor – Hyak to Easton
- Southern Cascades – South of I-90

We only have one category to discuss our sites in northeast Washington, which is defined as the area north of US 2 and east of US 97.

Wolf Monitoring

Wolf recovery and management has been a major focus for Conservation Northwest's broader wildlife recovery and connectivity goals since 2008, when our volunteer led remote camera teams in the Methow Valley documented the first pack in Washington in over 70 years.

Washington has eight confirmed packs of wolves: two in the Cascades and six in northeastern Washington. Four additional packs are suspected by the Washington Department of Fish and Wildlife (WDFW), but were unconfirmed as of October 2012. Conservation Northwest works with WDFW and other partner organizations to implement the state's wolf conservation and management plan that was adopted in December 2011⁴. Understanding the presence and range of our state's wolf population helps to inform management actions including measures to reduce conflicts between this recovering species and other land uses (i.e. ranching, recreation, vegetation management).

Our project goals for monitoring wolves this season were both to: 1) Monitor this species presence in known locations where agencies seek greater information on the visual characteristics, pack size, and range; and 2) Monitor high quality habitat where wolves have been documented to capture evidence of dispersing wolves into new and previously undocumented areas of Washington.

Fourteen of our twenty-four total remote camera sites were dedicated to wolf monitoring and their distribution reflected the three recovery zones delineated by the state: Eastern Washington, North Cascades, and the Southern Cascades. The Southern Cascades recovery zone includes the Olympic Peninsula and southern Washington coast, which were two areas we did not include in this year's monitoring efforts as there is no indication of current wolf presence or likelihood of wolf presence in the near future due to the lack of a nearby source population and other significant barriers such as road infrastructure and high concentrations of human development in the southern Puget region.

⁴ Washington Wolf Conservation and Management Plan, <http://wdfw.wa.gov/publications/00001/>

Wolverine Monitoring

Wolverines are recovering in Washington, and are an iconic species that represents that need for a connected landscape. As the largest land members of the weasel family, these rare and elusive predators prefer alpine environments where snow packs persist well into summer months. This difficult environment where food sources are scarce, contributes to their low population density and territoriality over large home ranges spanning more than a hundred square miles. Wolverines were mostly eradicated from their historical range in the lower 48 states by the early 1900s. Currently wolverines are unprotected, but motions filed by Conservation Northwest and other organizations are paving the way for consideration of full protection under the Endangered Species Act. Monitoring efforts now will help provide information necessary to develop and implement a recovery plan and critical habitat for wolverines, inform land management, and build upon robust ongoing professional research on this species in the trans-boundary Cascades.

Our goal for monitoring wolverine in the Cascades this season was monitoring the presence and collecting genetic information of wolverines in the Cascades outside the geographic scope of the ongoing North Cascades Wolverine Study. This included follow-up to our winter documentation⁵ of a new individual female wolverine in the Highway 2 corridor, and reports of snow tracks in the southern Alpine Lakes Wilderness and Mount Baker areas.

Five of our total twenty-four remote camera site locations were dedicated to detecting wolverine. All stations had a unique protocol developed by Cathy Raley and Keith Aubrey of our Advisory Council that included the construction of run-pole stations. Mid-season the protocol was amended to include hair snare devices those stations that had documented wolverine presence.

I-90 Corridor Monitoring

The landscape in Washington's central Cascades, spanning Snoqualmie Pass on both sides of Interstate 90, forms a corridor absolutely crucial for wildlife movement and connectivity – this corridor is referred to as the “I-90 corridor”. Our camera stations in the I-90 corridor are building upon a year-round effort our project has undertaken since 2006 to contribute data on wildlife presence near wildlife crossing structures designed as part of the I-90 Snoqualmie Pass East Project⁶ as part of a larger monitoring effort being coordinated by the Washington Department of Transportation.

Our objective for the monitoring season was to document wildlife presence in the approaches to wildlife crossing structures in the project area that were under construction – the Gold Creek and Rocky Run wildlife underpasses.

⁵ CITIZENS WILDLIFE MONITORING PROJECT: WINTER 2011-2012 FIELD SEASON REPORT, <http://www.conservationnw.org/what-we-do/northcascades/cwmp-2011-2012-winter-report-2>

⁶ I-90 Snoqualmie Pass East Project: <http://www.wsdot.wa.gov/Projects/I90/SnoqualmiePassEast/>

I-90 Snoqualmie Pass East

Hyak to Easton - 15 Mile Corridor



Figure 2. Map of the I-90 Snoqualmie Pass East project area with red circles indicating the Gold Creek and Rocky Run wildlife underpass locations, where our 2012 monitoring efforts were focused.

Five of our total twenty-four remote camera site locations were dedicated to monitoring wildlife presence in the I-90 corridor.

III. METHODOLOGY

The field program is run entirely by volunteers supported by staff from Conservation Northwest and partner organizations. Remote cameras are a core part of our project. Deployment of remote cameras by our citizen volunteers provide a tangible, low-cost way to engage people in the outdoors and to educate them in wildlife monitoring efforts without the need of extensive biological survey training. This network of cameras and volunteers provide verifiable photographic evidence invaluable in the detection of elusive, rare, and sensitive species such as gray wolves, lynx, grizzly bear, and wolverines. Once detected, state and federal agency biologists, and conservation NGO's can then implement further concentrated scientific studies in the area of interest as well as enact and implement appropriate management direction.

In order to provide structure and consistency in methodology and information delivery across such a large volunteer monitoring force, protocols have been established for the program that go under annual review. *See Appendix B for a sample protocol from the 2012 season.* These protocols are supported by volunteer trainings, additional research information, and a volunteer resource webpage⁷.

We use a species priority list that aims to categorize species in order of their significance to our project. This categorization assists in establishing the importance of timely communication of results from the field during our remote camera season, while providing trailing direction as well during our snowtracking season. The species priority list that we use in our Spring-Fall efforts is adapted from our winter snow tracking program which is heavily focused along Interstate 90 and therefore less likely to encounter the more elusive species that our spring-fall remote cameras may detect. All Level 1 species detected at a remote camera site during the season are reported immediately to project staff for confirmation and further communications. The priority listing for our 2012 season was:

Level 1

Grizzly Bear
Fisher
Lynx
Wolf
Wolverine

Level 2

Cougar
Marten
Moose
Mountain Goat
Red Fox
Marmot

Level 3

Black Bear
Columbian Black-Tailed Deer
Mule Deer
Bobcat
Coyote
Elk
Raccoon
Miscellaneous

⁷ See volunteer resource webpage here: <http://www.conservationnw.org/what-we-do/northcascades/resources-page-for-wildlife-monitoring-volunteers>

Site Selection

Prior to the season, sites are selected and prioritized in coordination with our Advisory Council. We present our Advisory Council with the number of sites we are able to dedicate to the season based on equipment inventory and a preliminary list of recommended sites. We seek their input on our recommendations and any additions they may have, then finalize a list for the season that guides a refined look at each site and volunteer recruitment.

Each site has a stated purpose to either record the presence of a target species, or monitor wildlife presence in general in a specific location. Project staff work with specific site advisors from our Advisory Council or their peers to develop a description for our volunteers that provides the stated purpose for the site, general directions and tips for selecting a specific site within the selected geography, maps, and contact information for support during the season.

We utilize volunteer field knowledge to guide and reassess site location in the field based on their experiences and results during the season. Our volunteers provide an effective feedback mechanism for consistent reassessment of the best site location, and actual field conditions for their site based.

Lures and bait

Scent marking is an important means of communication within the animal kingdom. Animals use scent to mark territories, to find mates and prey, and to assess levels of danger by ascertaining when, who, and what has been in the area. Scent lure is used at the majority of our sites to bring area wildlife into our camera's field of view to be recorded, and bait was used in combination with scent lure at our wolverine stations this season. The application and selection of attractant at our station is determined to meet the specific objectives of a site and in consultation with our Advisory Council.

This season, we did not utilize attractant at one of our stations along I-90 due to its proximity to the roadway. At all other stations, we utilized Gusto as our scent attractant.

Bait in combination with a scent attractant was only utilized in our camera sites focused on the detection of wolverines. This followed a unique protocol that included the construction of a run-pole station. In this set-up the bait is hung from cables above a run-pole station to strategically place the animal in front of our cameras to non-invasively capture evidence of the unique morphological fur chest markings and sex of wolverines attracted to the camera station. Wild bait (deer, elk, etc., often from road kills) was used whenever possible, and in instances when it was not available store purchased bait was utilized.

IV. RESULTS AND DISCUSSION

Results are reported for the priority level 1-3 species of interest to our program. We do not report photographs of birds, hares, small rodents, or dogs or cats. Domestic livestock are reported per site in the Recorded Level 3 species tables but are not included in the Diversity of Species by Priority Level

figures. They are only recorded because of the potential of wolf and livestock interaction. Along these same lines, marmots are noted as they are a prey species of interest for wolverines.

In this report, species richness is defined as the number of species recorded spanning each priority level. The more species recorded from each level (especially levels 1 and 2), the richer a site is in terms of interest to our project. Diversity is described as the number of different species. A site may be high in diversity but low in species richness.

Though our program makes many contributions to expanding knowledge of wildlife presence and distribution in Washington, it is not without limitations. Our cameras can only demonstrate species presence in the area, not species absence and abundance. Wildlife may be present in the area yet not within the field of view of our cameras.

Results in this section are divided between our monitoring efforts in the Cascades and northeast Washington.

CASCADES MOUNTAINS

Thirty cameras were installed at eighteen camera stations in the Cascades this year stretching from American Ridge in the William O Douglas Wilderness on the south end to the Mt. Baker Wilderness on the north end. Due to the spatial extent of our coverage area and number of cameras, we have divided the Cascades into smaller sub regions for reporting: North Cascades, Central Cascades, I-90 Corridor, and South Cascades. I-90 is specifically called out within the Central Cascades due to it's unique purpose.

North Cascades Sites and Focal Species

- Mt. Baker – Wolverine
- Chiwawa – Wolf
- Entiat Ridge – Wolf
- Methow Valley – Wolf

Central Cascades Sites and Focal Species

- Bootjack Mtn. - Wolverine
- Chiwaukum – Wolverine
- Colockum - Wolf
- Grindstone Mtn. – Wolverine
- Snow Lake – Wolverine

I-90 Corridor

- B – North side of Gold Creek underpasses
- C and D - South side of Lake Keechelus and the Gold Creek underpasses
- E and F – North side of Rocky Run underpass

South Cascades Sites and Focal Species

- American Ridge – Wolf
- Dry Meadow – Wolf
- Manastash –Wolf
- Taneum – Wolf

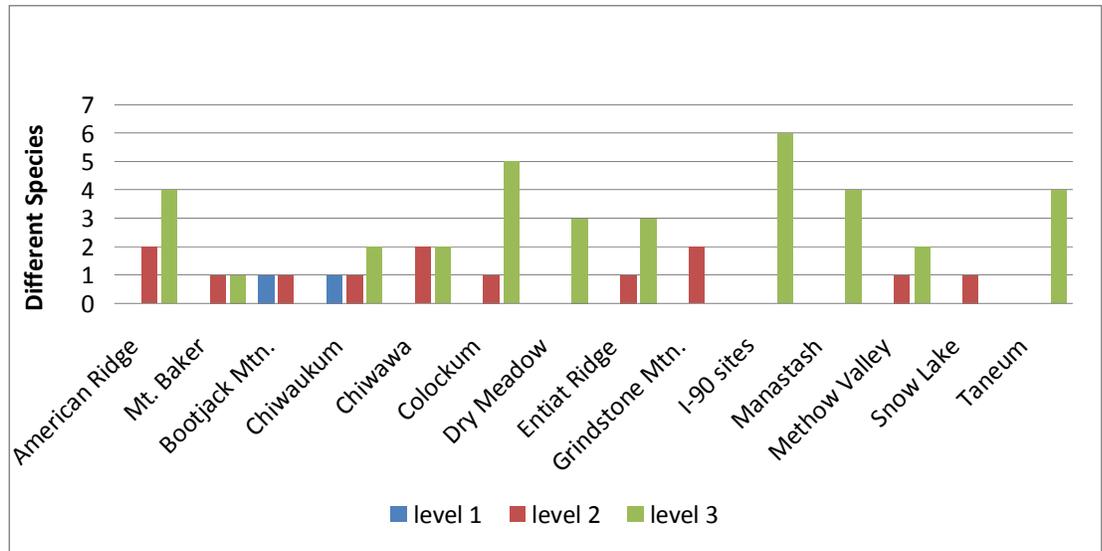


Figure 3. Cascades Remote Camera Station Diversity of Species Recorded by Priority Level across all subregions.

North Cascades



Figure 4. North Cascades 2012 Citizen Wildlife Monitoring Project remote camera locations (indicated with a red flag).

Site	Camera #	Months monitored	Lure	Camera and Model
Mt. Baker	1	End of June-October	Gusto	Reconyx RC55
Chiwawa	2	June-October	Gusto	Bushnell 119456
Entiat Ridge	2	June-October	Gusto	Bushnell 119456
Methow Valley	1	July-August	Gusto	Reconyx, RC 60 Covert IR

Table 1. North Cascades 2012 Citizen Wildlife Monitoring Project remote camera location descriptions.

Four sites were monitored in the North Cascades: three dedicated to the detection of wolves and one to the detection of wolverine.

Wolf monitoring stations were located in the Methow Valley, Chiwawa, and Entiat Ridge. The Entiat Mountains are believed to have been historically inhabited by wolves and are well within the range of existing packs. The Lookout Pack, though virtually decimated by poachers in 2008, resides in the general area of our monitoring. Though no wolves were recorded by our cameras this year, future monitoring in these areas will likely continue because of the historical and recent presence of wolves in the Chelan-Sawtooth area. The Methow Valley, Chiwawa, and Entiat Ridge sites all recorded black-tailed deer. Though no elk were recorded, the presence of deer does verify that primary prey is available for wolves in these areas. Other level 3 species recorded include black bear and marmot at Chiwawa, bobcat at Entiat Ridge, and coyote at our Methow Valley and Entiat Ridge sites. Of the level 2 species at our wolf stations, cougar were recorded at our Chiwawa and Entiat Ridge sites, and marten were recorded at our Chiwawa and Methow Valley sites.

Mt. Baker was our only site dedicated to wolverine monitoring in the North Cascades this year. Though our target species was not recorded, marten (level 2) and black bear (level 3) were recorded at this site and may be of interest to the Cascades Carnivore Connectivity Project (CCCP)⁸ as a future genetic sampling site.

Surprisingly, elk were not recorded at any of our sites in the North Cascades this season. This species was more commonly recorded at sites in this subregion in past seasons.

⁸ For more information regarding this study, please visit cascadesconnectivity.org

site	Target Species	Cougar	Marten	Mountain Goat	Red Fox	Moose
Mt. Baker	Wolverine		x			
Chiwawa	Wolf	x	x			
Entiat Ridge	Wolf	x				
Methow Valley	Wolf		x			

Table 2. North Cascade Sites with Recorded Level 2 species

Site	Target Species	Black Bear	Bobcat	Coyote	Elk	Black Tail Deer	Misc.
Mt. Baker	Wolverine	x					
Chiwawa	Wolf	x				x	marmot
Entiat Ridge	Wolf		x	x		x	
Methow Valley	Wolf			x		x	

Table 3. North Cascade Sites with Recorded Level 3 species

Central Cascades

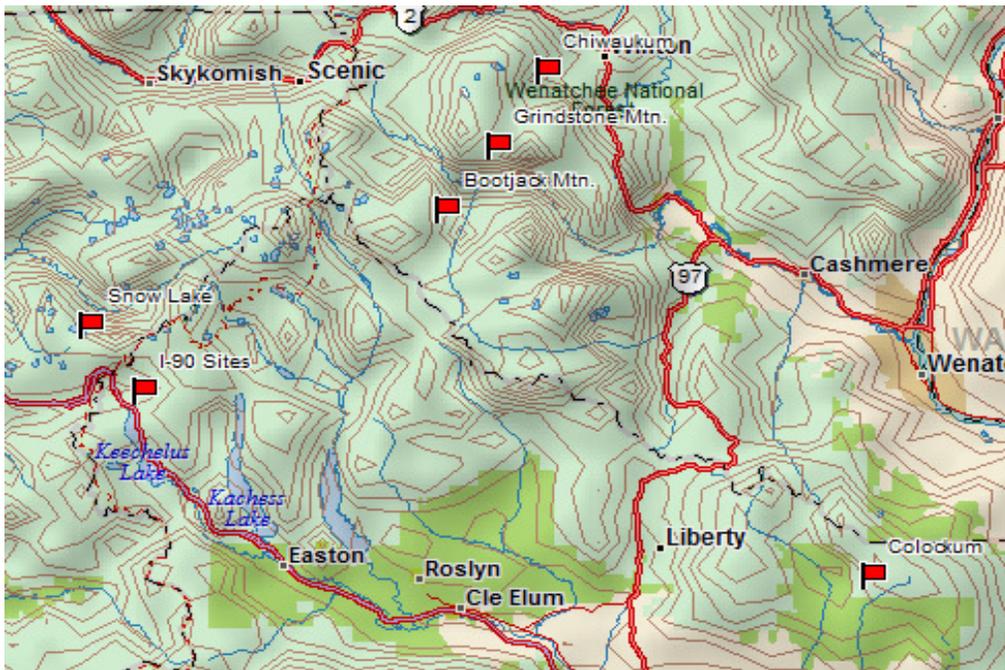


Figure 5. Central Cascades 2012 Citizen Wildlife Monitoring Project remote camera locations (indicated with a red flag). Note I-90 sites are indicated, but discussed in a separate section.

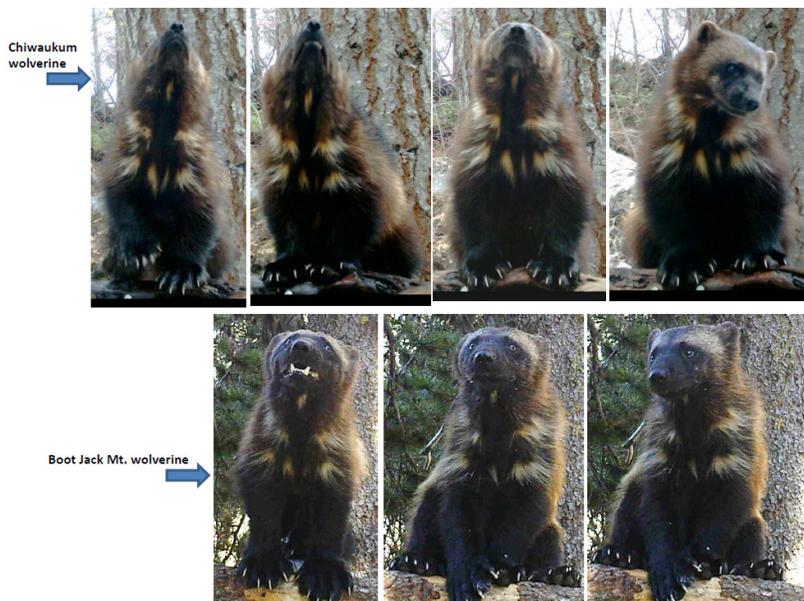
Site	Camera #	Months monitored 2012	Lure	Camera and Model
Grindstone Mtn.	2	June-September/October	Gusto	Reconyx RC55
Chiwaukum	4	June-present	Gusto	Reconyx RC55 Trailwatcher Cam
Bootjack Mtn.	2	August-October	Gusto	Bushnell 119477
Snow Lake	1	June-present	Gusto	Bushnell 119456
Colockum	2	July-present	Gusto	Bushnell 119456

Table 4. Central Cascades 2012 Citizen Wildlife Monitoring Project remote camera location descriptions.

Five remote camera sites were located in the Central Cascades subregion: four dedicated to the detection of wolverines and one to the detection of wolves.

Remote camera sites located with a focus on detecting wolverine were located within the Alpine Lakes Wilderness in two general locations: 1) just south of Highway 2, west of the town of Leavenworth and 2) north of Interstate 90. The camera sites south of Highway 2 included Bootjack Mountain in the Icicle Valley, Chiwaukum mountains (where our winter monitoring had documented a new female wolverine, Peg), and Grindstone mountain. Two of these sites, approximately 10 miles apart as a crow flies, successfully recorded our target species during the season - Chiwaukum and Bootjack Mountain.

Images recorded from May through the end of our season built upon those recorded at the Chiwaukum



site in April, and provided high quality views of the unique chest blazes that aid in identification.

Advisory Councilmember, Cathy Raley of the Pacific Northwest Research Station, closely analyzed images from the season and concluded that “Peg” had visited two of our camera stations during the season (See Figure 6) while three unique individual wolverines had visited one station in the Chiwaukum in 2012 (See Figure 7).

Figure 6: Comparison of photographs from two sites of “Peg” making a visit. Credit: Cathy Raley, PNW Research Station

Additionally, she found in her analysis that these individuals were new to researchers. Hair samples that allowed genetic testing for identification were only collected for one individual. According to Cathy, *“We believe the genetic sample goes with the wolverine identified as CHWK-01 in the attached file. This is the individual that was detected most frequently in April and May. Regardless of the genetic results, the photos alone were enough for us to conclude that this was a new wolverine....Comparing the markings we could see to those of our known study animals, and the fact that this animal did not have a collar, we were able to positively determine that this wolverine was not one that we have previously captured or detected at a run-pole camera station. So all 3 wolverines detected at Chiwaukum are in addition to individuals we have positively identified thus far.”*

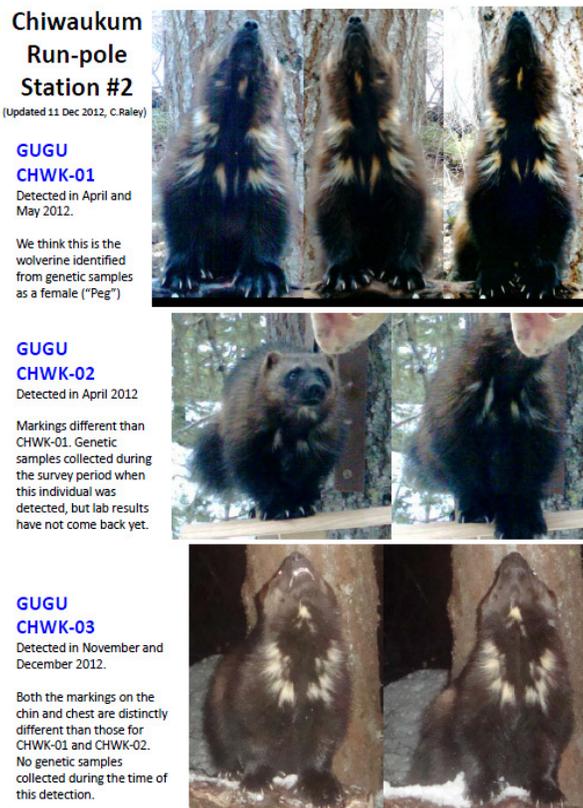


Figure 7: Comparison of markings for identification of three individual wolverines documented during 2012 in our project.
Credit: Cathy Raley, PNW Research Station

The confirmation in December 2012 that our camera sites documented three previously unknown individual wolverines is yet another example of the efficacy of citizen monitoring efforts that supplement professional wildlife research. Installation of hair snares into our protocol for all wolverine stations will allow for the collection of hair samples which can provide a host of genetic information about individual wolverines lineage, source population, and shared genetics with other wolverine

populations in Canada and the US. These results in the Highway 2 corridor contribute to the story researchers are telling of a recovering wolverine population in Washington’s Cascade mountains with an expanding range.

We did not document wolverine at our station in the southern Alpine Lakes Wilderness, but all four of our wolverine sites recorded the presence of American marten (a level 2 species). This is not surprising given that our wolverine sites are located in quality American marten habitat. The presence of American marten in these areas may prove useful to the Cascades Carnivore Connectivity Project, which is studying the barrier effects of highways in genetic diversity among populations of black bears and martens.

Chiwaukum and Grindstone Mtn. recorded level 3 species including black bear, coyote, and marmot. Mountain marmot is a prey species of wolverine, and therefore is worthy of mention regarding these sites.

Our one wolf monitoring site in the Colockum area recorded a level 2 cougar and all of our level 3 species. With the Teanaway pack nearby and the presence of ungulates in this area, continued monitoring of this area may prove beneficial if the Teanaway pack continues to grow and members disperse to form new territories. Cows were also recorded at the Colockum site and are only mentioned because of the potential for wolf-livestock interactions.

Site	Target Species	Wolf	Wolverine	Fisher	Lynx	Grizzly Bear
Bootjack Mtn	Wolverine		x			
Chiwaukum	Wolverine		x			

Table 5. Central Cascades Sites with Recorded Level 1 Species

Site	Target Species	Cougar	Marten	Mountain Goat	Red Fox	Moose
Bootjack Mtn	Wolverine		x			
Chiwaukum	Wolverine		x			
Colockum	Wolf	x				
Grindstone Mtn	Wolverine		x	x		
Snow Lake	Wolverine		x			

Table 6. Central Cascades Sites with Recorded Level 2 Species

Site	Target Species	Black Bear	Bobcat	Coyote	Elk	Black-Tailed Deer	Misc.
Chiwaukum	Wolverine	x		x			
Colockum	Wolf	x	x	x	x	x	cow
Grindstone Mtn	Wolverine						marmot

Table 7. Central Cascades sites with recorded level 3 species

I-90 Corridor



Figure 8. I-90 Corridor 2012 Citizen Wildlife Monitoring Project remote camera locations (indicated with a red flag).

I-90 Site	Camera #	Months monitored 2012	Lure	Camera and Model
B	2	June install No further info.	Gusto	Cuddeback Model n/a
C	1	June-October	Gusto	Bushnell 119346
D	1	June-October	Gusto	Bushnell 119456
E	1	June -September	No Lure applied	Bushnell 119467
F	1	Camera stolen	Gusto	Bushnell

				119467
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Table 8. I-90 Corridor 2012 Citizen Wildlife Monitoring Project remote camera location descriptions.

In 2012, general monitoring along the I-90 corridor east of Hyak was implemented using six cameras in five sites. Site B was located in forested habitat just north of the Gold Creek underpasses. Sites C and D were located on the south side of Lake Keechelus and the Gold Creek underpasses in forested habitat on national forest land. Sites E and F were located just north of the Rocky Run underpass, with site E directly adjacent to the underpass and site F located in higher quality habitat further from the roadway. These underpasses were being constructed throughout the season, and even in sites that utilized scent attractant it was used very sparingly.

Of the five sites, only sites C, D, and E had photographic evidence of wildlife. Site B was installed, but no data is available beyond that as the camera equipment experienced a series of malfunctions throughout the season. Volunteers documented scat at the time of install for site F near Laura Lake, but the camera was stolen before any photographs were recovered.

Of the three sites that had photographic evidence (C, D, and E), only level 3 species were recorded. Site D had the highest number of species recorded, while site E ranked second although no scent attractant was used due to the close proximity to the interstate. The species recorded at the I-90 sites included elk, bobcat, coyote, black tailed deer, otter and raccoon.

Heavy construction was underway along this stretch of the I-90 corridor during the season which was likely a deterrent for wildlife. Even with this disturbance and a restricted use of attractant, our cameras detected wildlife in habitat directly adjacent to these crossing structures under development. This is critically important as we move out of a pre-construction monitoring mode into effectiveness monitoring for these crossing structures.

I-90 Site	Black Bear	Bobcat	Coyote	Elk	Black Tail Deer	Misc.
B						
C			x		x	
D		x	x	x	x	
E					x	Otter raccoon
F						

Table 9. I-90 Corridor sites with recorded Level 3 species

South Cascades

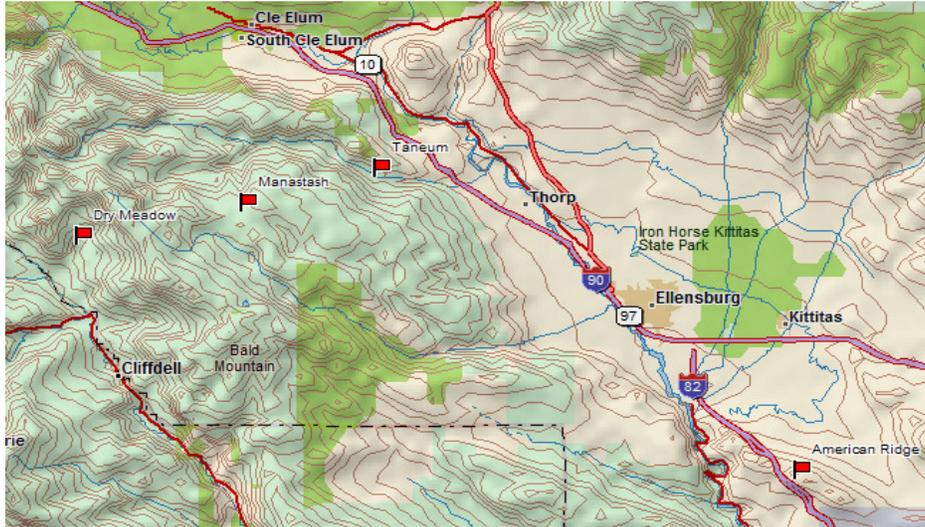


Figure 9. South Cascades 2012 Citizen Wildlife Monitoring Project remote camera locations (indicated with a red flag).

Site	Camera #	Months monitored 2012	Lure	Camera and Model
Dry Meadow	2	N/A	N/A	Bushnell 19477
Manastash	2	June-October 1 camera stolen	Gusto	Reconyx HC600
Taneum	2	June – September	Gusto	Bushnell 19477
American Ridge	2	July-November	Gusto	Bushnell 119456

Table 9. South Cascades 2012 Citizen Wildlife Monitoring Project remote camera location descriptions.

All cameras in the South Cascades were dedicated to the detection of wolves south of Interstate 90. Highly adaptable, wolves establish territories in a variety of ecosystems. Territories seem to more dependent upon prey availability than habitat preference. All four of our sites recorded the presence of elk and deer (primary prey species of wolves), though they did not record our target species.

Of our four South Cascade sites, American Ridge had the greatest species richness and diversity. Cougar and red fox (level 2 species) were recorded as well as bobcat, elk, deer, and coyote (level 3). Red fox, though fairly common in the Puget Sound lowlands, are relatively rare in the Cascades. This species is

the focus of region wide research and information sharing, and documentation in this area may prove useful for ongoing and future population dynamic studies for this species.

Dry Meadow, Manastash, and Taneum sites recorded only level 3 species. All three sites recorded coyote, elk, and deer. Manastash had bobcat visitation and Taneum recorded black bear.

Site	Target Species	Cougar	Marten	Mountain Goat	Red Fox	Moose
American Ridge	Wolf	x			x	

Table 10. South Cascades Sites with Recorded Level 2 Species

Site	Target Species	Black Bear	Bobcat	Coyote	Elk	Black Tail Deer	Misc.
American Ridge	Wolf		x	x	x	x	
Dry meadow	Wolf			x	x	x	
Manastash	Wolf		x	x	x	x	
Taneum	Wolf	x		x	x	x	

Table 11. South Cascades Sites with Recorded Level 3 Species

NORTHEAST WASHINGTON



Figure 10. Northeast Washington 2012 Citizen Wildlife Monitoring Project remote camera locations (indicated with a red flag).

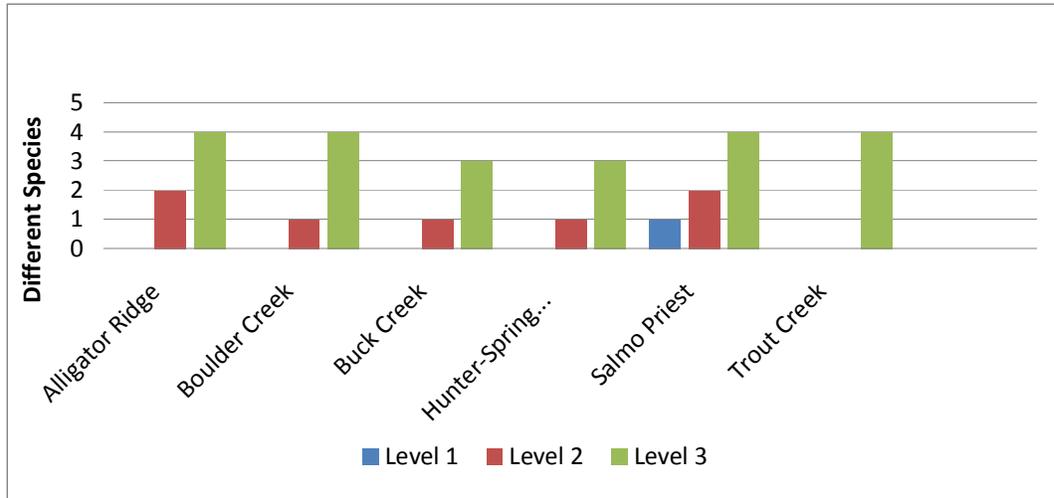


Figure 11. Northeast Washington Remote Camera Station Diversity of Species Recorded by Priority Level

Site	Camera #	Months monitored 2012	Lure	Camera and Model
Alligator Ridge	1	July-October	Gusto	Bushnell 19477
Boulder Creek	1	June-August	Gusto	Bushnell 19477
Buck Creek	1	N/A-October	Gusto	Bushnell 119477
Salmo Priest	1	June-October	Gusto	Bushnell 119477
Hunter-Springdale	1	May-July	Gusto	Bushnell 19477
Trout Creek	1	August –N/A	Gusto	Bushnell N/A

Table 12. South Cascades 2012 Citizen Wildlife Monitoring Project remote camera location descriptions.

Six sites were monitored in Northeast Washington where the majority of Washington’s wolf packs, confirmed and suspected, reside. Of our six sites all recorded level 3 species, while one recorded the target species and five sites recorded level 2 species.

For species richness and diversity of documented species, our site in the Salmo-Priest Wilderness of Washington’s Selkirk Mountains was the leading site. Salmo-Priest had seven different species, including wolf (level 1), cougar and moose (level 2), and black bear, bobcat, coyote, and deer (level 3).

This year’s monitoring verifies presence of wolves in this particular area and its importance as habitat for a wide range of species. The video of a member of the Salmo pack indicated a new data point for mapping the the Salmo Pack’s range. During our monitoring season there was not a collar placed on any individuals within the Salmo Pack, so our documentation helped to provide visual and geographic information to management agencies. It is particularly important to understand the range of the pack

as it is estimated that one third of this pack’s home-range is in British Columbia and the rest is in Washington. If the pack ever moves its den site north of the border, it would no longer count towards Washington state’s recovery goals.

Moose were recorded at five of the six remote camera sites: Alligator Ridge, Boulder Creek, Buck Creek, Hunter-Springdale, and Salmo-Priest. Though they are considered a level 2 species, the population in this part of the state is healthy and the significance of their presence is much lower compared to other areas in the state where moose are rare to non-existent.

Cougar, a level 2 species, were recorded in two of the seven sites: Alligator Ridge and Salmo-Priest. According to the WDFW, the population west of the Cascades is stable, but is declining in eastern Washington. Continued monitoring of cougar in eastern Washington will be important and may warrant monitoring of core habitat in the areas of decline for this species in years to come.

Of the level 3 species, black-tailed deer and coyote were present in all seven sites. Black bear were present at six of our seven sites and bobcat in four of our sites. Cows were also recorded in our Alligator Ridge site. This is only mentioned as a side note because of the potential for wolf/livestock interaction. It is important to know where these species may overlap so that preventative measures and management planning can be implemented.

Trout Creek, though diverse in numbers of species, was the lowest in species richness as only level 3 species were recorded there.

Site	Target Species	Wolf	Wolverine	Lynx	Fisher	Brown Bear
Salmo - Priest	Wolf	x				

Table 13. N.E. Washington sites with recorded Level 1 species

Site	Target Species	Cougar	Marten	Mountain Goat	Red Fox	Moose
Alligator Ridge	Wolf	x				X
Boulder Creek	Wolf					X
Buck Creek	Wolf					X
Hunter-Springdale	Wolf					X
Salmo - Priest	Wolf	x				X

Table 14. N.E. Washington sites with recorded level 2 species

Site	Target Species	Black Bear	Bobcat	Coyote	Elk	Black Tail Deer	Misc.
Alligator Ridge	Wolf	x	x	x		x	cow
Boulder Creek	Wolf		x	x		x	
Buck Creek	Wolf	x		x		x	
Hunter-Springdale	Wolf	x		x		x	
Salmo - Priest	Wolf	x	x	x		x	
Trout Creek	Wolf	x	x	x		x	

Table 15. N.E. Washington sites with recorded level 3 species

V. RECOMMENDATIONS FOR FUTURE MONITORING

Each year we reflect on lessons learned from the past season to guide our planning and execution of future seasons of the monitoring program. Input from volunteers, project advisors, and staff helps to compile recommendations to improve the efficiency, effectiveness, and quality of upcoming work.

Recommendations at the close of the 2012 spring-fall season include:

- Continue to seek additional funding from grant sources in order to grow program. Funding needs include purchasing more field equipment; including but not limited to additional cameras as well as more sophisticated GIS mapping software to share our results with the public and agencies in a more compelling manner.
- Reach out to colleges, universities, and wilderness schools in our state to expand our volunteer pool and provide opportunities to students interested in the fields of biology and conservation.
- Expand our winter monitoring program with emphasis on detection of species that may be easier to track and attract to our sites during this season including wolverine, wolves outside of known pack areas, and lynx. This seasonal expansion also allows us to utilize baited stations as required per our protocols when there is less risk of disturbance to bears.
- Increase communication with our team leaders and volunteers to address needs and concerns in the field, and to build relationships with our new volunteers and reinforce relationships with long-time volunteers.
- Pair new volunteers with experienced wildlife monitors to ensure consistency in our program and provide new learning opportunities for all involved.

VI. ACKNOWLEDGEMENTS

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We thank our advisory council members and specific site advisors for the the talent, time, and guidance they provided: Keith Aubrey (USDA Forest Service, PNW Research Station), Paul Balle (I-90 Wildlife Bridges Coalition Steering Committee and Woodland Park Zoo), Scott Becker (WA Dept. of Fish and Wildlife), Michael Borysewicz (Colville National Forest), Roger Christophersen (North Cascades National Park), Scott Fitkin (WA Department of Fish and Wildlife), William Gaines (Conservation Science Institute), Patty Garvey-Darda (Okanogan-Wenatchee National Forest), Chris Loggers (Colville National Forest), Robert Long (Western Transportation Institute), Andrea Lyons (Okanogan-Wenatchee National Forest), Gregg Kurz (US Fish and Wildlife Service), Paula Mackay (Western Transportation Institute), Kelly McAllister (WA Dept. of Transportation), William Moore (WA Department of Fish and Wildlife), Chris Morgan Western Wildlife Outreach and BearTrek), Dave Moskowitz (Wilderness Awareness School), Sonny Paz (Mt. Baker Snoqualmie National Forest), Jesse Plumage (Mt. Baker-Snoqualmie National Forest), Cathy Raley (USDA Forest Service, PNW Research Station), Jo Ellen Richards (Okanogan-Wenatchee National Forests), Jay Shepard (WA Dept. of Fish and Wildlife), Joan St. Hincclair (Okanogan-Wenatchee National Forest), David Volsen (WA Dept. of Fish and Wildlife), and Aja Woodrow (Okanogan-Wenatchee National Forest).

We would like to thank our volunteers, whose hard work in and out of the field made this season possible: Joel Anderson, Prentiss Andrews, Roger Bean, Denise Beardslee, Doug Beeman, Sara Brooke Benjamin, Marcus Bianco, Beverly Breckenridge, Robert Briggs, Paul Brookshire, Tom Bugert, Luci Bull, Curtis Bull, Jan Carlson, Richard Champlin, Timothy Chandonnet, Colby Chester, Miranda Ciotti, Cathy Clark, Jim Clark, Jenn Coe, Kellene Collins, Laura Cooney, Jane Cover, Roger Crafts, Nancy Curry, Kyle Dewey, Jason Elder, Trent Elwing, AJ Engebret, Michelle Engebretson, Peder Engelstad, Samantha Everett, Doris Ferm, Lauren Foster, Fred at Cascade Vocational Services, Jay Friedman, Chris Galbreath, Crystal Gartner, Drew Gaylord, Cathy Gaylord, Genelle Gibson, Kayla Haas Michael Harvada, Richard Hernandez, Tristan Higgins, Ron Hill, Michael Hinkel, Kari Hiser, Amy Houser, Laurel Kaminski, Joseph Keigel, Fred Koontz, Mathew Kuhar, Charlene LaCoursiere, Cynthia Lambarth, Julia Leach, Peter Loft, Ariel Logan, Chad Mauer, Taylor McDowell, Peter McGlenn, Alexandria Molina, Rick Moore, Lindsey Moyer, Tom Murphy, Lori Nicholl, Kendall Norcott, Ayako Okuyama-Donofree, Larry O-Neil, Katherine Owen, Nicolas Pinel, Geoff Praeger, Melissa Reitz, Katie Remine, Susan Rhodes, Jacob Richardson, Ray Robertson, Laurie Ross, Elizabeth Rothman, Erin Ryan, Paul Ryhajlo, Allen Sayigh, Shannon Schelinder, Susanne Seales, Anna Simpson, John Soklaski, Kelly Staples, Ron Stepchuk, Sarah Stewart, Tom Stonehocker, Brian Torrell, Amanda Trail, Benjamin Trail, Ted Tsui, Robin Turnblom, Pieter Van Winkle,

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We have many volunteers and active supporters who contribute their time and expertise in various ways throughout the course of the program and the potential to miss people ever looms. Thank you to any we have missed!

APPENDIX A: 2012 SITE PHOTO HIGHLIGHTS



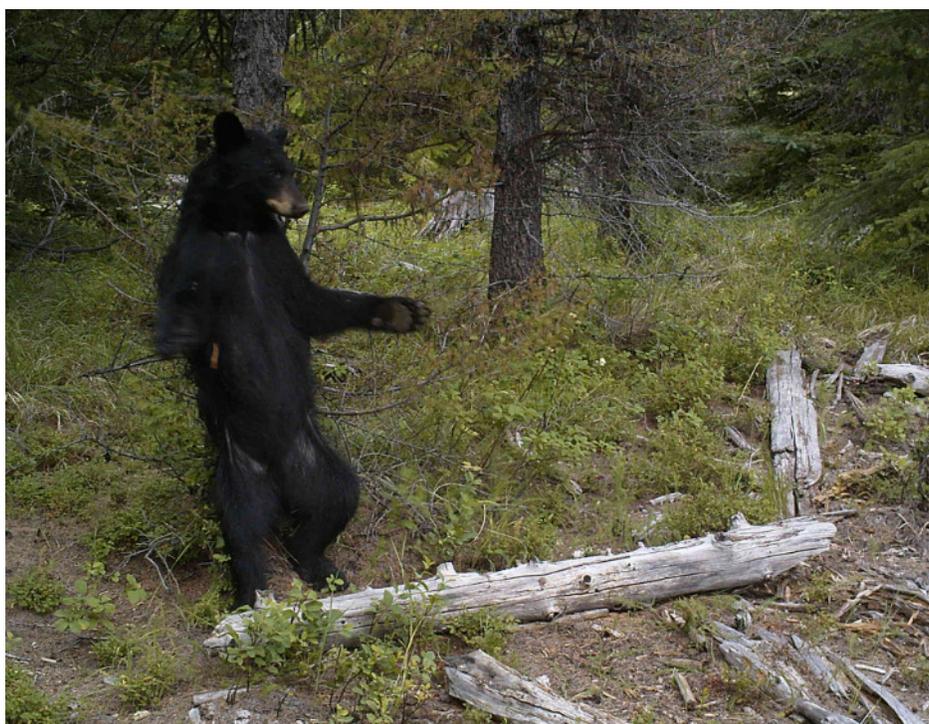
Wolverine, Bootjack Mtn.



Cougar, Alligator Ridge



Wolf, Salmo-Priest



Black Bear, Alligator Ridge



Elk, Colockum

More images from our 2012 season are available on our Flickr page at
<http://www.flickr.com/photos/conservationnw/sets/72157630066278218/>

APPENDIX B: 2012 PROTOCOL FOR REMOTE CAMERA VOLUNTEERS

Cascades Citizen Wildlife Monitoring Project

Survey Protocol for Remote Camera Checks – 2012 Season

Contents:

- Field Preparation.....P. 1
- Getting to camera site.....P. 2
- Camera set-up.....P. 2
- Basic overview of camera check.....P. 3
- After your camera check.....P. 4
- Remote Camera Data Sheet and Online Photo Sharing Protocol.....P. 5
- CCWMP Communications Protocol.....P. 7
- Technical Instructions for cameras by model.....P. 8
 - Cuddeback No Flash Model.....P. 8
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 - Bushnell Trophy Cam XLT.....P. 11
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- Wildlife Documentation Protocol.....P. 14

Field Preparation

1. Know your site: familiarize yourself with your location, purpose of your monitoring, target species, and site specific instructions (i.e. scent application, additional protocols).
2. Review this protocol including the Communications Protocol and Species Priority List to understand processes and priorities for the overall program this year.
3. Coordinate with your team leader before conducting your camera check to make sure you receive any important updates.
4. Gather the supplies needed for your check and schedule the pick-up either from the nearest Conservation Northwest office or your team leader/members. Conservation Northwest contacts Seattle Office: Kit McGurn (Volunteer Coordinator) 206.675.9747 ext 201, Jen Watkins (Project Director) 206.940.7914, Bellingham office: Julia Spencer 360.671.9950 ext 10
Resources such as data sheets and protocols are available for download from our website at: www.conservationnw.org/what-we-do/northcascades/resources-page-for-wildlife-monitoring-volunteers/
5. Before going into the field, make sure you/your team members have a copy of this document as well as everything else needed on the equipment checklist. Most important: keys for cable locks on cameras, fresh camera batteries and memory cards, lure, blank data sheet, pencil, maps, a GPS to find your camera/document wildlife sign, and a digital camera to document wildlife sign.

6. Ensure you review the camera technical tips and field manual for your camera, and if you have access to the camera conduct a mock set up.
7. Research the target species for your camera, including its habitat preferences, tracks and signs, and previous sightings in the area you are going. (The Background Guide to Species in the I-90 Corridor, along with a track ID field guide, are good resources for this. We also have track ID documents for specific species in the office that we can provide).
8. Research your site, consider your access and field conditions. *Where will you park? Do you need a permit to park in this location? What is your hiking route?* Call the local ranger district office closest to your site for information on current field conditions, especially when snow is possible to still be present.
9. Review this protocol the night before your check if possible.

Getting to Camera Site

Use the site write-up, maps, directions and/or GPS coordinates to locate your cameras. It might be helpful to take a copy of the data sheet from the installation and/or previous visit, which may have useful notes on it. Take digital photos of the site when you get there (or bring them if already available) to help you/others find and identify the camera location on future visits and to send to our office as a pictorial record of the camera location and site setup.

1. Be on the lookout for tracks, scat, or other wildlife sign on the way to the camera and if encountered, document per **Wildlife Sign Documentation Protocol** section (below).
2. Look for flagging along the route and near the actual camera location if your team has elected to place it, but don't rely on it because it can disappear and there may be flagging out there unrelated to our project. ***Be careful about placing flagging that could give away our camera locations for security reasons. Use your judgment as to whether flagging is necessary and where and how much to use.***
3. For the next team, note on the back of your data sheet any landmarks or unique characteristics of the site to make it easier for them to find the camera. Or, if you move camera location for any reason be sure to not only mark the new GPS coordinates but to make a detailed write-up that will allow others to find this camera.

Camera Setup

For the first time the camera is placed in the field for the season, or in case you move the camera

These are some things to look for when deciding where to setup the camera:

- Find a location where wildlife will most likely pass by – a game trail, a location with tracks or sign, travel corridors (valleys, river corridors), and/or excellent habitat for your target species (i.e. dense forested cover for martens). Landscape features that tend to funnel wildlife movement and areas close to water may be good sites. Place the camera so that it is pointed

toward this area. Avoid sites within 500 m of campsites or human sign, or 250 m of human trails if possible (*this may be difficult for some of the I-90 locations*). At a minimum select a site out of the line of site from major trails and/or roads.

- If setting up a camera to target a trail, try to aim it at a 45-degree angle to the trail (instead of shooting up or down the trail, or directly perpendicular to it). A 45-degree angle generally captures the best images.
- Find two trees (or a tree and a rock, log or other feature the camera can be aimed downward at), about 10 feet apart; one tree that is both large enough to mount the camera on and sturdy enough that it won't sway too much in breezes. The other tree or landscape feature is for spreading the lure on and can be any size, but make sure it is large/sturdy enough though to withstand animals rubbing and leaning against it and that the camera is angled properly to aim toward that area.
- For best results, consider how the light may effect the photos. Shadows and light changes themselves can actually trigger the camera, but note that pointing the camera in a north-south direction often offers the best results when possible.
- Look for a clear site or one that you can easily clear the camera's view if obstructed by branches, leaves, or brush – plan to use a knife or saw if needed in forested areas to clear the screen. Be diligent about removing vegetation in the camera's view, especially from the foreground, as it can produce false triggers when swaying in the wind or when the sun hits it and creates shadows.
- Attach the camera to the mounting tree, above eye level (or at chest level) and pointed downward toward the trunk of the other tree/feature that you are spreading lure on. Depending upon the camera model you have, use the laser or test feature (see details below) and other team members to help aim it at the right location. Consider the size of the animal species that you are targeting while aiming the camera. Point it low enough to capture smaller animals like wolverine and pine marten, while the placement of the actual camera on the tree is high enough to get a view of larger animals, like deer or bear, walking by in front of it. ** Most often, cameras are mounted with an error of pointing too high, so aim on the low side. Some cameras (i.e. Bushnell) have a viewer feature that will allow you to actually view the test images recorded. Use this feature if you have it, or have been supplied with a detached viewer.*
- Once you have the camera in position, use bungee cords and/or other methods to secure the camera to the tree. Branches or nearby wood may be helpful to help tilt the camera downward to ensure the aim is correct. Anticipating spring snowmelt and changing conditions in many locations, this step may need to be repeated during future camera checks. **After camera is secure, place your lock around the camera.** Make sure that lock cannot be slid off of the camera, but is secured to it.
- Placing the camera about 10' from the lure tree/feature (or even a little farther out depending on the angle of the camera) is best for most camera models to avoid cutting off or only capturing portions of animals. Full view of an animal's features is often needed for sure species ID.
- **Record the GPS coordinates (use Datum WGS 84, and lat/long coordinates) on your data sheet only if this is a camera install/move or they were not previously recorded.** Carefully fill out all of the other information requested on the data sheet.

Basic Overview of Camera Check

- Upon arriving, walk in front of the camera and trigger the motion sensor. This picture will verify that the camera is working and also serve as a reference if the date/time is incorrect. *(make sure to record the actual date and time of the check on your data sheet so that we can match against the date/time on the photos when we download them in the office in case there is any malfunction with the camera date/time).* If the camera does not trigger, your batteries may already have died or your memory card is full.
- Unlock the cable lock with your keys to access the camera
- Use the technical instructions (Pg. 8) for the appropriate camera model to replace the batteries and memory card, check/set up all of the camera settings *(Links to all models users guides is below and on our website. Hard copies of user manuals are made available to team leaders and stored in the office.)*
- Apply lure and install bait according to your specific sites instructions *(Every site has unique directions, be sure to understand and follow yours).* Please remember that a very little amount of lure goes a long ways, and that too much long can deter animals. Their noses are much more powerful than ours.
 - If you are applying bait you will receive specific instructions from our staff and/or advisory council on this. Do not apply bait at your site unless instructed. Wolverine teams are the only ones utilizing bait in the 2012 season.
- Make sure to apply the scent in the area the camera is aimed at so that wildlife spend time sniffing in the focus of the camera. Also, apply a small drop of lure higher on the tree so that the scent is better picked up in the wind. **Make sure to record the exact names of the lure(s) applied by your team on your data sheet.** This information will be entered into our database to track the wildlife response to different lures.
 - With fish oil, fish fertilizer, or oil from a sardine can, you can apply the scent more liberally by pouring some with the aid of a branch lower on the tree and also higher, creating an oil slick that will remain on the tree through rain events.
 - With professional scent lures (like those in small bottles) remember a little goes a long ways. Simply use a branch dipped into the bottle for application, and drop a few drops at the base of the tree. You can apply some to the bark of the tree as well and hang the “lure twig” there or insert it in the bark, but do remember moderation.
 - If no lure trees are available in the desired location where you would like to place the camera (game trail, etc), you can always scent a large downed log, large boulder, or pile of rocks located in the view of the camera. We have had great success with this in the past as a substitute for trees, especially for species where you are looking to utilize game trails.
- **Carefully fill out the data sheet with all requested information**
- Arm the camera to take pictures before leaving the site

After your Camera Check

1. Email a brief report of your visit to your team leader. If there are any important news/findings, such as signs of a Level 1 species, problems with the camera or location, etc...contact your team leader immediately upon return and cc: Conservation Northwest –and kit@conservationnw.org and jwatkins@conservationnw.org If not critical, still please pass on any information about the site to your team leader. The next team will greatly benefit from a brief report, including site conditions, what you learned about animals in the area, topography, hazards, and any outstanding questions. Team leaders will be the communication point between your team and Conservation Northwest.
2. Upload photos from retrieved memory cards on online Dropbox (online photos sharing service) and fill out online data form (see instructions for both below). Or you have the option of returning the memory card(s) and data sheet(s) to your team leader or the nearest Conservation Northwest office asap, so that we can get the photos from your camera downloaded and reviewed and store the camera check information into our database. Mark on your data sheet how data is being returned, in case the images become separated from it.

Cameras should ideally be checked roughly each month throughout the season, depending on the camera location and accessibility. Your team leader will schedule checks to ensure that cameras are being checked regularly and lure refreshed at the camera location.

Remote Camera Data Sheet and Online Photo Sharing Protocol

Options for Data Return*:	
<i>Online (Preferred Method):</i>	
	See Online Data Sharing and Data Sheet instructions below
<i>In-person</i>	
	Bring in a data sheet for each camera along with a clearly labeled memory card containing all photos, or a CD with all photos downloaded and saved onto it, and folders properly labeled with camera location
<i>Postal Mail</i>	- Be sure to save a copy of all images until you are sure they have reached our office, especially if you have chosen this option
	Mail a data sheet for each camera along with a clearly labeled memory card

Installing Online Photo Sharing service, Dropbox:

1) Download Dropbox online at: <https://www.dropbox.com/install>

2) If you attended a training or have spoken to Kit, your email will be added to the “2012 Remote Camera Monitoring Season” folder on Dropbox. If you need to be granted access to post pictures send email request to Kit McGurn, Remote Camera Program Coordinator, at kit@conservationnw.org to be added to the shared Remote Camera Monitoring Season Folder on Dropbox. You will receive an invite which you will have to respond to in order to be added to the “2012 Remote Camera Monitoring Season” folder

Uploading Remote Camera Photos to DropBox Online:

There will be folders for each team and site within the overall “2012 Remote Camera Monitoring Season” folder. You will need to follow this protocol for creating uploading photos from each camera check:

- 1) There will already be an overall location folder within the “2012 Remote Camera Season” folder. (Example: Mt. Rainier_Tahoma Creek)
- 2) Each time you upload new photos from your last check you will need to create a folder for that check for each camera site (most teams will have two camera sites) . The folder will need to be labeled as such:

Location_XXX (previous visit date) to XXX (current visit date)_

Example: Mt. Rainier Camera #1_8/12/12 to 8/30/12

And for second site:

Mt. Rainier Camera #2_8/12/12 to 8/30/12

- 3) With your memory card viewer (hooked to computer via USB) or via your own computer internal memory card reader insert memory card from a camera and go through all photos in whatever photo viewer program you use (window media, Divx, Mac photo program, etc). Determine if you have any series of photos taken by false triggers such as light changes, temperature changes, waving branches, etc. If those photos number in the hundreds/thousands, do not place those photos in dropbox.
- 4) Transfer all photos, for any species recorded in your dropbox folders for each respective camera. Include a note in each camera folder (via word document, etc) for any instances of runaway photo taking from false triggers
- 5) There will also be a folder named "General Photos" in your site photo for any relevant photos you take with your own digital camera of the site/route to site/wildlife tracks sign, etc.

Within the "General Field Photos" folder create a folder for each time you head into the field.

Example "Mt. Rainier site visit 8_30_12"

Label individual photos as best you can prior to uploading into the folder and include a word document with additional details such as GPS coordinates of specific photos and route descriptions, etc

Entering Remote Camera Data to Online Data Form:

All data from each camera install, check, location change, and removal needs to be entered in the field on your Camera Data Deployment/Check form while in the field.

Once you get home and are ready to transfer your camera photos into Dropbox, enter all data from field data forms into the online form:

<http://www.conservationnw.org/ccwmp/ccwmp-remote-camera-data-sheet/>

Be sure to enter data into each field for each camera site. Enter date into the online form for every Install/check/location change/retrieval

CCWMP Communications Protocol

Due to the potential social and political sensitivity of some species and the importance of this work being shared in a scientific and thoughtful manner, the Cascades Citizen Wildlife Monitoring Project has a Communications Protocol for all volunteers and staff of the effort.

All photos taken by cameras owned by the CCWMP are owned by the non-profit organizations sponsoring this effort, and we strongly encourage that any cameras not owned by our effort but participating in it please follow this protocol as well.

- All photos taken by cameras and retrieved by teams are only released to people outside the program by one of the three program sponsor organizations or by an agency affiliated with our Advisory Council. *Volunteers are not to share their results with anyone outside the program directly.*
- Photos gathered off of a camera are sent in per the protocol above for review and decisions about communicating.
- If you feel you have captured a photo of your target species, a Level 1 or 2 species, or a unique photo that interests you – you can upload it to Dropbox and alert our staff to view OR email directly to our staff. Photos can be emailed simultaneously to kit@conservationnw.org and jwatkins@conservationnw.org (to ensure that even if one of us is on vacation they are viewed).
- Selected photos are shared on our website, and results reported monthly in our volunteer e-newsletter. Requests for any photographs can be made through our program to kit@conservationnw.org or jwatkins@conservationnw.org
- Photos that need further identification or discussion are taken to our Advisory Council prior to any wider release, and we will notify you of the discussion and outcome.
- Any interaction with the media based on the results of a camera is decided upon by the host non-profit organizations, and shared with the Advisory Council.
- An annual report is prepared at the close of each season that will report on all results, and at that time all results, with the exception of details of camera locations, are public knowledge.

If any member of the press approaches you about the program, please re-direct them to our offices and staff.

Contacts for Remote Camera Work for 2012:

Project Director: Jen Watkins, jwatkins@conservationnw.org or 206.940.7914

Volunteer/Data Coordinator: Kit McGurn, kit@conservationnw.org or 206-637-9747 ext 201

Technical Instructions for cameras by model

Please also review the field manual for your camera
(hard copies available in our office, links to manuals on our volunteer resource page)

Cuddeback No Flash Camera Model:

To install this camera you will specifically need:

Four D-Cell Batteries

#25 Torx screwdriver (*if you want to attach it to a tree using the supplied screw*)

Bungee cord (s) to further secure camera to tree. *This camera model can sometimes be flipped upside down when only secured with the screw, so it's best to use a bungee as well.*

- Unlock the lock on the camera and Open camera by unscrewing the gold screw on the front of the camera body and pulling off the face plate.
- MAKE SURE THE CAMERA IS IN THE OFF POSITION FIRST, AND THEN REMOVE THE COMPACT FLASH CARD IF IT HAS ALREADY BEEN INSTALLED. (If so, place the card in a case or Ziploc and clearly label to return the card with images to the CNW office).
- Unscrew the other gold screw near the bottom inside of the camera (the battery plate screw) to and remove the battery plate (*this can be a little tricky – pull up and out*). Insert four D-cell batteries if needed, using proper orientation (*an icon right next to the battery plate screw depicts battery orientation*) and replace the battery plate. *For backcountry sites or those that are far away, we suggest replacement of batteries at each check, even if they are still showing life. For closer sites, such as those along I-90, use your judgment based on the battery life left (see below)
- INSTALL THE COMPACT FLASH CARD YOU BROUGHT THAT IS CLEAN OF IMAGES – MAKE SURE THE CAMERA IS STILL OFF - THE CF CARD SHOULD ONLY BE REMOVED OR INSERTED WHEN THE CAMERA IS OFF. Orient the CF card so that the side with the small lip on it is pointed down toward the batteries and slide it in firmly.
- Turn camera on and use the keys and LCD screen to confirm all settings (listed below).

Buttons: M = Mode - to view information or go between menus

S = Settings – to set date, time, delays, etc...

C = General Purpose key

TURN ON YOUR CUDDEBACK CAMERA AND CHECK/SET SETTINGS:

- 1) If it asks you “EZ Mode Change?” ... do nothing until the question goes away.
- 2) The display will then read “Please Wait...”
- 3) Next, it will display the battery life remaining and the date and time.
- 4) Confirm that the date and time are correct (within a minute or two)
- 5) Press the “S” key and scroll through the settings. Make sure “Camera Delay” is 1 minute

IF either THE TIME OR CAMERA DELAY NEEDS TO BE RESET:

Use the "S" (Settings) key to scroll through "Set Date" "Set Year" and "Set Time" and "Camera Delay" and use the yellow up and down arrow buttons to change if needed

- 6) When you see "Utilities" C=Yes, press the red "C" button. Confirm that Sensitivity is "High". If not, use the yellow arrow keys to scroll through and select "High".
- 7) Cycle through the utilities by pressing S until it says "Format Card?" and press "C" for Yes.
- 8) Press M to display how many images have been recorded onto the card. (**Record this on your data sheet unless this is the Install, in which case Images should be 0**).
- 9) Pressing M again will display the MODE (Either Standby, Test, or Live Mode) – next step...

Summary of Recommended Settings for the Cuddeback in EZ Mode:

Camera Delay: 1 Minute* or set to VIDEO mode so that there is no delay

*Note: this camera does not have "rapidfire" capabilities and this is the shortest option for delay unless you choose to use video mode. (*Video Mode is set in the Advanced Mode settings, which are not detailed in this protocol . Refer to the Cuddeback user manual for instructions.*)

Set Date: (Current)

Sensitivity Level: HIGH

Format Card: YES when inserting a fresh, replacement card. THIS ERASES ALL IMAGES ON THE CARD – do not format a card that you are retrieving from the field!!!

CHECK THE CAMERA'S AIM USING THE TEST FEATURE:

- 1) Press M until it displays what MODE it is in (either Live Mode, Test Mode, or Standby)
- 2) Press either yellow key until it says "TEST MODE."

This feature will allow you to walk in front of the camera and when you are in the center of the detection area, the red LED will illuminate without triggering the camera. *The camera needs a "warm-up period" for this to work properly; this may take up to 3 minutes.* During the "warm-up", the LED will flash every few seconds and eventually quit flashing, indicating the TEST mode is ready for operation.

*You can also use STANDBY MODE to play around with the camera without it triggering

This is a good time to do the following:

- If you have one, affix Zorb-it (moisture absorbing) packet inside camera body
- Wipe lens with cleaning cloth or soft cloth and a windex product if needed

- Apply any lures that need to be applied to the tree after most or all camera handling has been completed or have separate team members handling the camera and lure. This keeps the camera clean and free of lure.

ARM THE CAMERA TO TAKE PICTURES:

- 1) Press M until it displays what MODE it is in (either Live Mode, Test Mode, or Standby)
 - 2) Press either yellow key until it says “LIVE MODE MOTION.”
 - 3) Screw the face plate back on, relock the camera to the tree, and secure with bungees if needed
- ** THE CAMERA IS NOW ARMED AND READY TO TAKE PICTURES.

For more info on the Cuddeback No Flash camera:

- Use the printed instruction manual provided, which is also available online at:
http://www.cuddebackdigital.com/images/pdfs/NoFlash_7_11_07.PDF
- FAQ's and tips: <http://app.cuddebackdigital.com/faq.aspx>

Reconyx RC55 & R60 Camera Models:

To install this camera you will specifically need:

Six C-Cell Batteries

A bungee cord to attach it to a tree*

- Unlock the Masterlock cable with your keys so that you can open the camera
- Open camera by unhooking the latch on the front of the camera body and removing the cover
- Press “OK” to disarm (the camera will then show you the status)
- The status on the LCD display will show the number of pictures, remaining battery power and % full the card is. **Record the number of pictures on your data sheet under “No of Images Shown on Camera Display”** (*You can also check this anytime by using the arrow buttons to scroll to “Check Status”*)
- Turn the camera off and insert 6 fresh C batteries if needed* using the proper orientation – there are icons depicting this where you insert the batteries. *For backcountry sites or those that are far away, we suggest replacement of batteries at each check, even if they are still showing life. For closer sites, such as those along I-90, use your judgment based on the battery life left.
- MAKE SURE THE CAMERA IS IN THE OFF POSITION, AND THEN REMOVE THE COMPACT FLASH CARD IF IT HAS ALREADY BEEN INSTALLED. Place the card in a case or Ziploc and clearly label to return with its images and your data sheet to the CNW office (*The card slot is located below the arrow buttons*).
- Install the compact flash card you brought that is clean of images – MAKE SURE THE CAMERA IS STILL OFF - THE CF CARD SHOULD ONLY BE REMOVED OR INSERTED WHEN THE CAMERA IS OFF. Orient the CF card face up so that the side with the small lip is facing away from you and slide it in firmly.
- Turn camera on and **check the time and date** which will come up on the LCD display. If needed, reset or set the date and time. To do this, select “Change Setup” from the Main Menu by hitting

the “OK” button on Change Setup, and then select “Advanced” (by again using the OK button) and using the arrow keys to scroll to “Date/Time”.

- Use the arrow keys and LCD screen to program or confirm other basic settings (listed below). This camera model is quite easy to use – use the arrow keys scroll through the menus and the “OK” button to select various menus and options.

Recommended Settings for Reconyx:

Set from “Trigger” Menu, which is under “Advanced” Menu:

Motion Sensor: ON

Sensitivity: HIGH (the camera may miss images of animals passing by quickly with any setting lower than this)

Pics per Trigger: 3

Picture Interval: 1 SEC

Quiet Period: NO DELAY * These are the same settings as using the “QuickSet Trail” option

- Recommended mounting height for this camera is about chest level and angled slightly downward (using branches/wood blocks, etc...). Alternatively, it can be mounted a little higher and angled down a little more. The camera has a 40 degree field of view.
- To ensure proper aim, use the Walktest mode (from the main menu) and use the red light to determine when the camera is detecting you in the field of view – the red light will flash when it detects you. The camera will self-arm from Walktest mode after a 2 minute delay.
- If your camera is already setup and mounted and the Walktest is not needed on this site visit, just scroll to “Arm Camera” on the Main Menu once you have spread lure and are completed and select “OK”. The camera will arm in 10 seconds. This will give you time to put the cover back on, relock the camera to the tree, and walk away.

For more info on the Reconyx Cameras:

- Use the printed instruction manual provided, which is also available online at:
http://www.trailcampro.com/miscfiles/rapidfire_instruction_manual.pdf
- Technical tips: <http://www.reconyx.com/page.php?id=58>

Bushnell Trophy Cam XLT:

To install this camera you will specifically need:

Eight to Twelve AA batteries

Python Cable Master lock / Small Keyed Master lock*

(*used to lock access panel shut)

- To mount this camera, use a Python Cable Master lock to lock the camera to a tree, and use the small brass Master lock to lock the access panel shut. Read the above info about placing a camera. The below info is in regard to installing as well as checking cameras throughout the season.
- Unlock the small brass Master lock so that you can get into the access panel.
- Open camera by unhooking the latches on the right side of the camera and swinging door open.
- Turn switch from 'ON' to 'SETUP,' in order to view pictures and battery life. This info will be shown at the top of the screen. **For a camera check, record the number of pictures on your data sheet under "No. of Images Shown on Camera Display."**
- If batteries are at less than 50% full, **turn camera switch to the 'OFF' position**, remove old batteries, and replace with 8 new AA batteries (make sure and note orientation of positive/negative ends).
- If you are checking the camera, **MAKE SURE THE CAMERA SWITCH IS IN THE OFF POSITION AND REMOVE THE SD (SECURE DIGITAL) CARD**. Place the card in a case or Ziploc, **CLEARLY LABEL IT ACCORDING TO WHICH CAMERA IT WAS IN**, and return it with your data sheet to Conservation NW either via mail or email if there aren't too many photos.
- Install the SD card you brought that is clean of images – **MAKE SURE THE CAMERA IS STILL OFF - THE SD CARD SHOULD ONLY BE REMOVED OR INSERTED WHEN THE CAMERA IS OFF**. Orient the SD card face up so that the side with the cut corner is facing away from you and slide it in firmly. It will click into place.
- Turn camera on and **check the time and date by clicking the menu button, and using the arrow button to scroll right or left until you reach 'Set Clock'**. If needed, reset or set the date and time.
- Use the arrow keys and LCD screen to program or confirm other basic settings (listed below). This camera model is quite easy to use – use the arrow keys scroll through the menus and the "OK" button to select various menus and options.

Recommended Settings for Bushnell XLT:

Mode: Camera

Image Size: 5M

Capture Number: 3

(disregard video settings unless we specifically ask you for video or check in with Kit if you have desire to utilize video mode)

Sensor Level: Normal

Set Field Scan: OFF

Species Priority List

Level 1

Grizzly Bear
Fisher
Lynx
Wolf
Wolverine

Level 2

Cougar
Marten
Moose
Mountain Goat
Red Fox
Marmot

Level 3

Black Bear
Columbian Black-Tailed Deer
Mule Deer
Bobcat
Coyote
Elk
Raccoon
Misc.