



Surveys for Pacific Marten (*Martes caurina*) on the Olympic National Forest

Winter 2013



Photo: Joe Moorman, Lena Lake, Olympic National Forest

Summary:

In 2013, the Olympic National Forest (ONF) and the non-profit organization Adventurers and Scientists for Conservation (ASC) formed a partnership to survey for coastal Pacific marten (*Martes caurina*). There is a need to determine more fully the current status of marten on the Olympic Peninsula and with limited federal funding and personnel, volunteer programs can help fill in informational gaps. After putting together a Challenge Cost Share agreement that outlined the responsibilities of ONF (planning survey areas, gathering supplies, technical aspects of program) and ASC (recruitment and training of volunteers, data collection), survey work began in early January. A total of 13 remote camera stations were monitored between January 12 and March 30, 2013. Fifteen volunteers worked on the project and were installing, monitoring, and taking down the cameras on 12 different days (this equated to 78 person/survey days). These 13 stations documented 13 different wildlife species, including two sciurids (Douglas tree squirrel and northern flying squirrel), two felids (bobcat and cougar), one canid (coyote), one mustelid (fisher), five bird species (Gray jay, Steller's jay, common raven, unknown owl species, and another unknown passerine), snowshoe hare, and an unknown rodent species. Additionally, photographs were taken of domestic dogs and some human winter recreationists.

Background:

The Pacific marten is a medium-sized, semi-arboreal carnivore in the family Mustelidae (weasels) that once occurred throughout the forests of the Pacific coastal states (Zielinski et al. 2001). In Oregon and Washington, martens were found in areas down to sea level (Bailey 1936; Hagmeier 1956), however harvest of the species, a furbearer, in Washington has never been consistent (Zielinski et al. 2001). In the 1940s, a notable harvest of 83 animals was recorded from Clallam, Jefferson, and Mason counties, three of the four counties that comprise the Peninsula. Trapping records available online from the Washington Department of Fish & Wildlife (<http://wdfw.wa.gov/hunting/harvest/>) have more recently documented only seven animals being taken between 1997 and 2001. From 2002 through 2009, martens are not even listed in the reports for the Peninsula. Trapping data are not currently available online (June 2013) for the years 2010-2012, though it is unlikely there were any martens harvested here during these years either (Calkins, pers. comm., 2013).

There has also been little evidence of coastal marten from remote camera surveys. During inventory efforts in the Cascade Range and on the Peninsula in 1991, a total of 39 photos of marten were obtained (out of 260 taken), only one of which was purportedly from the Peninsula (Jones and Raphael 1991). It is now believed that this photograph was actually of a long-tailed weasel (Aubry, pers. comm., 2010). Another effort using remote cameras, from March–October 1992, documented one photo of a marten (from approximately 50 cameras placed in the Hoh, Dosewallips, Duckabush, Hamma Hamma, and Gold Creek drainages) in Olympic National Park (ONP) along the Dosewallips River (Sheets 1993). This particular photograph has not been tracked down and therefore not verified. Third, extensive surveys conducted in Olympic National Park during the winters of 2001/2 and 2002/3 also produced no photos of marten, nor any of fisher (*Martes pennanti*), another target species, out of 1,270 pictures taken (Happe et al. 2005). Finally, camera surveys done on ONF and ONP since 2009 to document fisher presence and reproduction (after the species was introduced on the Peninsula beginning in 2008) have likewise not recorded any martens. Where martens exist, they readily come to camera stations, so the lack of them during these many survey efforts would seem to be cause for concern. In 2001, Zielinski

et al. stated that martens had declined on the Olympic Peninsula, a conclusion which still seems valid twelve years later.

In summary, there are only three verified records of marten on ONF, including 1) an animal that was photographed in July 1988; 2) two different animals that were caught in live traps established for a spotted owl prey study in August 1990 (no photographs taken); and, 3) most recently, the discovery of a dead juvenile (photographed and preserved at the Burke Museum in Seattle) that was found in August 2008. The animal photographed in 1988 was observed in The Brothers Wilderness dragging a snowshoe hare off the trail. The observer was able to snap a photograph as the marten tugged on its prey.



Pacific marten with snowshoe hare in The Brothers Wilderness, July 18, 1988
Photo: Ivy Otto

The trapped animals were caught to the north of this animal in the Dosewallips watershed (Buckhorn Wilderness) along Bull Elk Canyon on August 7 and 21, 1990. Finally, the dead juvenile (photos below) collected in 2008 was found along the Mt. Rose Trail just north of Lake Cushman in the Mt. Skokomish Wilderness. Figure 1 on the following page shows these three locations.



Mt. Rose Trail marten, August 2008

Photos: Stephen Slaughter and Danielle Munzing

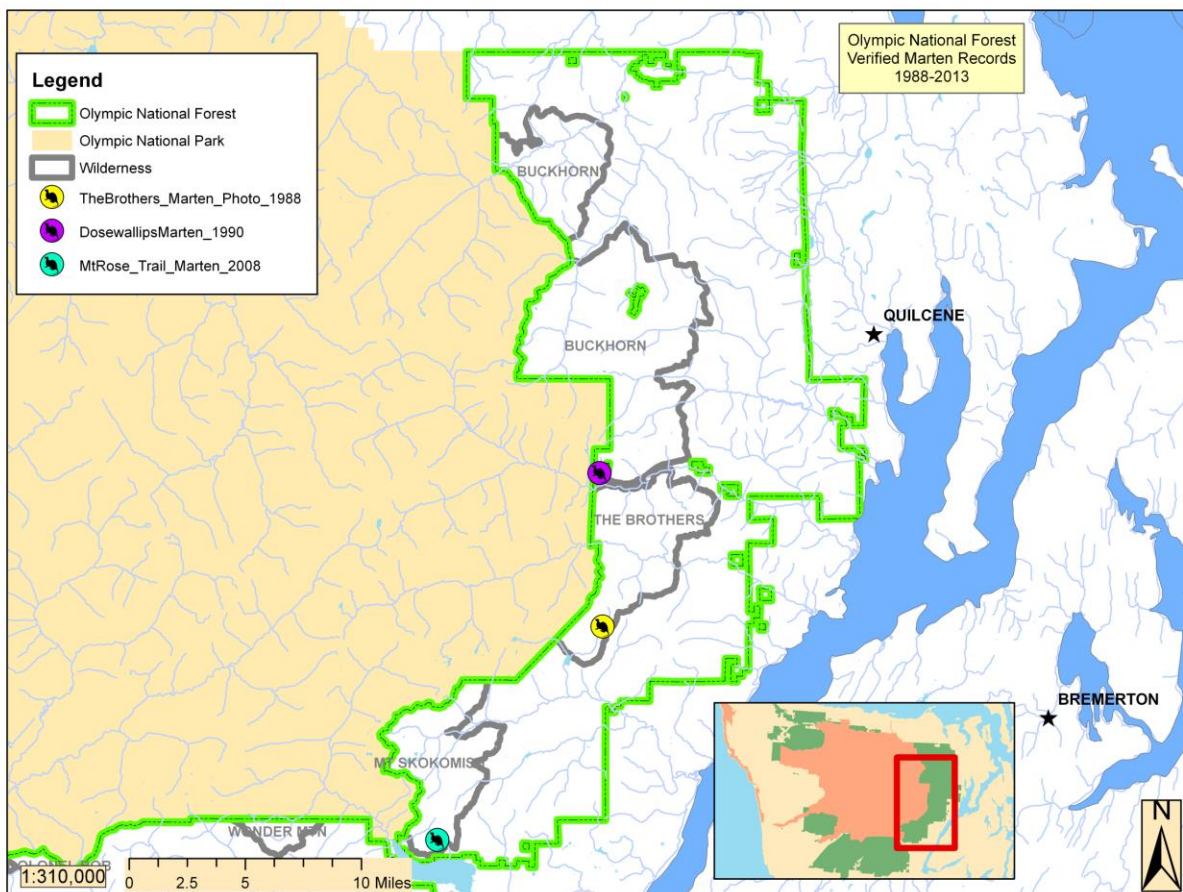


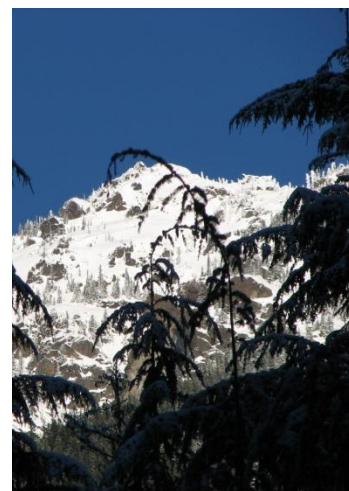
Figure 1. Verified marten locations on Olympic National Forest, 1988-2008

2013 Surveys:

Given that the three verified locations of martens on the Peninsula in the last 25 years were on the east side of Olympic National Forest, we decided to focus our present survey efforts there. Earlier survey efforts specifically for marten, during the summers of 2010 and 2011, also have focused in these watersheds. During summer 2010, ONF staff and volunteers obtained through a Challenge Cost Share agreement with Conservation Northwest set up and monitored cameras in Church Creek (southwest of the Mt. Rose marten site), Lena Lake, and the Mt. Skokomish Wilderness. In winter 2011, ONF staff monitored cameras set up on Mt. Rose, and that summer volunteers monitored cameras at Mt. Ellinor, Mt. Rose, and Mt. Washington. No martens were documented at any of these stations.

For 2013, our plan was to install twelve camera stations in the following six areas: Mt. Rose (near where the dead juvenile had been found), Mt. Ellinor, Lena Lake (near where The Brothers marten had been observed), Mildred Lakes, Duckabush River, and Harrison Lakes (near the Dosewallips marten). Each site would have two cameras installed, at least one mile apart if possible, and they would be checked every 2-3 weeks. We would use a combination of beaver and chicken bait, as well as Gusto lure as an attractant. ONF had six Reconyx cameras to use, 3 Rapidfire models and 3 Hyperfire models. The remaining cameras, Trailwatcher brand, were borrowed from Keith Aubry at the PNW Research Lab in Olympia.

All cameras were initially installed on January 12th and 13th. The last camera was taken down on March 30th. A thirteenth station was installed on February 3rd near a dead bull elk found along the Duckabush Trail as this seemed a good opportunity to have another camera station on the landscape. At some sites, the camera stations were moved during the first or second check either because there were no photos of any species, or to gain additional elevation, or simply because the original site did not seem as ideal as it might have been (too close to a road, etc.) All of the sites had one camera moved except for Harrison Lakes and Lena Lake. Figure 2 on the following page shows the placement of the cameras (red circles).



*Volunteers Joe Moorman and Paul Andersson with
ASC executive director Gregg Treinish at Lena Lake, February 2, 2013*

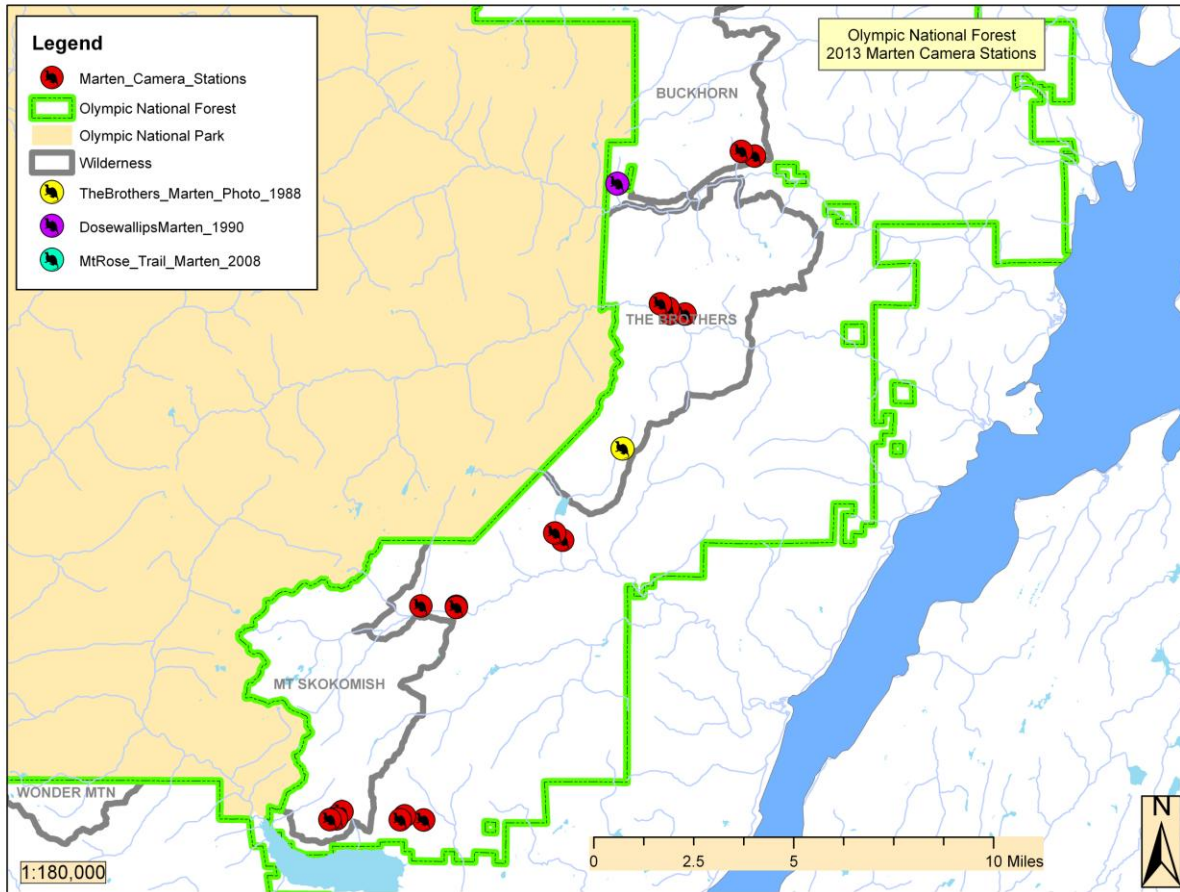


Figure 2. Marten survey stations, ONF, winter 2013

Results:

As mentioned, 13 different wildlife species were recorded, however no marten were documented at any of the sites. One male fisher, the only mustelid, was recorded on March 10th in the Duckabush watershed. The following table shows the results of each station:

Camera Station	Camera Model	Results
Harrison Lake A	Reconyx Rapidfire	Gray jay
Harrison Lake B	Reconyx Rapidfire	Steller's jay, Douglas tree squirrel, cougar, bobcat, raven, unidentified bird spp., northern flying squirrel, domestic dog
Mt. Rose A	Reconyx Hyperfire	Bobcat, coyote
Mt. Rose B	Reconyx Hyperfire	Gray jay, bobcat, coyote
Mt. Rose C	Reconyx Hyperfire	Gray jay, northern flying squirrel, snowshoe hare, humans
Mt. Ellinor A	Reconyx Hyperfire	Nothing
Mt. Ellinor B	Reconyx Rapidfire	Gray jay, Douglas tree squirrel, unknown owl spp., bobcat, coyote
Mt. Ellinor C	Reconyx Hyperfire	Gray jay, bobcat

Putvin A*	Trailwatcher	Nothing
Putvin B	Trailwatcher	Nothing
Putvin C	Trailwatcher	Nothing
Duckabush A	Trailwatcher	Rodent spp.
Duckabush B	Trailwatcher	Nothing
Duckabush C	Trailwatcher	Bobcat, fisher
Duckabush elk carcass	Trailwatcher	Bobcat, human
Lena Lake A	Trailwatcher	Rodent spp.
Lena Lake B	Trailwatcher	Cougar

*The Putvin Trail was the closest we could get to Mildred Lakes, which was an extremely long ski in.

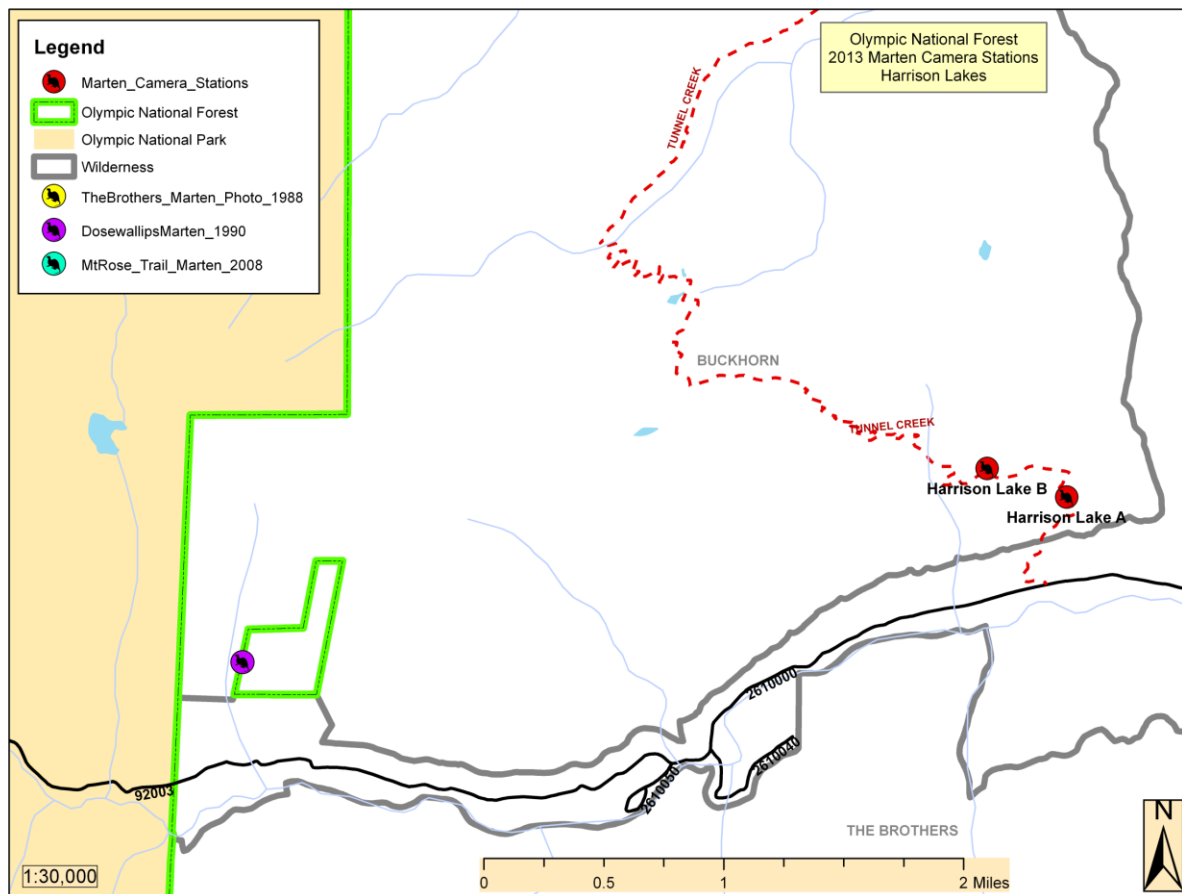


Volunteers hiking up Big Hump in the Duckabush watershed, January 12, 2013

Discussion:

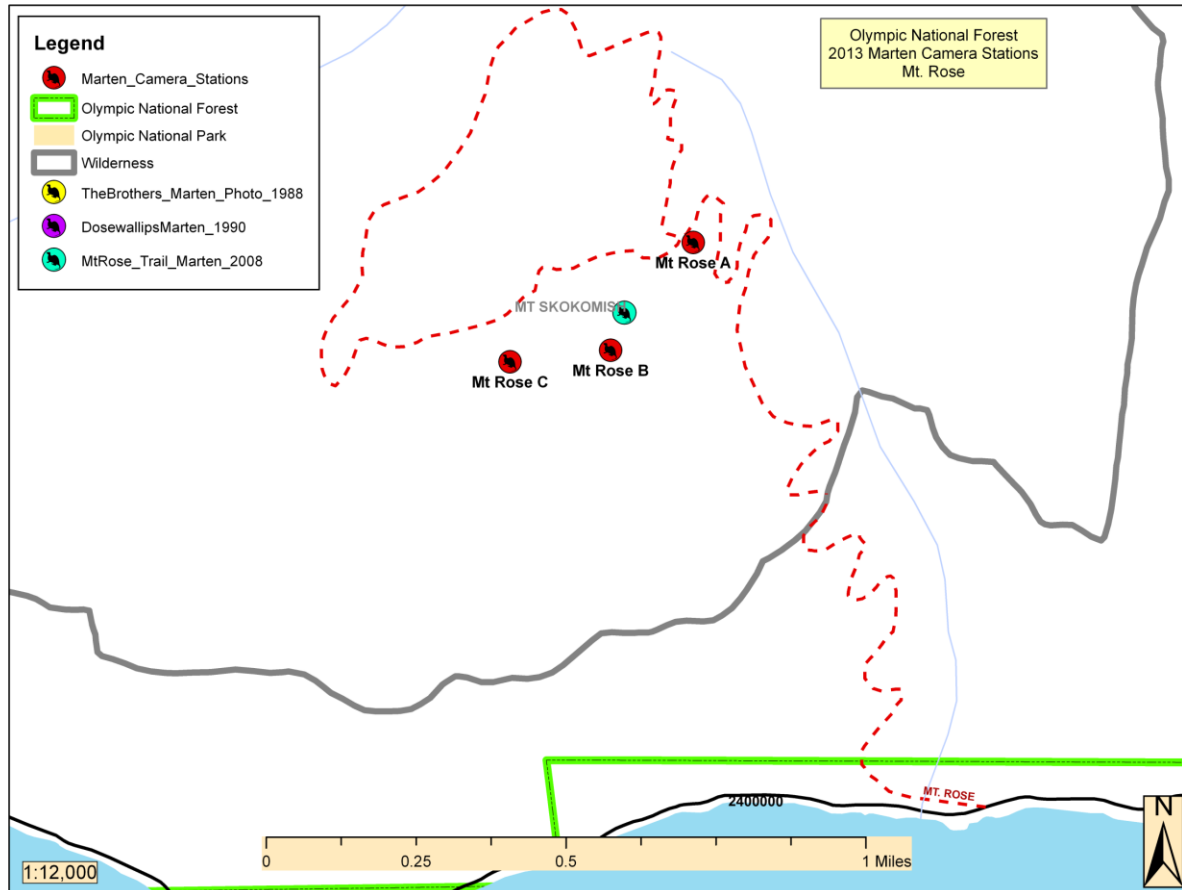
In order to get some sense of how meaningful the negative results are, I've tried to determine how functional the camera set ups were, i.e. how long they had bait and fresh lure, and how long the camera was functioning during each time period between checks. If our set ups were in good locations (subjective, but based on optimal habitat and where we believe the martens may still be, that is, high, isolated areas) and well angled toward the bait tree (in order to show the tree above and below the bait, as well as the ground at the base of the tree), and if the cameras were working and the bait had not been stolen by some animal, then in theory, if martens were in the area, the chances are good, given their tendency to come in to bait stations, that we should have documented them. If, however, the camera wasn't placed well to capture the full area around the bait, or wasn't working for some reason, or if the bait had been stolen, then a negative result cannot necessarily be attributable to a lack of martens. It's difficult to say exactly how much time stations were or were not functional, but this "down-time" can be approximated and the following notes will explain.

Harrison Lakes



These cameras were located approximately 3.2 miles east of the Dosewallips marten record and were up from January 12 through March 30. Neither station was fully functional during this time. There were issues with the placement of the cameras, that is, they were generally placed too close to the bait tree and so did not include any of the area on the ground around the tree. During the second check, the volunteers did not put out new bait, nor any fresh lure (there was a misunderstanding here with the protocol and they felt that if the bait was untouched, it did not need replacement). These stations had Reconyx Rapidfire cameras and the cameras themselves appeared to be functional, however one station took photos of a check on March 2 and the takedown on March 30, but nothing in between even though the bait had been mostly removed.

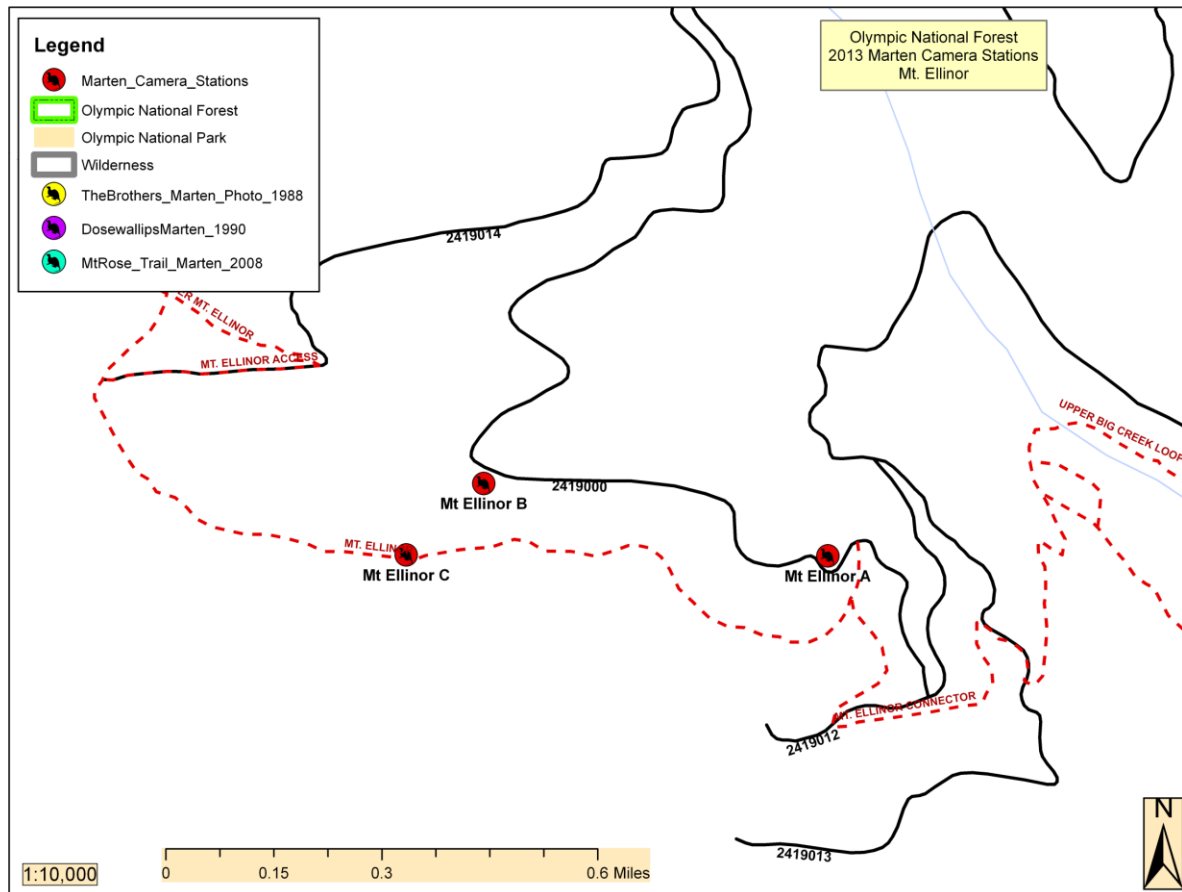
Mt. Rose



These cameras operated from January 13 through March 16 and were located less than $\frac{1}{4}$ mile from the most recent marten record from 2008. All sites had good set ups and appeared to be functional the entire time (one was moved during the second check) except for one station during the time between February 23 and March 16. During this time, the bait was eaten and photos were taken of the surveyors during the check and the takedown, but nothing was photographed in between. These two stations had Reconyx Hyperfire cameras. Similar to the one Harrison Lake camera, it is puzzling why the camera would capture the humans but not the other species, which must have visited there since the bait was gone.



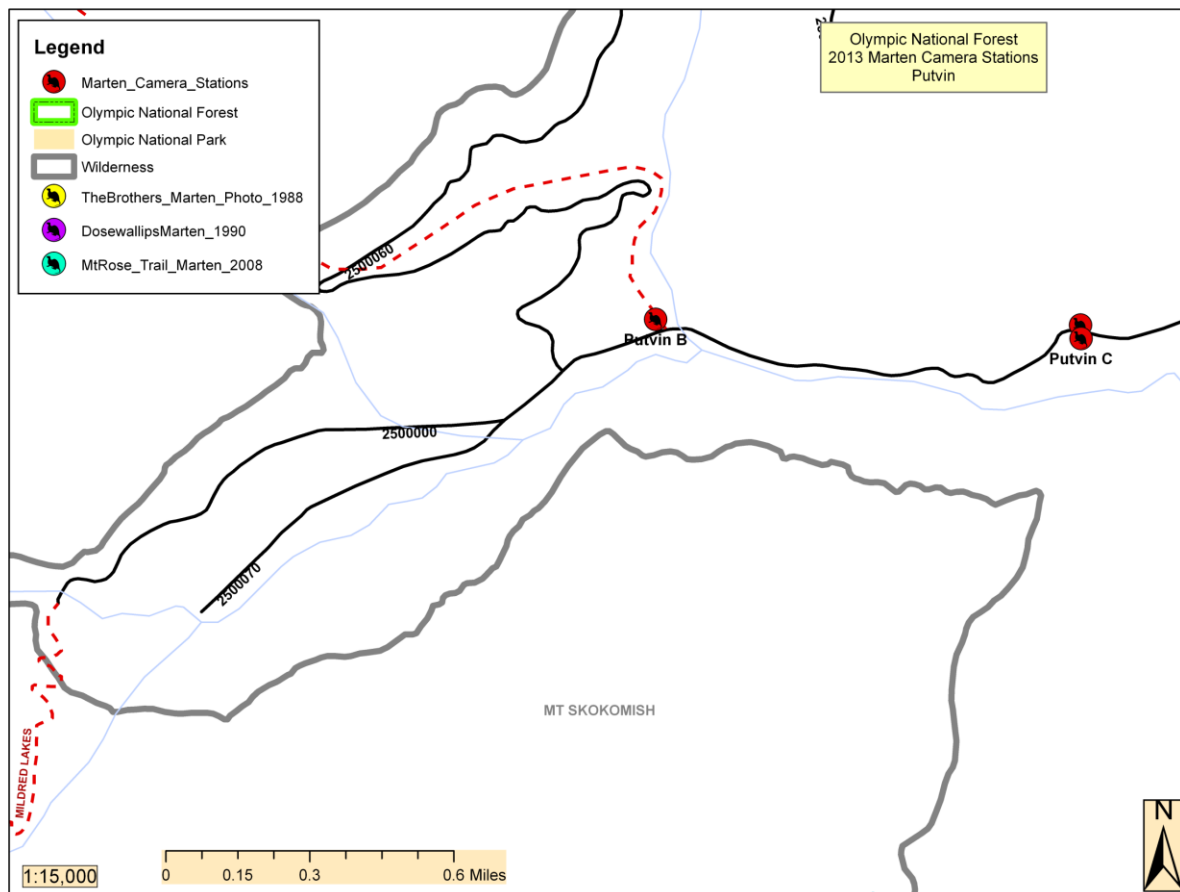
Mt. Ellinor



These cameras operated from January 13 through March 9, and were between 1.6 and 2.2 miles east of the Mt. Rose marten. One station near the lower Mt. Ellinor trailhead was moved further up the trail, which put it in close proximity to “B” station but higher on the slope. Set-ups were good for both sites though the initial locations were too close to the 2419 road (this road is snowed in during the winter and is used by skiers and snowshoers). There was one Reconyx Hyperfire and one Rapidfire used on Mt. Ellinor. Both functioned well the entire time and there was always at least some bait at the sites during the checks.

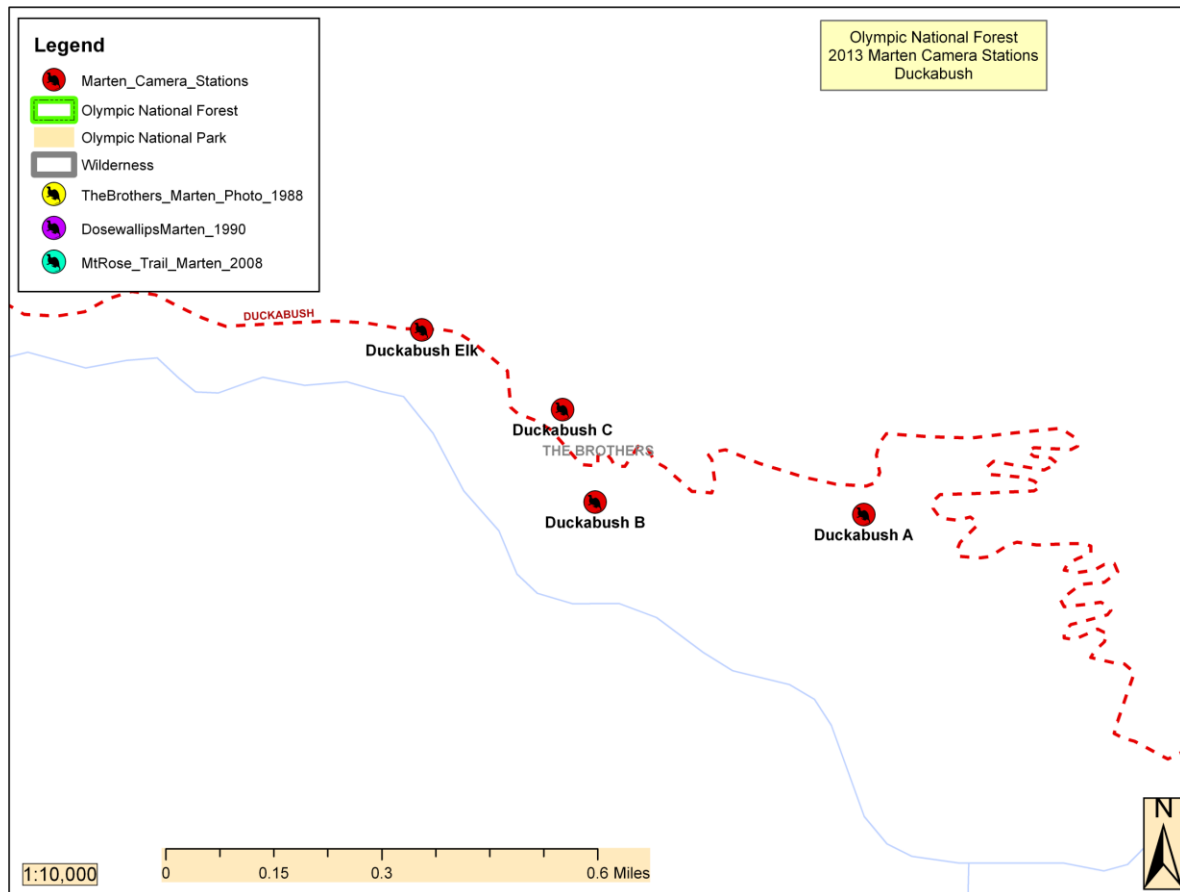


Putvin



These cameras operated from January 13 through March 23. One site was moved slightly on February 2. We used Trailwatcher cameras at these sites and obtained no photos of any wildlife. At the station that was moved, between February 2 and March 3 when it was checked, the bait was taken but there were no photos of any animals (there were photos of the set up and the check). At the other station, B, there was the opposite problem: the bait was intact but the camera battery was dead, so it seems there should have been photos of something taken even though there was no evidence of animals having been there. Later, when taking down station B, the surveyors found the bait gone and the camera not functioning. Upon looking at the memory card, we found that the camera began taking photos at 0827 on March 4 and continued to do so for over 700 photographs until 1438 the following day. There were no animals on any of these photos. Consequently, these three sites were mostly non-functional during the survey period.

Duckabush



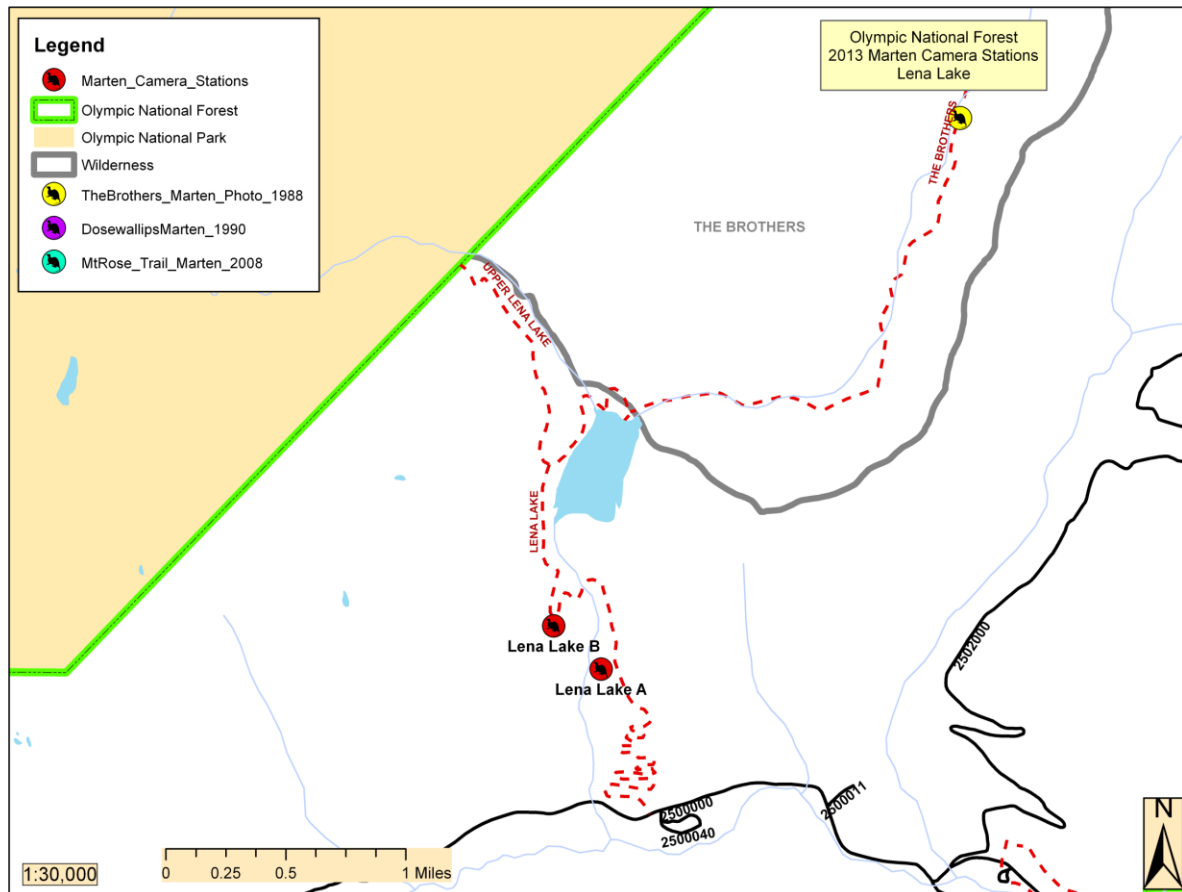
These stations operated from January 12 through March 16. All the sites used Trailwatcher cameras and on the second check, the camera at station A was not working. This camera was taken down and sent in for repair. Station B was determined to not be a very good location (the bait and camera trees, upon further reflection, were a bit too far apart) and was moved to “C.” Station C ended up documenting a male fisher on March 10. Additionally, a third camera was set up where a bull elk had been killed (in a landslide, we believe) along the Duckabush trail. Apart from “A” camera, these stations seemed mostly functional, though there simply weren’t many photos taken of anything. This isn’t unusual, some sites don’t attract animals for whatever reason, yet station B, the one that was moved, had one photo of a bobcat and no more. This does seem odd—either the animal really only popped in and popped out of the site (somewhat unusual for bobcats, which will often remain at sites trying to get at the bait), or it did stay longer and the camera, similar to other areas, simply didn’t record it.



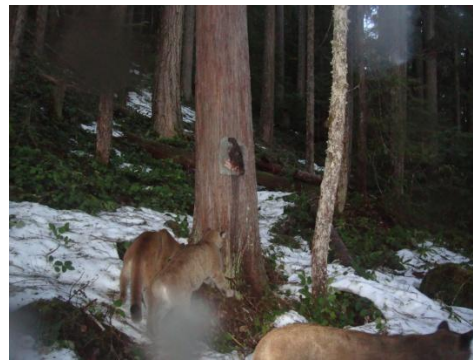
Fisher at Duckabush station C, March 10, 2013



Lena Lake



These stations were located approximately 2 $\frac{3}{4}$ miles southwest from The Brothers marten (1988). One of these stations, A, operated from January 12 through March 9. Both sites had Trailwatcher cameras and during the initial set up it was determined that one camera wasn't working, so it could not be installed (consequently, that camera operated only from February 2 through March 13). This second station, B, was nonfunctional much of the time due to camera problems, though it did document a family of three mountain lions. The other station had some rodent visitation, but during two of the checks several hundred photos were taken of nothing (false triggers).



Conclusion:

The volunteers were outstanding in their efforts to get the cameras as far into the backcountry as possible. They were all very fit and very interested in this project. They exhibited flexibility and a high degree of effort. Though not terribly complicated, remote camera surveys do require following a certain protocol and the individuals who did the best at this part were those that had some kind of science/biology background, even if it had only involved having volunteered on other projects. In terms of the cameras, we consistently struggled with the Trailwatcher cameras. When they took pictures, they took far clearer shots than the Reconyx cameras, but unfortunately they often were not functioning. Though Trailwatcher cameras have worked successfully on wolverine projects in the Okanogan country, it may be that the amount of rain and moisture on the Peninsula does not suit them well. That said, there were also some concerns with the Reconyx, however these generally functioned more consistently.

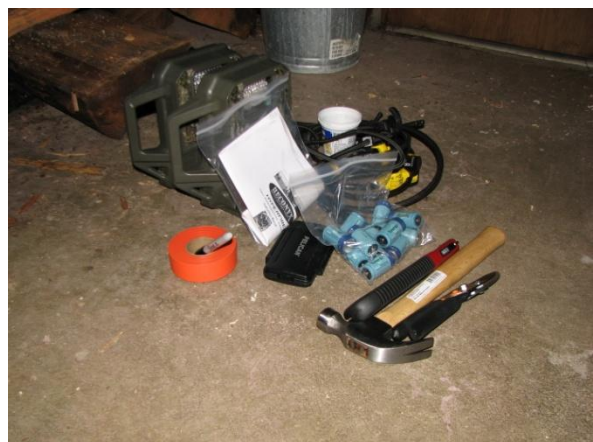
For future survey efforts, I would recommend the following:

- One full day of training for volunteers before stations are set up in the field. For this project, the training coincided with the set ups and for this reason, I believe, there were some misunderstandings. ONF employees, with ASC, will conduct the training for the entire group and everyone will get a chance to practice and use and understand the equipment, fill out test data forms, and set up the bait and lure before the cameras are deployed at the sites.
- If possible, volunteers should be compensated for their efforts. There are some limitations with using volunteers, including keeping their motivation high and the project a priority in their busy lives. The group this winter was highly motivated and very capable, however, ideally camera stations are checked every two weeks. For this project, the best we could manage with the volunteers' schedules was to check the sites on average every three weeks. I think if they were compensated some for their time, as well as their mileage, this may help further with motivation and inspire them to be more available for the station checks.
- ONF will also work to ensure having better cameras that do not have so many technical problems. There is nothing more disheartening than working very hard in the winter, hiking or skiing or snowshoeing great distances into sites, and finding equipment that has malfunctioned. We may be able to purchase more cameras, Reconyx ideally though these are expensive and we may more likely be able to purchase a few Bushnell cameras, which are much cheaper.
- It worked out well to have people staying in the bunkhouse at Hoodsport, which made for less driving time on the day of the checks and more time in the woods. We will plan to do this again if possible.

Betsy Howell
June 20, 2013

Acknowledgments

ONF would like to thank ASC, and specifically Gregg Treinish, Brendan Weiner, Jeff Wohl, and Jaime Walton, for making the initial contact with the forest and for being interested in working in the Olympics. The high profile of ASC likewise interested Seattle's National Public Radio station, KUOW, and reporter Ashley Ahearn joined us on our initial outing to set up the cameras (<http://earthfix.kuow.org/flora-and-fauna/article/volunteers-search-for-the-elusive-marten-in-olympi/>). The agreement with ASC was only possible with funding provided by ONF's ecology department, which Robin Shoal organized, while Keith Aubry at the PNW Research Station provided many of the cameras. Finally, none of this work would have happened without the volunteers: Darrin and Lisa White, Sonia Wolfman, Michele Williams, Joe Moorman, Paul Andersson, Sarah Ellison, Laura Harrington, Kai Waldron, Angela Bohlke, Greg Wahl, Jenna Walenga, Trent Banks, Rob Newcomer, and Sam Newcomer. Thank you all!



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