Hebgen Lake Camera Trap Wildlife Monitoring Study
March-July 2013
Project Summary Report
September 2013

Prepared by:
Adventurers and Scientists for Conservation

Project Summary:

The 2013 Hebgen Lake Wildlife Monitoring Study was a collaborative effort between Adventurers and Scientists for Conservation (ASC) and the Hebgen Lake Ranger District (HLRD) of the Gallatin National Forest. The primary goals of this project were to investigate carnivore presence or absence in five drainages of the HLRD using motion-triggered wildlife cameras and to engage members of the public in a citizen science project on public land. Presence or absence of the wolverine (*Gulo gulo)* was of particular interest. Working with guidance from U.S. Forest Service Wildlife Biologist Courtney Frost, the project was able to survey five sites with ten cameras (Figures 1-6) between late March and early July 2013 (Table 1). The cameras were available thanks to a generous loan from Dr. Roland Kays from the North Carolina Museum of Natural Sciences. Program staffing was donated by ASC. The U.S. Forest Service provided essential project funding as well as collaborative logistical support, training for volunteers, and assistance with recruitment of participants.

A recent landscape assessment by the HLRD of the watershed areas to the north and east of Hebgen Lake revealed the need for habitat improvement projects in the area, yet very little is known about the populations of wolverines inhabiting the mountainous terrain surrounding the lake. To capture photographic evidence or absence of these animals Courtney Frost and ASC staff developed a joint project to place ten backcountry camera stations in five drainages. The drainages are west and adjacent to border of Yellowstone National Park and access the high-elevation interior of the HLRD.

ASC and USFS recruited eight local community volunteers to help set up and maintain the ten wildlife camera stations. Volunteers were asked to "adopt" cameras and visit the placements once a month from March through July to download photos, change

lures, replace batteries and maintain the cameras. Volunteers were trained in setting up and maintaining the remote camera stations with a scent lure and a visual lure. Biologist Frost provided detailed protocols and worked with ASC staff to train volunteers in placing cameras in likely travel corridors.

During the three-month survey the cameras recorded over 7400 exposures. Wolverine (threatened listing pending) and the threatened Canada lynx were not recorded at the camera sites. However, over 1100 images recorded deer, elk, moose, fox, coyote, black bears and grizzly bears. Humans, domestic dogs, horses and mules also triggered the cameras. Five sample images are presented in figures seven through eleven.

During the survey volunteers made eighteen trips to the HLRD backcountry to set up, check and remove the camera traps. This public engagement with scientific data collection, wildlife, and the National Forest Service was perhaps the greatest success of the program. Volunteers were engaged over a several month period and were eager to participate in further monitoring efforts. One of the volunteers wrote:

> *"We had a great experience with the wildlife camera project. It was a fun motivation to visit the same location over the course of a few months - watching the seasons change, noticing more details about the area with each visit, and really getting to know the place after our multiple visits. We were so curious to see what life was captured on the camera that we brought a card reader in the car with us so we could review them immediately upon finishing the hike. It's wonderful to know that our efforts - which any hiker could do - will be useful for the Forest Service. Great project!"*

In addition to capturing images of wildlife movement patterns during the spring the project also established the viability of engaging citizen science volunteers on the HLRD.

The program could easily be scaled up with the addition of more cameras and targeted recruiting in surrounding communities. The cameras are an exciting technology development that can allow greater public engagement in science on National Forests.

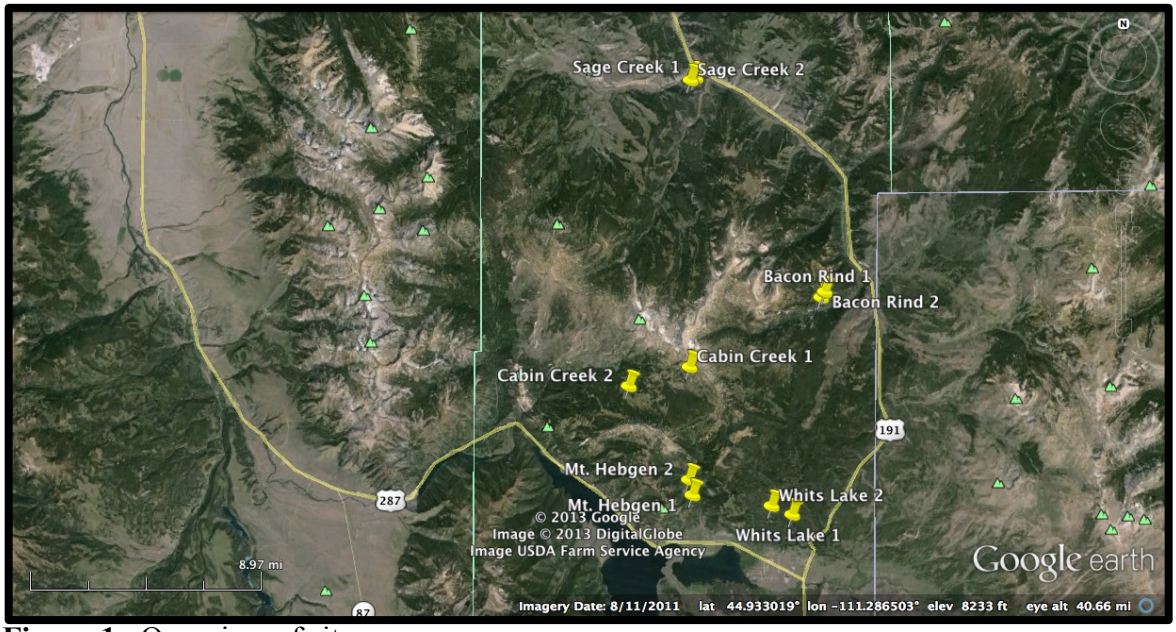

Figure 1. Overview of sites

Figure 2. Sage Creek sites

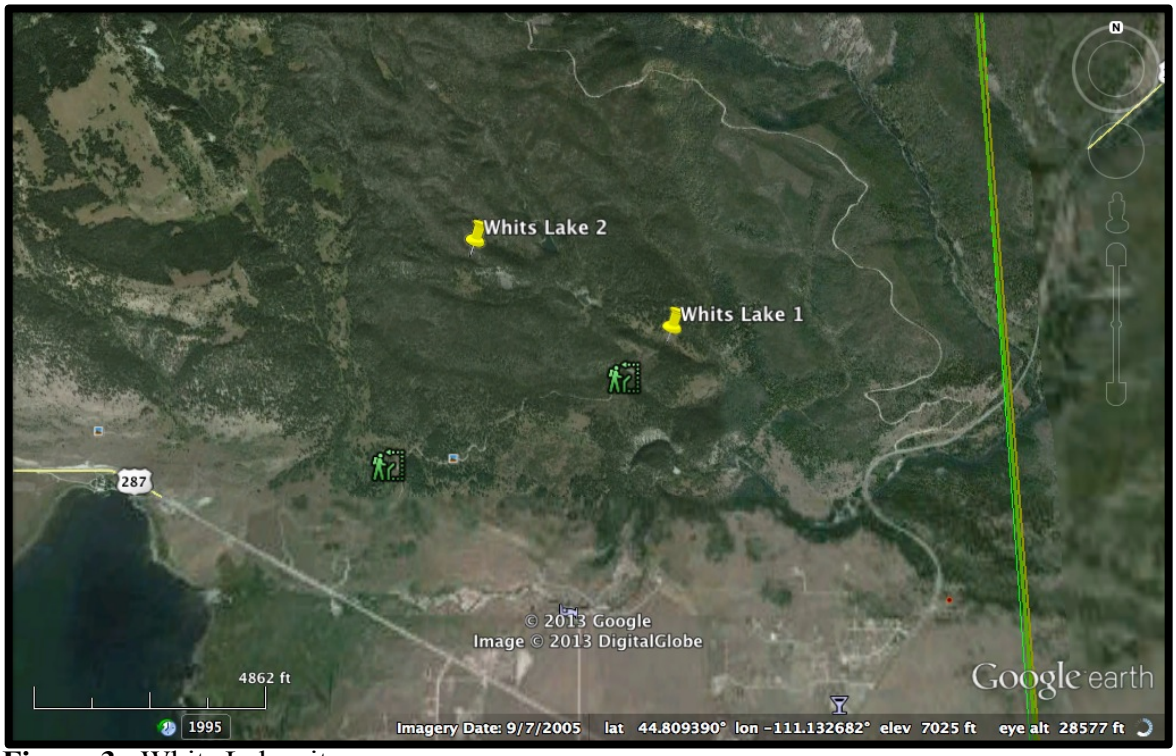

Figure 3. Whits Lake sites

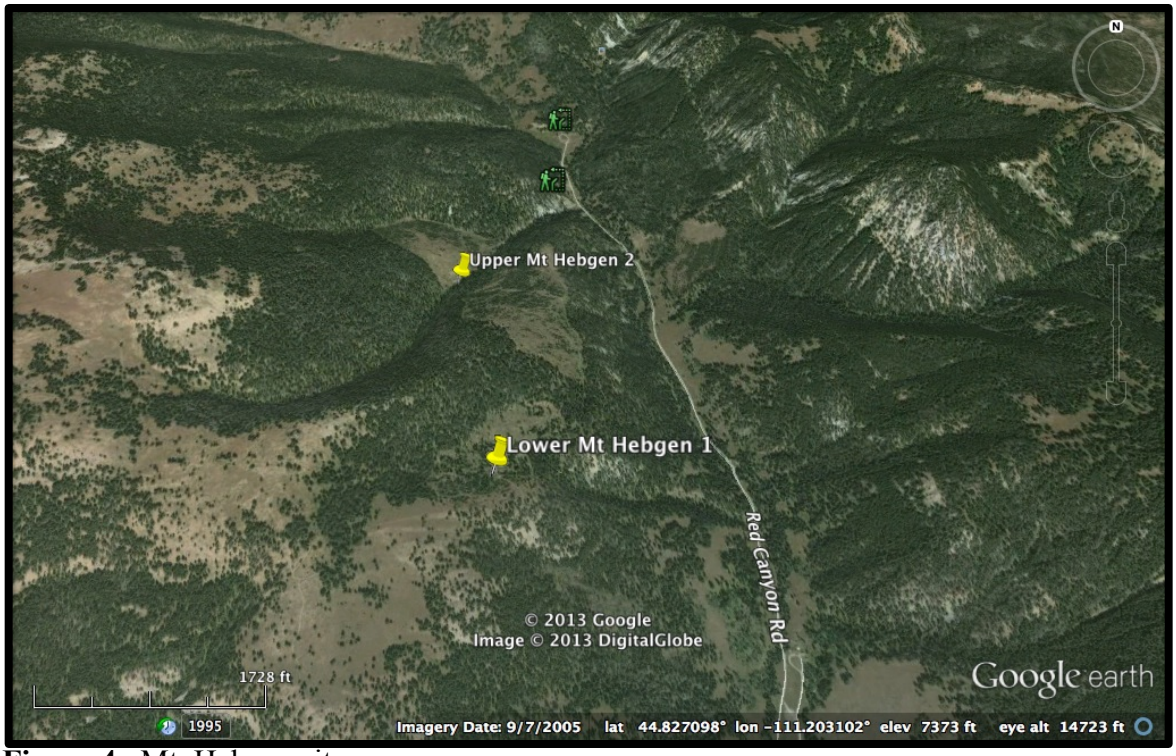

Figure 4. Mt. Hebgen sites

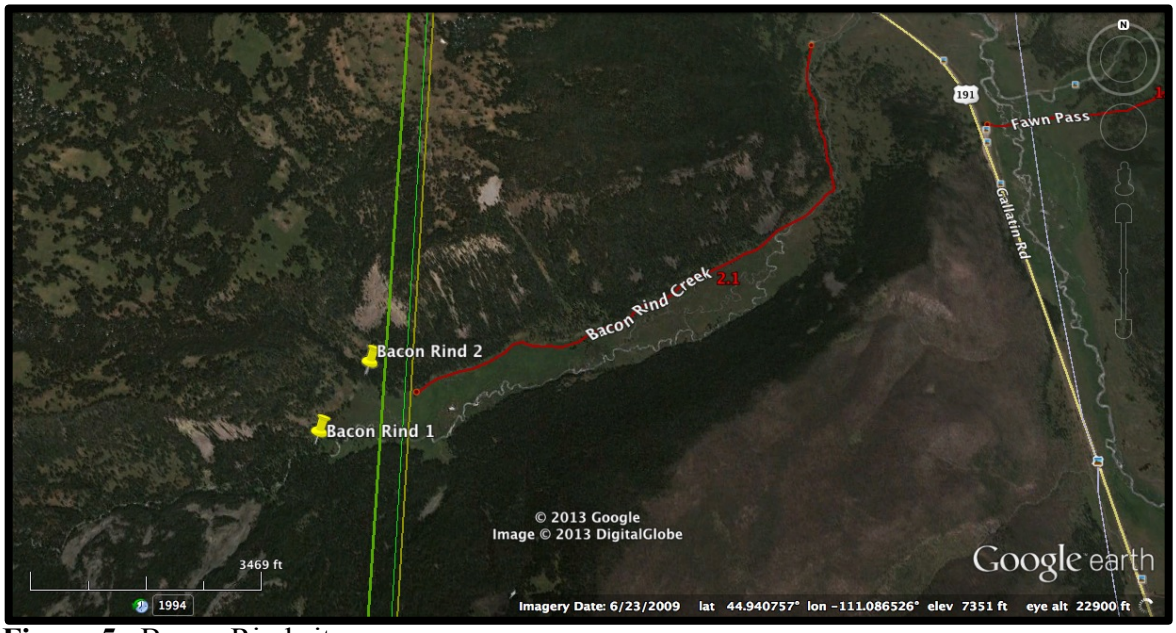

Figure 5. Bacon Rind sites

Figure 6. Cabin Creek sites

Table 1. Camera data table

Camera location	Camera type	Camera ID	North (deg.)	West (-deg.)	Elev. (ft)	Aspect	Established	Check 1	Check 2	Check 3	Check 4	Species	Team members
Lower Mt. Hebgen 1	Bushnell HD	R01	44.8232	111.2066	7470	SE	4/27/13	06/08/13	7/8/13			deer, elk, coyote, black bear	Whitney and Kristin
Upper Mt. Hebgen 2	Bushnell HD	R02	44.8315	111.2090	7250	NEE	4/27/13	06/08/13	7/8/13			deer, elk	Whitney and Kristin
Sage Creek 1	Reconyx RC55	NA	45.0593	111.2041	7106	NNW	3/22/13	04/20/13	5/19/13	6/6/13	07/12/13	fox, moose, deer	Todd
Sage Creek 2	Reconyx RC55	NA	45.0579	111.2080	7440	E	3/22/13	04/20/13	5/19/13	6/6/13	07/12/13	elk	Todd
Bacon Rind 1	Reconyx RC55	NA	44.9348	111.1032	7348	N	3/22/13	04/23/13	5/16/13	6/21/13		elk, deer	Curt and Mason
Bacon Rind 2	Reconyx RC55	NA	44.9379	111.1004	7380	NNE	3/22/13	04/23/13	5/16/13	6/21/13		grizzly bear	Curt and Mason
Cabin Creek 1	Reconyx RC55	NA	44.8955	111.2089	8641	W	3/23/13	04/27/13	5/19/13	6/8/13	7/11/13	grizzly bear, other photos deletec	Courtney
Cabin Creek 2	Reconyx RC55	NA	44.8846	111.2573	8190	W	3/23/13	04/27/13	5/19/13	6/8/13	7/11/13	No carnivores, photos deleted	Courtney
Whits Lake 1	Reconyx RC55	NA	44.8115	111.1260	6930	NW	4/1/13	06/07/13	7/5/13			black bear, deer, elk	Kathy and Andy
Whits Lake 2	Reconyx RC55	NA	44.8166	111.1428	7460	NW	3/27/13	05/20/13	7/1/13			elk	Kathy and Andy

Figure 7. Bull elk (*Cervus canadensis*)

Figure 8. Grizzly bear (*Ursus arctos horribilis)*

Figure 9. Moose (*Alces alces*)

Figure 10. Red fox *(Vulpes vulpes)*

Figure 11. Black bear *(Ursus americanus)*

Figure 12. Grizzly bear (*Ursus arctos horribilis)*