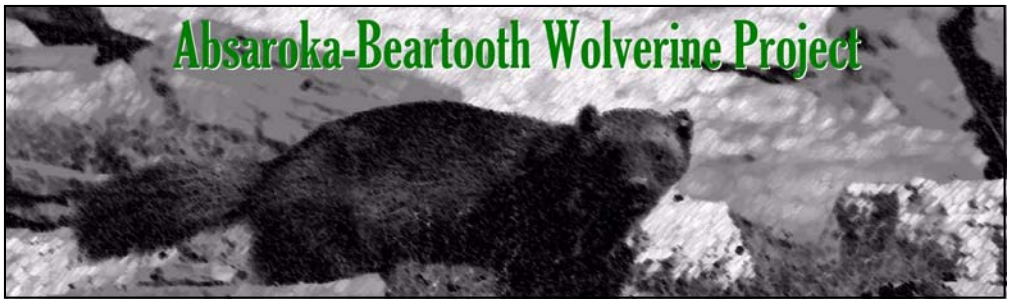


Absaroka Beartooth Wolverine Project completes third winter

The Absaroka-Beartooth Wolverine Project, through the generous support of the Yellowstone Park Foundation, continues to improve our understanding of wolverine ecology in the Greater Yellowstone Ecosystem.

We shifted gears this past winter field season. Due to a low capture rate over the previous winter, we adapted our efforts to document wolverines in and around Yellowstone. Although capture work occurred in selected areas where we were previously successful, this was augmented by a substantial effort to develop and implement a wolverine detection survey. We used a helicopter to detect wolverine tracks, which were used as an indicator of wolverine presence and distribution.

Our current effort of live-capture, marking, and monitoring, coupled with the development and implementation of a new wolverine detection technique, is giving us a clearer picture of the presence, abundance, and status of wolverine in and around the park.

In light of the recent upswing in public interest and concern for wolverine conservation, and recent deliberations regarding the integrity of wolverine populations in the contiguous United States, our work promises to be an important piece of future science-based management and conservation of this rare species.

Female F3, February 2008

Absaroka-Beartooth project continues to capture and monitor wolverines

We continue to monitor 3 wolverines in our study area. We recaptured female F3 north of Yellowstone Park in February. She was re-instrumented with a store-on-board GPS collar and VHF transmitter. We believe she is about 2 years old. As of this writing, she is still wearing her GPS collar, and we will retrieve it this fall after its automated release to collect the location data. Male M2 has been steadily monitored via aerial telemetry since his initial capture in March of 2006. He continues to range from Sylvan Pass in the park south to nearly Togwotee Pass west of Dubois, Wyoming. F133 is a young female initially captured and marked by Wildlife Conservation Society personnel in Montana. In March of 2007 she moved south through Yellowstone to the southeast corner of the park. In partnership with the WCS project, we continue to monitor her via aerial telemetry. We did not detect natal denning activity by her during intensive monitoring this winter and spring. We will monitor F3 and F133 very closely next winter (2008-2009) in an effort to detect denning and reproduction, as these two individuals may be old enough to be reproductively active next year.

Trapping Summary 2005-2008

Winter Trapping Seasons: 3

Total number of traps: 33

Total Trap nights: 4,867

Wolverine captures: 4 Individuals

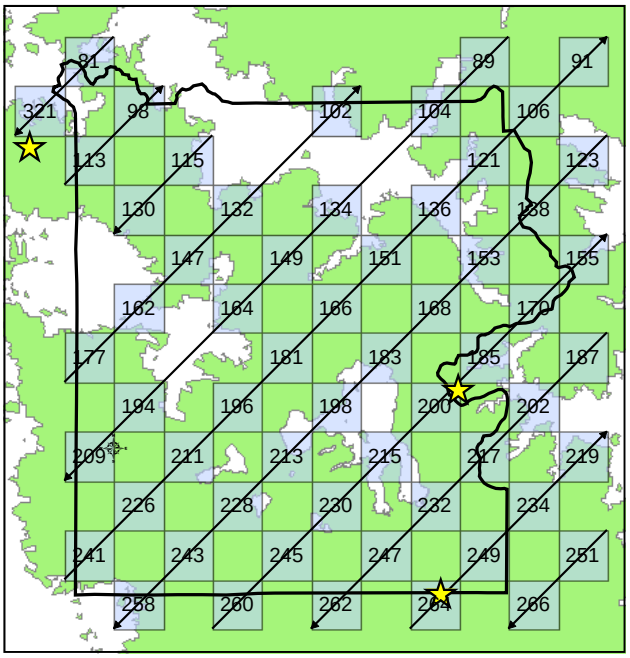
Total relocation points: 889

Developing and Implementing an Aerial Survey Protocol for Wolverines in the Yellowstone Ecosystem

Little is known about the distribution and numbers of wolverines in Yellowstone Park and National Forest lands on the park's north, east, and south-east boundaries, partly due to the absence of aerial survey techniques for documenting this species' presence in mountainous terrain. We were particularly interested in developing and implementing a survey in Yellowstone Park because survey data would provide us with an assessment of the relative numbers and distribution of wolverines that was independent of our live-trapping effort. To date, our live-trapping data suggest that few wolverines occur along the east boundary of the park, particularly the area between Sylvan Pass and the south portion of the Beartooth Plateau. We wanted to see if an aerial survey would similarly indicate low wolverine numbers and if it would lead us to detect any unmarked individuals.

We developed a survey technique collaboratively with Wildlife Conservation Society (WCS) biologists Bob Inman and Mark Packila. In mid February, 2008, we conducted wolverine track surveys from a helicopter in the Madison, Henry's Lake, Gravelly, and Absaroka Mountain Ranges, MT—areas that support radio-marked wolverines captured on the WCS and Absaroka-Beartooth projects—to evaluate the efficacy of documenting wolverine occurrence and distribution. Our objective was to identify the more efficient of two search (flight) patterns—straight travel across the cell versus a more intensive, tortuous route—and to evaluate our ability to detect tracks of radio-marked individuals within their home ranges. We confined our track searches to wolverine habitat estimated using a WCS computer model.

In total, we attempted to detect tracks of seven wolverines from a helicopter, and found tracks in 14 of 27 (52%) grid (10 x 10 km) cells. Wolverine tracks were often easily distinguished from those of other carnivores and ungulates, even without landing the helicopter to inspect tracks closely. The optimal allocation of time for searching a grid cell was about 23 minutes, but there was little practical difference in using the two search patterns. We were nearly as successful in finding tracks in grid cells that did not contain the radio-marked wolverine as we did the one that was "occupied."



Configuration of grid cells and flight path for survey of wolverines in Yellowstone Park and vicinity. Green indicates a habitat model and stars indicate wolverine track detections.

Using the "test" results described above, we designed a survey of wolverines in Yellowstone Park and portions of the Gallatin, Shoshone, and Bridger-Teton Forests along the park boundary. The objectives of the survey were to document wolverine occurrence and to further evaluate our ability to detect radio-marked individuals. During April, 2008, we surveyed every other 10 x 10 km grid cell that overlapped wolverine habitat, flying diagonal, straight-line routes across the survey area over three consecutive days. We detected three wolverine tracks, one near the northwest corner of the park, one near the park's east entrance, and one in the southeast corner. In the first two cases, the wolverines may have been radio-marked. In the final case, information from the morning telemetry flight confirmed that the track was made by a marked individual. Among the radio-marked wolverines that we knew with certainty were present in the survey area, we detected one of two (50% success) individuals. Results of our preliminary survey suggested that few wolverines occur in the park interior—and consistent with our live-trapping data—few occurred along the east park boundary between Sylvan Pass and the Beartooth Plateau. Although we believe that this survey effort was highly successful, additional surveys (replicates) are needed to more reliably define the relative numbers and distribution of resident wolverines, to better evaluate our ability to wolverines that are present, and to better identify suitable wolverine habitat. Finally, this survey approach has strong potential for application to other areas in the contiguous United States where wolverine status is uncertain.

Numerous cooperators continue to contribute time, effort, and resources to this project, including the Yellowstone Park Foundation, the Gallatin, Shoshone, Bridger-Teton, Beaverhead-Deerlodge, and Caribou-Targhee National Forests, Yellowstone National Park, the USDA Forest Service Rocky Mountain Research Station, Greater Yellowstone Coordinating Committee, the Northern Rockies Conservation Cooperative, The University of Montana, Montana Fish, Wildlife & Parks, Wyoming Game & Fish, the Wolverine Foundation, and the Rocky Mountain Cooperative Ecosystems Studies Unit.

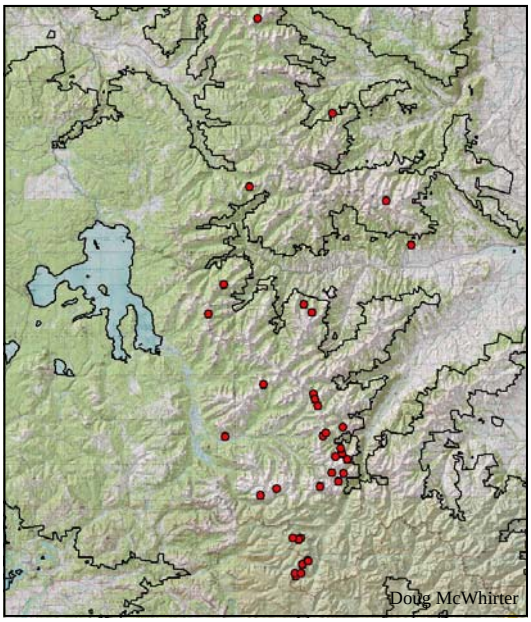
Survey terrain, Absaroka Range, Wyoming.

Wolverine track identified in the Madison Range during survey development.

Winter Survey of Ungulates (Carrion) in Wolverine Habitat

Previous studies indicate that carrion of ungulates is an important source of food for wolverines during the winter. Although the park and surrounding state wildlife agencies routinely collect data on the numbers and sex-age composition of ungulates that use low-elevation (< 7,000 feet) ranges during the winter, the high cost of surveys and small number of ungulates often preclude data collection in high-elevation habitats where wolverines typically reside. We hypothesized that carrion from ungulates that die naturally during the winter might be scarce in parts of our study area, and thus food limitation might help explain our live-trapping and survey data that suggested few wolverines were present.

We shared survey costs and observer expertise with Wyoming Game and Fish to document the relative numbers and the distribution of ungulates along the crest of the Absaroka Mountain Range during early May, 2008. The one-day survey spanned high elevation reaches from the upper Thorofare River to the south margin of the Beartooth Plateau. During the winter and early spring, this region supports persistent deep snow-pack interspersed with occasional ridges and slopes that are free of snow due to exposure to wind and sun. In total, two observers counted 153 bighorn sheep in 37 groups —87 adult or yearling rams, 53 ewes, and 13 lambs. The area south of Sylvan Pass —the region where two radio-marked wolverines currently reside—accounted for 128 sheep. Twenty-five sheep were counted north of Sylvan Pass, an area where telemetry and trapping data indicated that few wolverines were present. By chance, we sighted a radio-marked wolverine (M2) from the helicopter. Although scattered groups of elk were encountered at low and mid (< 8,500 feet) elevations, no other ungulates (e.g., mountain goats and moose) were seen in wolverine habitat.



Locations of bighorn sheep sightings (red circles) in the Absaroka Mountain Range, east Yellowstone Park boundary.

While this survey provided a useful snapshot of ungulate populations, our understanding of food sources for Absaroka wolverines remains quite limited. Additional information, including that from additional aerial surveys, are needed to more fully understand the number, distribution, and potential sources of carrion (e.g., wounding mortality associated with sport hunting or natural deaths) available to wolverines in this area.

A radio-marked wolverine (M2) observed from the helicopter during the ungulate survey in the Absaroka Range.

Outreach Efforts Continue

An essential component of our work is to educate the public about wolverine ecology in the Yellowstone ecosystem. A wolverine study day camp is scheduled at Cody, WY this summer in cooperation with the Yellowstone National Park Division of Interpretation. Numerous public and invited talks were completed over the last year, and additional talks and outreach activities are scheduled. We are also working with PBS' *Nature* series to assist in their feature production on wolverines.

Many people contributed time and effort to this project. We would like to extend our thanks to the following individuals for their assistance and interest over the last year.

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Wildlife Conservation Society Bob Inman & Mark Packila

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Thank You!

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