GREATER YELLOWSTONE WOLVERINE STUDY
Madison and Teton Study Areas
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CAPTURE RESULTS WINTER 2005-06

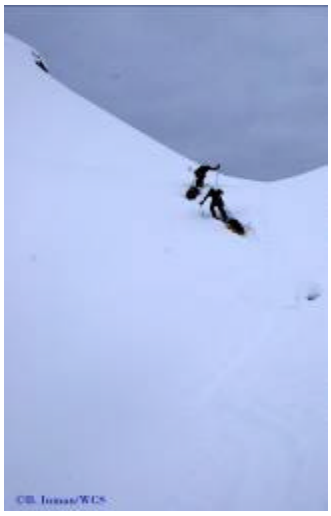
This year capture efforts were focused on the Teton Study Area between Dec 1 - Feb 28. Our increased density of log box traps in the Teton Range allowed putting forth our greatest effort to date in these mountains, including an attempt to fill in gaps of trap coverage from prior years. A total of 15 traps were operated in the Teton Range for 761 trap-nights, including one trap at Grand Targhee Ski Resort that was run by the Alta 4-H. Additionally, 2 traps and 2 bait sites were run along the southern periphery of the Teton Wilderness during December and January, and 4 traps were run in the heart of the Teton Wilderness for the entire month of February. During the winter we recaptured and re-implanted all marked wolverines (2? , 2?) in the Teton Range. This includes F405, a known-age female, who had eluded us the previous year and was still carrying a kit implant that functioned well beyond estimated battery life. F405 was also fitted with a Televilt GPS collar that has failed prematurely. No new individuals were captured this year although one wolverine track was observed at a bait site in the southern Teton Wilderness after capture efforts ended there.


Traveling to a trapsite in Grand Teton NP.


A. Chapin returns F405 to the trap after handling.

TETON WILDERNESS EXPANSION EFFORTS

This winter we conducted capture efforts in the Thorofare area of the Teton Wilderness. Work began last September when the Forest Service (USFS) mule packers from Buffalo Ranger District brought in trap building supplies. This allowed our crew to build four traps 4-6 miles from Hawks Rest cabin, and cut the winter firewood supply. Another mule string in October transported a cache of food for Austin Chapin and Deborah McCauley, the future trapping crew. Prebaiting of the traps surrounding Hawks Rest started in late January. The capture crew arrived February 1. Support crews made up of Mark Packila, Rob Spence, Forrest McCarthy, Bob Inman, Amy Bensted, Lance Koch (USFS), and a number of volunteers sledded in extra bait and supplies weekly and assisted in running the trap-line. No wolverines were captured during the month; however, tracks were found on two occasions in areas between Hawks Rest and our trap



A. Chapin and R. Spence breaking trail to Hawks Rest.

sites. Our limited one-month trapping effort combined with substantial snowfall are likely causes for this lack of capture success. The study average of 89 trap-nights per capture was barely exceeded with a total of 91. We were optimistic that our efforts would be more productive in this remote, low-use wilderness area than they have been in other areas. Snowfall may have influenced our results in two ways; regularity of snow may have resulted in wolverines restricting their travel, and snow depth may have contributed to higher than normal winterkill of ungulates, resulting in increased food availability. In the future, a greater trapping effort would be needed to increase success in this area.

Crews made effective use of their time throughout the month of February. We completed 8 round-trips between Turpin Meadows and Hawks Rest from January 21 to February 28 along with daily trapsite visits. We monitored wildlife activity during all of our travels. Moose wintering locations were noted and reported to WGF and USFS biologists. Otter sign was observed in Pacific Creek on one occasion. We never observed lynx tracks during our repeated travels. Tracking conditions were poor during most of this period due to regular snowfall. Also, the roofs of Hawks Rest cabin, Yellowstone National Park's Thorofare cabin, and the Wyoming Game and Fish (WGF) cabin were shoveled

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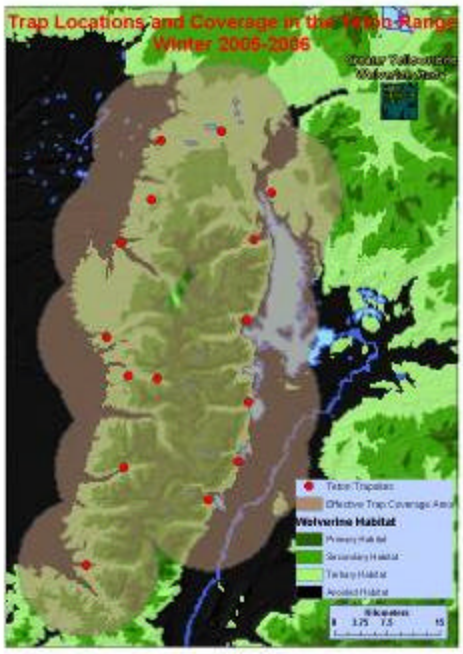
F. McCarthy and D. McCauley shoveling cabin roof.

TETON RANGE POPULATION ESTIMATE

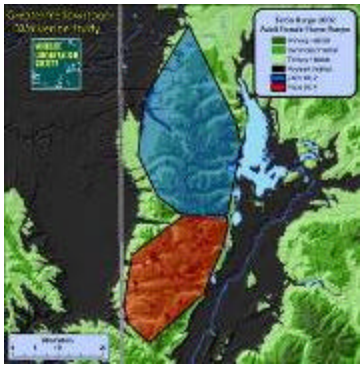
Our original intentions were to estimate population density of wolverines in the Teton Range using log-box traps in a mark-recapture effort (Dec.-Jan.) followed by track surveys and backtracking to collect DNA (Feb.) as an unbiased sample. Based on a variety of factors, we decided to modify the focus of our efforts. By mid-January we had captured only one wolverine (F404) two times. Consistent, heavy snowfall throughout this period was thought to be restricting wolverine travel leading to minimal trapsite encounters and poor capture success. We also determined that logistical constraints on operating the trap-line from Hawks Rest could be improved by designating additional personnel to that effort during late-January and February.

This shift of resources led to greatly improved capture efforts in both areas. Additional crews available to work in the Thorofare area provided much needed assistance to Austin and Deborah in trapping efforts, as well as the ability to transport a sufficient amount of

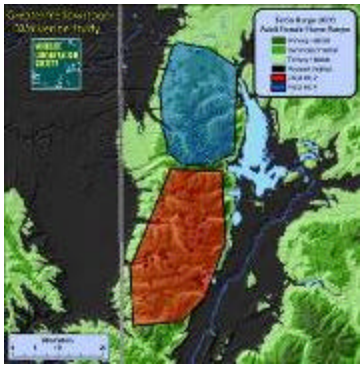


bait to keep the trap-line functioning despite a high number of incidental captures and corresponding bait consumption. Continuing to operate the trap-line on the west slope of the Teton Range resulted in all 4 marked wolverines having radio-transmitters replaced and being captured a total of 9 times. Even with the increase in capture success later in the season we did not capture any unmarked wolverines.

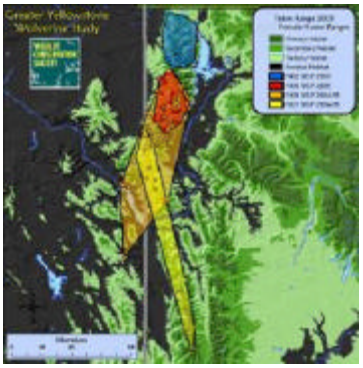
It is likely that there is an adult female in the northern portion of the Teton Range whom we did not capture this winter. Previous home range data indicate a territory there. F401 occupied the area until she died; F402 moved into the area shortly after it became vacant. The two female kits (F405, F421) born in the southern portion of the Teton Range in 2004 have made extensive movements to the Snake River Range, Caribou Range, and Salt River Range, but have never been located north of F404's (their mother) home range in the Tetons. There has always been a distinct boundary between the northern and southern adult females' home ranges. This leads us to believe that the northern Teton Range is still occupied by F402 (marked animal whose transmitter battery died 2 years ago) or another adult female. Based on the density and placement of traps this winter we believe there is a low probability of additional resident adult wolverines in the Teton Range.



2002 ? home ranges.



2003 ? home ranges.



2005 ? home ranges with F402 2003 home range.

Limited options are available to perform a simple mark-recapture estimate with zero captures of unmarked individuals. NOREMARK (Gary White's program for mark-recapture population estimation) was used for all population estimate calculations. The Joint Hypergeometric Estimator (JHE) closed population model results in a population estimate of 4 with a 99% confidence interval (CI) of 4-6 wolverines. We also ran a mark-

recapture estimate adding 1 unmarked individual to the 9 study-captures (10 captures of 5 individuals), the resulting JHE population estimate is 5 with a 99% CI of 5-9 wolverines. A similar estimate (10 captures of 5 wolverines) was also made using the Minta-Mangel estimator (Ecol. 70:1738-1751), which resulted in a population estimate of 5 with a 99% CI of 5-5 wolverines. The Minta-Mangel estimator is likely more accurate as it accounts for individual encounter probabilities (recaptures) that are absent in the JHE. There are at times a few kits or transient individuals in the Teton Range (F405 currently fits this description). In our opinion, population size is likely to fluctuate from 4-10 wolverines, including juvenile and dispersing individuals. It is unlikely that there are ever >10 wolverines in the Teton Range at any point in time.

Recreation Monitoring

Jenny Bell was once again conducting recreation surveys around the Madison, Gallatin, and Gravelly mountain ranges. Parking area surveys (vehicle and snowmobile trailer space counts), parking area validations, and trail counters are being utilized to develop a technique to monitor levels of winter recreational use. Recent analysis of recreational data has helped us identify areas to improve our survey methodology. We determined that trail counters can more accurately assess recreational use in areas where snowmobiling does not originate at a central parking area and at ski areas where peak time parking lot counts are not as effective. The number of trail counter validations was increased to estimate and assure counter accuracy. Twice weekly, parking area surveys were performed during peak hours at high use areas. Frequency of parking area validations was also increased to approximately two per week. Validations are conducted by stationing an observer at one parking area all day to record the number of vehicles, snowmobile trailer spaces, snowmobiles on each trailer, and/or skiers in each vehicle along with entry and exit times of users. The purpose of increasing parking area validations was three-fold: first, to accurately predict the number of actual snowmobiles represented by each trailer space, or the number of skiers represented by each vehicle; second, to determine the peak hours of parking area use; third, to determine the amount of day-long parking area use that is represented by peak hours. We increased the sample size of parking area validations due to their importance in estimating actual user numbers from survey results. This improvement in sampling accuracy will enhance our ability to determine annual rates of change in winter recreational use at each site.

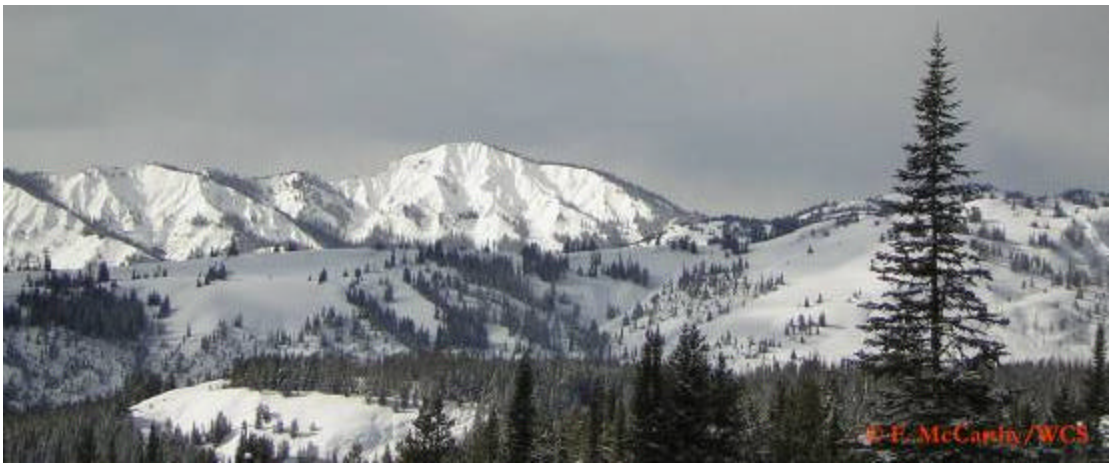
Snowmobile use funneling past Doe Creek trail counter.

MORTALITIES

We documented one mortality this winter; a young male (M230) was legally harvested in the Madison Study Area of Montana.

UPCOMING PROJECT ACTIVITIES

We are currently transitioning into a new phase of the study with emphasis on reproductive rates and denning habitat. This spring we will continue to monitor all radio-instrumented females to locate any den sites. None of 4 adult females have initiated denning as of March 15, which is already 3 weeks later than our previously documented birth dates. We are also initiating efforts to locate dens of unmarked females with both aerial and on the ground searches of possible denning habitat. Later in the season we will attempt to capture and radio-implant all kits and unmarked females at the appropriate time.



Potential denning habitat on the Bridger-Teton NF.

ACKNOWLEDGEMENTS

We would like to thank the Beaverhead-Deerlodge, Bridger-Teton, Caribou-Targhee, and Gallatin National Forests and Grand Teton National Park for their financial and logistical support, including housing, trucks, satellite phones, and radios, through this winter. We would also like to thank the J-Y Ranch for allowing us access through their land. Special thanks to the Bridger-Teton packers for transporting 10 mule loads of our gear to Hawks Rest and use of the backcountry cabins in January and February. Our thanks to additional volunteers assisting with efforts in the Thorofare area include Dan Alder, Ryan Chapin, Derek Collins, Danielle Deisenroth, Thomas Doherty, Matt Goewert, Rebecca Huntington, Amy McCarthy, and Ryan Young.