

Grizzly Bear DNA Project Update

Eye on the Environment

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Community
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Education

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As many of you know, Northwest Connections worked with the Northern Divide Grizzly Bear Project in 2004. The purpose of the project was to census the grizzly population in the entire ecosystem that includes Glacier National Park, the Bob Marshall Wilderness Complex, the Mission Mountains Wilderness, the Rattlesnake Wilderness, and all the surrounding rural areas including the Rocky Mountain Front, the Blackfoot Valley, the Seeley-Swan, the North Fork of the Flathead, and the eastern reaches of the Mission, Flathead and Tobacco Valleys. All told the project surveyed 7.8 million acres of rugged terrain.

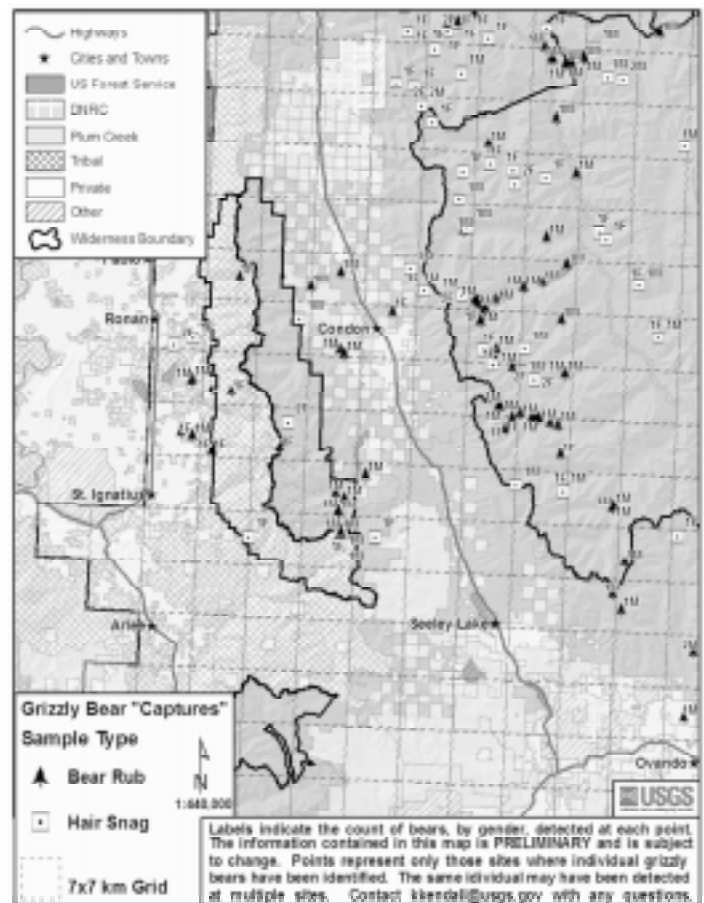
Northwest Connections worked a little over 1 million of those acres, the chunk of ground north of the Clearwater Divide and west of the Bob Marshall Wilderness boundary to Highway 93 on the Flathead Indian Reservation. This area makes up the Mission-Swan Subunit. Northwest Connections employed 20 crew members, many of whom were members of rural communities in the area who also had wildlife experience.

This project was unique not only because of its unprecedented size and complexity, but also because we used two methods to collect hair samples for genetic analysis. We collected hairs from single strands of barbed wire strung around a non-food bait. This method has been used extensively in bear research projects across North America. We also collected bear hair from natural rub objects such as trees, fence posts and telephone poles. This technique was used in research completed in the greater Glacier National Park area from 1998-2000.

Now onto the fun stuff. Currently, the project reports that the preliminary genetic analyses of the nearly 34,000 hair samples that were collected during the 2004 field season are complete. When we checked on the status of the data analysis in June, just half the samples were complete, so things have come along rapidly.

The systematically deployed, baited hair snags—the standard method for sampling bear hair—yielded 53% of the grizzly bear samples, whereas unbaited, naturally occurring bear rubs yielded 47%. Thus far, we've identified 544 unique grizzly bears in the 7.8 million acre study area, 56% of which are female. The majority of individuals (49%) were identified only at the hair snags, with 18% identified only from bear rub samples, and 33% identified in both kinds of samples.

The initial analyses is being followed by extensive genetic analysis to expand the genotypes, confirm they are correct, and develop genotypes for the many bears that have been handled for



research and management or died in recent years. This USGS-led project will provide the first scientifically defensible grizzly bear population estimate for the greater Northern Continental Divide Ecosystem (NCDE), as well as unprecedented information on grizzly bear distribution and genetic health.

In the Mission-Swan subunit, one of nine subunits, 3,959 hair samples were collected during the 2004 field season. While most of the samples contained black bear hair, 157 samples (4%) yielded complete grizzly bear genotypes. Forty-five unique grizzly bears were identified: 27 females and 18 males. The two sampling methods were almost equally successful, with 24 bears identified at the baited hair snags and 25 on bear rubs. Previous literature indicated that bear rubs predominately sample male bears, but almost half (12/25) identified in the Mission-Swan were female. Three males

and one female were identified from both sampling methods. The Mission-Swan subunit had the highest percentage of black bear samples (63%) of the 9 subunits sampled in the study. The lowest proportion of black bears samples (31%) was found in Glacier National Park. The proportion of sampling stations that collected hair was comparable between subunits, as was the genotyping success rate.

The USGS bear study team continues to analyze data, prepare manuscripts, and give presentations at scientific meetings and to local groups. Upon completion of the final error-checking of the genetic data later this year, they will develop an estimate of grizzly bear population size for the ecosystem and submit a manuscript for publication in a peer-reviewed scientific journal. Once this gets published the information will be widely distributed to bear managers, partner agencies and the general public. Stay tuned!