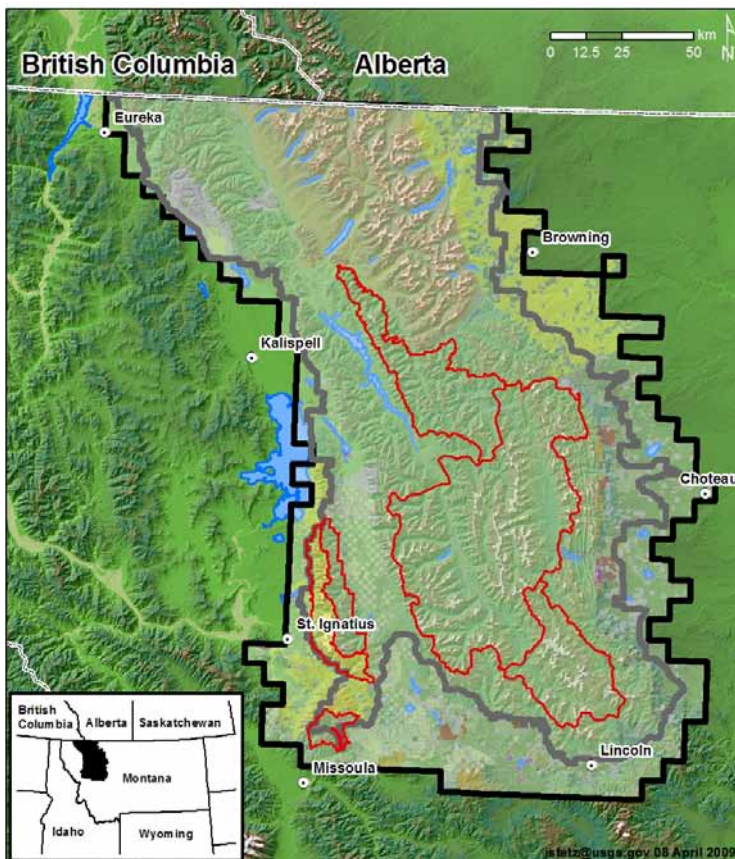


Noninvasive Methods to Monitor Bear Population Trends

The U.S. Geological Survey is beginning a new grizzly bear research project this summer in the Northern Continental Divide Ecosystem (NCDE) of northwestern Montana. This work is based on hair collection and DNA analysis methods similar to those used in the 2004 Northern Divide Grizzly Bear Project. However, instead of producing a snapshot of population size, distribution, and genetic structure, the objectives of this new work are to provide site-specific information needed for bear management and to evaluate ways to make noninvasive sampling methods more efficient and cheaper, while retaining the scientific rigor necessary to assess recovery status.

Specific regions called microsatellites in the nuclear DNA are amplified using polymerase chain reaction (PCR) and analyzed. This process yields information from one locus to determine the species, six additional loci to determine unique identity, and a separate gender-specific locus to determine sex. This project will then use 9 additional loci to determine genetic variation in the population.



Bear rubs and other passive hair collection opportunities occur on all types of lands found in the NCDE: forest and open range, public and private, front country and back country. Bear rub surveys will be conducted throughout occupied grizzly bear range in the U.S. portion of the NCDE. Field work will consist of surveying forest trails, roads, and power and fence lines to identify natural bear rubs. Short pieces of barbed wire will be attached to the rubbed surface to facilitate hair collection at most sites, however, barbless wire will be used on trees bumped by pack stock. No lure or attractants are ever used at bear rubs. Hair samples will be collected periodically throughout the summer and sent to a lab for genetic analysis. Only a few hair follicles are needed to obtain a great deal of information about the bear that left the sample: species, individual identity, gender, and potentially, relationship to other bears.



Study Area Boundary

Designated Wilderness

Recovery Zone



Surveying bear rubs is safe and efficient, and is consistent with wilderness “minimum tool” requirements. No trapping or overflights are required, sampling can be conducted on established travel routes, and no bait or lure is used. Bear rub surveys are also an excellent way to engage the public in wildlife conservation research as little training is required, and there is no more risk to people (or bears) than would be expected on any hike in the woods. Remote camera footage of bears at rub trees can be viewed on the USGS website: <http://www.nrmcs.usgs.gov/research/KendallRemoteCamera.htm>



Our previous work demonstrated that collecting hair from bear rubs can sample a large portion of the population. In 2004, nearly 13,000 hair samples were collected from 4,795 bear rubs. From these samples, we detected over 50% of the males and over 25% of the female grizzlies in the population. This was despite not being able to conduct sampling on 20% of the NCDE and not sampling in late summer when female rubbing behavior peaks. New statistical approaches can use these detections to look at fine-scale patterns in this population, including whether the number of bears is increasing, decreasing, or stable, changes in how bears are distributed on the landscape, and if there are any barriers to interbreeding (i.e., geneflow) within the NCDE. By surveying bear rubs throughout occupied range and over a longer sampling season, we expect to detect even more grizzlies than the 275 individuals detected at bear rubs during 2004. More detections will allow us to make more reliable inferences about how this population is faring and assess progress toward recovery.

For more information, please visit the project's website:
http://www.nrmcs.usgs.gov/research/NGSbear_monitoring.htm

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