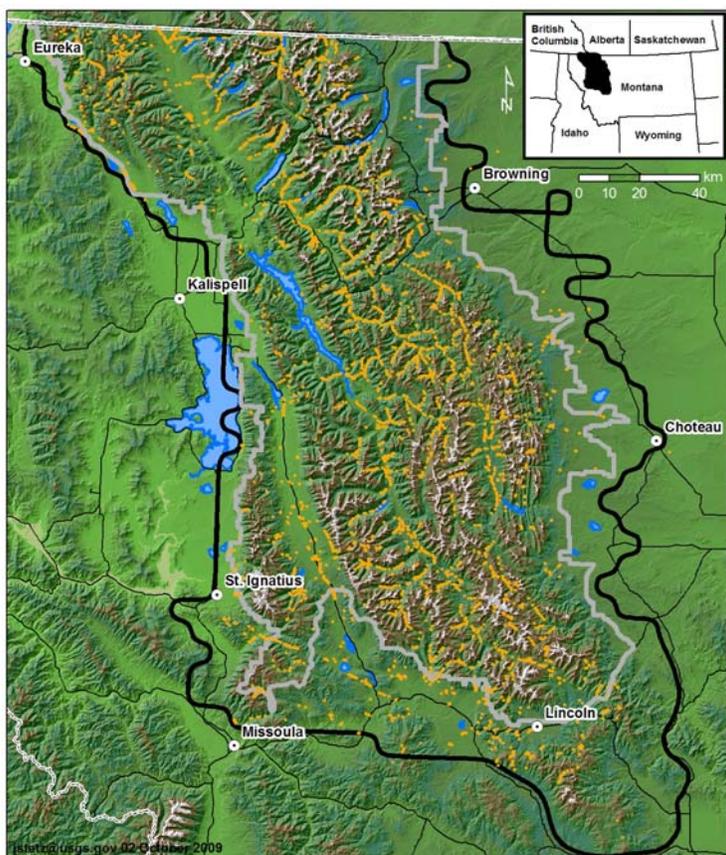


# Noninvasive Methods to Monitor Bear Population Trends

The U.S. Geological Survey began a grizzly bear research project in 2009 in the Northern Continental Divide Ecosystem (NCDE) of northwestern Montana. This work uses 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, the objectives of this new work are to estimate population growth rates by collecting hair at natural bear rubs along trails, roads, and fence and power lines. This approach holds promise of providing reliable estimates of population trends in an efficient, cost effective, and unobtrusive way.

**2009 Update:** We conducted field work from mid May into early October, with approximately 14 biological science technicians deployed across our 8.5 million acre study area. We identified 4,907 bear rubs from which we collected 9,240 bear hair samples. Genetic analysis is scheduled to be completed by late spring 2010. Field work will continue in 2010 and 2011, with final reports and peer-reviewed publications in 2012.



Bear rubs and other passive hair collection opportunities occur on all types of lands found in the NCDE: forest and prairie, public and private, front and back country. Bear rubs are found by hiking forest trails, roads, and power and fence lines. Short pieces of barbed wire were attached to the rubbed surface to facilitate hair collection at most sites; however, barbless wire is used on trees close to trails or bumped by pack stock. No lure or attractants are ever used. Genetic analysis of the hair reveals the species, sex, and individual identity of the bears using rub trees. This information is then used in mark-recapture models to estimate population growth and survival rates, along with other valuable information.

Timeline	2009	2010	2011	2012
Identify / setup bear rubs	•			
Hair collection	•	•	•	
Genetic/data analysis		•	•	•
Prepare manuscript				•

● 2009 Bear Rubs     
 Study Area Boundary     
 Recovery Zone



Surveying bear rubs is safe, efficient, and consistent with wilderness "minimum tool" requirements. Further, no trapping or overflights are required, surveys can be conducted on established travel routes, grizzlies and black bears are sampled concurrently, and no bait or lure is used so bear behavior is not affected. Because field sampling methods require little training and experience, there is potential to reduce monitoring costs through assistance by existing agency personnel and volunteers. 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 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](http://www.nrmcs.usgs.gov/research/NGSbear_monitoring.htm)

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