

Cabinet-Yaak Grizzly Bear DNA Project

Non-Invasive Methods to Estimate Bear Population

The study area includes all areas in and around the Cabinet-Yaak Ecosystem where grizzlies have been documented



Country spanning the Cabinet Mountain Wilderness and Yaak River drainage in northwest Montana and northern Idaho holds a population of grizzly bears that is in danger of extinction. The Cabinet-Yaak Ecosystem is one of six recovery zones identified by the U.S. Fish & Wildlife Service in the lower 48 states where suitable habitat remains for grizzly bears. Recovery and management of grizzlies and their habitat require solid scientific information, and the Cabinet-Yaak Grizzly Bear DNA Project is integral to that effort.

Year 2012, our project is estimating the grizzly bear population in the Cabinet-Yaak Ecosystem with non-invasive methods, using knowledge of natural bear behaviors. With rigorously tested scientific protocols, hair samples will be collected, individual grizzlies will be identified through genetic analysis, and a population number will be calculated. The calculation will also provide minimum and maximum population bounds that indicate the precision of the population estimate.

Equally important, this project will provide information on population density and distribution, and show relatedness of grizzly bears within the Cabinet-Yaak recovery zone to each other and to bears in other recovery zones and Canada. The study's results will be used by land and wildlife managers as a scientific basis for current decision making and future planning.

Hair traps are distributed on a 5km x 5km grid, so that all bears have a chance to encounter at least 1 trap



Quick Facts

- ▶ There are at least 40 grizzly bears in the study area.
- ◀ The study area is more than **2.4 million** acres!
- ▶ Bear hair is all over the forest, if you take the time to look.
- ◀ We collect bear hair for its **DNA** using barbed wire!
- ▶ Bears naturally rub on trees, posts, etc.– leaving hair behind.
- ◀ We have set up over **1,000** rub stations to collect it!
- ▶ Often, bears return to the same rubs year after year.
- ◀ You can see our video of bears visiting rub sites and hair traps. Just search online for “**USGS remote bear video**”!
- ▶ Bears have a better sense of smell than a bloodhound.
- ◀ We will also set up almost **800** hair traps with sent lure!
- ▶ Some bears may be interested in our scent traps, others not.
- ◀ Using **both rubs and traps** to collect hair, we will identify more bears in the area and get a better population estimate!

Project Timeline

	2011	2012	2013	2014
Set up bear rubs	✓			
Set up hair traps		✓		
Collect hair from rubs & traps		✓		
Genetic analysis		✓	✓	
Analyze data and prepare report			✓	✓

How We Collect Hair for Genetic Information



Two methods, five visits, hundreds of miles to cover

Method 1: Hair Traps



Select trap sites in each grid cell by identifying bear habitat and animal travel routes on a map.

Hike out to the spot, encircle a group of trees with 100 feet of barbed wire, and pour some liquid scent lure in the center of the corral.

NOTE: We know from remote video that bears visit hair traps for an average of only 2 minutes.

Hike back to every bear rub and hair trap 5 times for the **DNA** in the



Step 1

Step 2

Step 3

and carefully collect the new hair off of each barb **root** of the **hair**

Method 2: Rub Objects



Survey roads, trails, and power lines for bear rubs, which look smooth and have hair on them.

Clean the hair off of the rubbed tree, bridge, sign post or power pole and attach short pieces of barbed wire to the object. **No lure is ever used!**

NOTE: We use smooth wire if the object could be easily bumped by a backpack or horse pack.



Analyses and Results

Individual grizzly bears will be identified by genetic analysis. We will then use the proportion of newly identified bears vs. previously identified bears in each collection session to statistically estimate how many bears we did not sample during the summer. This data analysis will yield a population estimate with probable minimum and maximum numbers of bears in the study area.

For more information, please visit the project's website or scan the QR code
<http://www.nrmcs.usgs.gov/research/CYEbeardna.htm>

Northern Rocky Mountain Science Center
U.S. Department of the Interior
Geological Survey
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Inter-Agency Study Team

Federal - U.S. Geological Survey Northern Rocky Mtn Science Center - U.S. Forest Service Kootenai, Idaho Panhandle, and Lolo National Forests
- U.S. Customs and Border Patrol - U.S. Fish & Wildlife Service

Tribal - Kootenai Tribe of Idaho State - Montana Fish, Wildlife & Parks - Idaho Fish & Game County - Lincoln County, MT - Boundary County, ID

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