



Southern Lakes Grizzly Bear Study: Catching Hair Not Bears for DNA Analysis

Environment Yukon began a study of grizzly bears in the Yukon Southern Lakes region in 2009, in collaboration with the area's First Nations. The study area covers the important grizzly bear ranges between Tagish Lake and Kusawa Lake, from the Alaska Highway south to the British Columbia border.

This summer, wildlife managers will continue collecting hair samples from bears using a special method called a DNA-based mark-recapture grid. This method helps wildlife managers learn a number of things about bears without having to handle them.

What can be learned from bear hair samples?

Wildlife managers use DNA from hair to identify individual bears and to estimate the total number of bears in the study area. Wildlife managers also learn about the distribution of bears, genetic variation in the population, and how isolated the Southern Lakes population is from other populations of bears. These all help us understand the population's health. There are indications that the Southern Lakes grizzly bear population is experiencing high rates of human-caused mortality and may be in decline. The information from the DNA-based mark-recapture study, when looked at with all other information, will assist wildlife managers in understanding the status of the grizzly bear population in this area.



How are hair samples collected?

Wildlife managers string a single strand of barbed wire about 2 feet off the ground to make a triangle roughly 10 m (30 feet) on each side. We use trees or rebar to hold the wire in place. At the centre of the triangle we place a smelly liquid lure to attract bears. When a bear steps over the wire or crawls under it to get to the lure, a small amount of hair should get snagged on a barb. The barbed wire is at the best height to stop bears from sneaking under or jumping over it without leaving hair. Cubs sometimes sneak under the wire without leaving hair, but they often leave hair when they roll on the lure in the centre of the station.

What does a mark-recapture grid look like?

The map of the Southern Lakes study area has been divided up into a grid of 170 cells, each about 49 km². Wildlife managers build one hair-snagging station in each grid cell in locations where there is a high chance of a bear encountering it. Sites are selected based on habitat, observation information, and radio-collar locations.

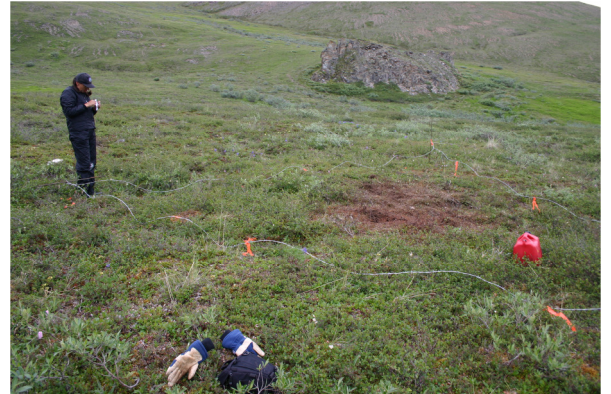
What do you use to attract the bears to the stations?

The liquid lure is like a soup flavoured with rotted fish or animal bits, fish fertilizer and cooking oil. Wildlife managers pour this very smelly liquid on top of branches and rocks on the ground in the

middle of the barbed wire triangle. Curious bears step over or crawl under the barbed wire to find out what smells so good! The lure is liquid so it cannot be eaten – this way bears won't come back to the site looking for food. Liquid lures are easy and fast to apply and have been used successfully in other studies.

When is the study done and how often are the stations checked?

The work is timed for when bears are shedding hair. The stations are set up in early June and removed in late July. This is also the time of year that bears move around the least so the stations should attract only bears who actually live in the area and not those who are just passing through. At the end of every 10-day hair-capture session, wildlife managers check the stations to collect snagged hair and refresh the liquid lure.



Does hair snagging hurt the bear?

Not at all. Only a small amount of loose hair is caught in the barbs as the bear passes by. This is hair that bears are naturally shedding. There is no risk of the bear becoming tangled in the wire or cut. Bears frequently use the wire to relieve an itch.

Why is it called mark-recapture?

We hope that individual bears will visit stations more than once over the summer. The first time a bear leaves hair at a station, the bear is considered to have been "marked." Any time the same bear leaves hair again, the bear is considered to have been "recaptured." The number of new marked bears in one session is compared to the number of recaptured bears in the next session. The number of new bears captured each session is used to estimate the number of bears that were missed in previous sessions. Samples from individuals snagged at different stations at different times tell wildlife managers a lot about how much the bears are moving around and which areas they prefer.

What do you do with the hair samples?

The samples are sent to a lab that specializes in analyzing DNA. There is enough DNA in the root of the hairs for geneticists to identify individual bears and their gender. In some cases, geneticists can also tell how bears are related to each other.



For more information about the Yukon Southern Lakes Region Grizzly Bear Population Study check out www.env.gov.yk.ca/bears or contact Environment Yukon at (867) 667-5652 or toll-free at 1-800- 661-0408. You may also email sighting information to carnivore@gov.yk.ca.

