

## **Alberta Conservation Association 2016/17 Project Summary Report**

**Project Name:** Grizzly Bear Population Inventory in BMA 5

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**Partnerships**

Alberta Environment and Parks  
Alberta Innovates  
Alberta Parks  
Bear Scare Limited  
Benga Mining Limited operating as Riversdale Resources Limited  
Cycleworks Motorsports  
Landowners in southwestern Alberta  
Municipal District of Ranchlands  
Parks Canada  
Safari Club International – Northern Alberta Chapter  
Spray Lake Sawmills  
Waterton Biosphere Reserve Association

**Key Findings**

- Identified and set up an additional 75 bear rub objects during our first bear hair collection visit in the spring of 2016, bringing the total to 922 rub objects that we surveyed.
- Completed over 3,600 visits to rub objects over a 12-week duration, in which five field crews collected bear hair samples from 60 survey routes, visiting all 922 bear rub objects four times each and covering a distance of over 6,000 kilometres.
- Collected 1,289 bear hair samples from rub objects located on both public and private land in the southern portion of Bear Management Area 5.
- Delivered bear hair samples to Wildlife Genetics International for genetic (DNA) analysis. The estimated timeline for receipt of genetic results is March 2017, at which point these data will be used in combination with data from the northern portion of BMA 5 in a spatially explicit capture-recapture framework to establish a grizzly bear density and abundance estimate for Bear Management Area 5.

## **Introduction**

Grizzly bears (*Ursus arctos*) are an iconic symbol of Alberta's wilderness and historically an important part of Alberta's hunting heritage. In 2002, Alberta's Endangered Species Conservation Committee recommended that the provincial grizzly bear population be designated as *Threatened* due to its small population size and low reproductive rate, limited immigration from outside populations, and increased human activity on the landscape (Alberta Sustainable Resource Development and Alberta Conservation Association 2010; Alberta Sustainable Resource Development 2008). In 2006, the Alberta government suspended the grizzly bear hunt largely based on estimates of low population size gained from survey techniques available at that time. Recent advances in sampling approaches have shown a difference in grizzly bear estimates in the southernmost bear management area in Alberta. Our goal was to identify naturally existing bear rub objects, collect hair samples, and, together with Alberta Environment and Parks, use genetic (DNA) analysis to help determine a population estimate for grizzly bears in this area. This estimate will be important for understanding human-bear conflicts and for proactive land-use planning designed to reduce these conflicts.

## **Methods**

In 2014, we collaborated with project partners to search for bear rub trees in all drainages on Crown land north of the Crowsnest Pass to Kananaskis Country. We divided the mountainous terrain into 65 survey routes where teams of two hiked and travelled by all-terrain vehicle to locate trees and other structures previously rubbed by bears. We attached short strands of double-stranded barbed wire to the surface of each rub tree to aid in hair collection. We also attached a pre-numbered aluminum tag as a tree identifier. Further, we collected ecological information at each site, including rub type (tree, fence post), tree species, rub surface size and condition, and presence or absence of hair. In 2015, we continued this initiative by intensively searching for bear rub objects on private land in the southern portion of Bear Management Area 5. This region is just east of the area surveyed in 2014 and is more than 1,200 km<sup>2</sup>. We also surveyed grazing allotments on Crown land in the southern Porcupine Hills.

In 2016, our field crews visited each identified rub object four times. During the first visit, we cleaned off any existing hair, and then during the three subsequent visits, we collected bear hair samples. After each visit, hair samples were sent to Wildlife Genetics International for DNA analysis. Through the extraction of nuclear DNA from the hair follicle, the lab will identify species, sex and individual identity of the bears.

## **Results**

In 2016, over a 12-week period (mid-June to early September) we deployed five field crews that visited each of the bear rub object four times. The first visit entailed removing hair from the rub object, followed by three subsequent visits to collect hair samples. This equated to 3,688 visits! While removing all existing hair from previously identified rub objects during our first visit, we identified and set up an additional 75 bear rub objects, bringing the total number of rub objects surveyed in 2016 to 922. We collected 1,289 bear hair samples from the 922 bear rub objects located along 60 survey routes on both private and public land in the southern portion of Bear

Management Area 5. Of the 1,289 hair samples collected, 63 were collected opportunistically, and the remaining 1,226 were from known rub objects. Approximately 47% of hair samples were collected from known rub objects in the first collection period (Figure 1). We sent all hair samples to Wildlife Genetics International, which will complete the DNA analysis by March 2017.

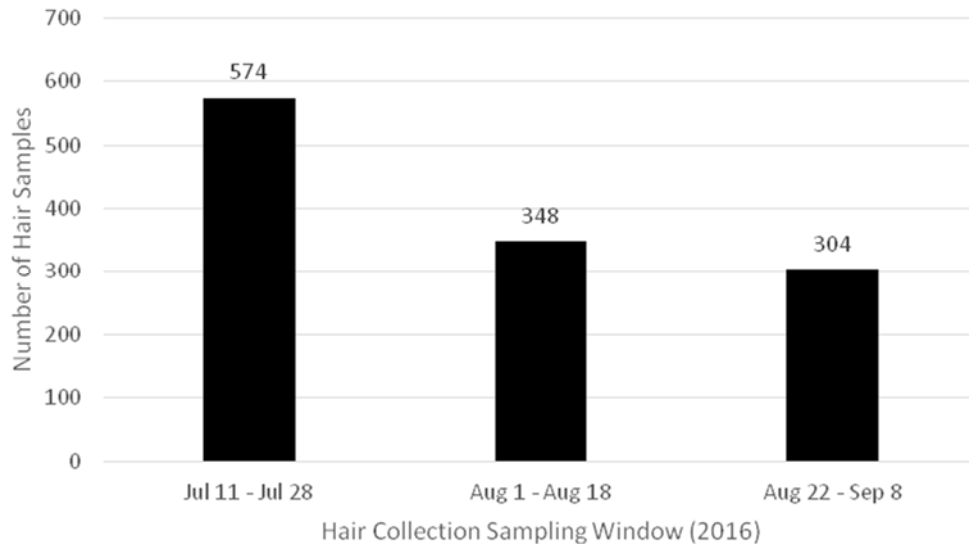


Figure 1. Number of bear hair samples collected per sampling window in the southern portion of Bear Management Area 5 in 2016.

## Conclusions

Ongoing concern exists over the frequent conflict between humans and bears in southwestern Alberta. Bears and the ranching community are attempting to co-exist on the landscape, although natural attractants and abundant food sources found in agricultural operations (e.g., livestock depredation, grain bins or silage) often lead to conflict. A large industrial footprint also exists in the region with an associated network of roads and all-terrain vehicle trails. Moreover, recreational activity is increasingly bringing more people into areas frequented by grizzly bears with the additive potential for human-bear conflict. Hair collected from rub objects will contribute to the detection of individuals, and DNA analysis will provide information on coarse-scale habitat considerations, bear movement corridors, landscape linkages and areas of human-bear conflict.

## Communications

- Authored article on the Grizzly Bear Inventory Project in Bear Management Area 5 for the *Conveyor*, Grassy Mountain Community Newsletter, Volume 2, Issue 2 (Spring 2016).
- Composed and mailed out a project update to approximately 60 landowners at the beginning of the field season for the inventory project in the southern portion of Bear Management Area 5 (April 2016).
- Composed and mailed out a project update to approximately 60 landowners at the end of the field season for the inventory project in the southern portion of Bear Management Area 5 (November 2016).
- Authored article “Making Scents of Bear Rub Trees, Grizzly Bear Monitoring Project in Bear Management Area 5” for our *Conservation Magazine* (Fall/Winter 2016).

## Literature Cited

Alberta Sustainable Resource Development. 2008. Alberta grizzly bear recovery plan 2008 – 2013. Alberta Sustainable Resource Development, Fish and Wildlife Division, Alberta Species at Risk Recovery Plan No. 15, Edmonton, Alberta, Canada. 68 pp.

Alberta Sustainable Resource Development and Alberta Conservation Association. 2010. Status of the grizzly bear (*Ursus arctos*) in Alberta: update 2010. Alberta Sustainable Resource Development, Wildlife Status Report No. 37 (update 2010), Edmonton, Alberta, Canada. 44 pp.

## Photos



Short strands of barbed wire were attached to rub trees to help facilitate hair collection from rubbing bears. In this photo, Alberta Conservation Association summer intern Evan Rothlin removes this barbed wire from a rub tree at the end of the field season in 2016. Photo: Colton Newton





While collecting hair samples from bear rub trees located in the southern portion of Bear Management Area 5, Alberta Conservation Association summer intern Kelly Mulligan captured this great photo of a grizzly bear cub print in the fresh mud. Photo: Kelly Mulligan





Though its colour can be highly variable, bear hair is typically fine and flexible and will not kink when bent. In this photo, masses of bear hair were snagged on both the barbed wire and on the tree itself, making it easy for staff to collect genetic information from bears in a safe, effective and non-invasive way. Photo: Kelly Mulligan