**Alberta Conservation Association**
**2017/18 Project Summary Report**

**Project Name:** Grizzly Bear Population Inventory in Bear Management Area 1 (BMA1)

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## Partnerships

Alberta Agriculture and Forestry
Alberta Environment and Parks (AEP)
Forest Resource Improvement Association of Alberta (FRIAA)

## Key Findings

- Set up an additional 16 remote (rotary-winged access) and 23 ground accessible barbed wire corral hair trap sites (rub sites) in the spring of 2017, bringing the total to 252 rub sites that we surveyed (ACA/AEP combined).
- Set up trail cameras on historically active grizzly bear and randomly selected rub sites for a total of 42 cameras throughout the study area. Collected and processed over 112,000 photos resulting in 9,965 photos of animals and 12 occurrences of grizzly bears.
- Completed 1,238 visits to rub sites over a 9-week duration; where four field crews (one ACA rotary-winged, two ACA ground, and one AEP ground) collected bear hair samples from 27 survey routes, visiting an average of 247 sites/session over five sessions.
- Collected 3,975 bear hair samples from rub sites located primarily on public land throughout Bear Management Area 1 (BMA1).
- Delivered bear hair samples to Wildlife Genetics International for DNA analysis. The estimated timeline for genetic results is July 2018, at which point these will be used in a spatially explicit capture-recapture framework to establish a grizzly bear density and abundance estimate for BMA1.

## 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, low reproductive rate, limited immigration from outside populations, and increased human activity on the landscape (Alberta Sustainable Resource Development 2008; Alberta Sustainable Resource Development and Alberta

Conservation Association 2010). 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. Our goal was to set up lured barbed wire corral hair trap sites (rub sites), collect hair samples, and together with Alberta Environment and Parks (AEP), use DNA analysis to help determine a population estimate for grizzly bears in BMA1. This estimate will play an important part in proactive land-use planning, supporting grizzly bear management, and reducing human-bear conflicts in Alberta.

## Methods

In 2015 and 2016, AEP staff set up 213 rub sites throughout the Chinchaga area of northwestern Alberta. Sites were accessed using all-terrain vehicles and a rotary-winged aircraft. Each rub site was constructed using a 16-metre-long double-stranded length of barbed wire, stretched and stapled taut around three to four large trees at approximately 60 – 70 cm high. A labelled aluminum tag was also attached to the tree where the two ends of the 16-metre wire strand met to serve as a site identifier. In the spring/summer of 2017, we partnered with AEP to intensively sampled BMA1. Over a nine-week period (mid-May to mid-July), we deployed four field crews (one ACA rotary-winged, two ACA ground and one AEP ground) on 27 routes, visiting each route and respective rub sites five times. During the first visit, we set up an additional 39 rub sites for a grand total of 252 rub sites. We also cleaned off any existing hair samples, retightened barbed wire, and applied lure to each site. During the second, third, and fourth visit, we collected hair samples and re-applied lure to each site. On the fifth visit we collected hair samples and removed barbed wire, signs, and flagging from all sites. Throughout the 2017 field season a small number of sites were removed from the study and replaced due to inadequate helicopter landing conditions or territorial bears in the area. We sent 3,975 hair samples 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. The DNA results will be used in a spatially explicit capture-recapture framework to estimate grizzly bear density and abundance in BMA 1.

## Results

During mid-May to mid-July of 2017, ACA and AEP crews (completed 1,238 visits to rub sites, averaging 247 rub site visits per session over five sessions. A total of 3,975 bear hair samples were collected. From the 42 trail cameras that were set up throughout the study area, we collected and processed over 112,000 photos of which 9,965 were animals and 12 were grizzly bears. Nearly 33 percent of all bear hair samples were collected from rub sites in the second of four collection periods (Figure 1). We sent all hair samples to Wildlife Genetics International, who will complete the DNA analysis by July 2018.

## Conclusions

Ongoing concern exists over the conflict between humans and bears in northwestern Alberta. A large industrial footprint exists in the region with an associated network of roads, pipelines, cut lines, 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 sites 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.

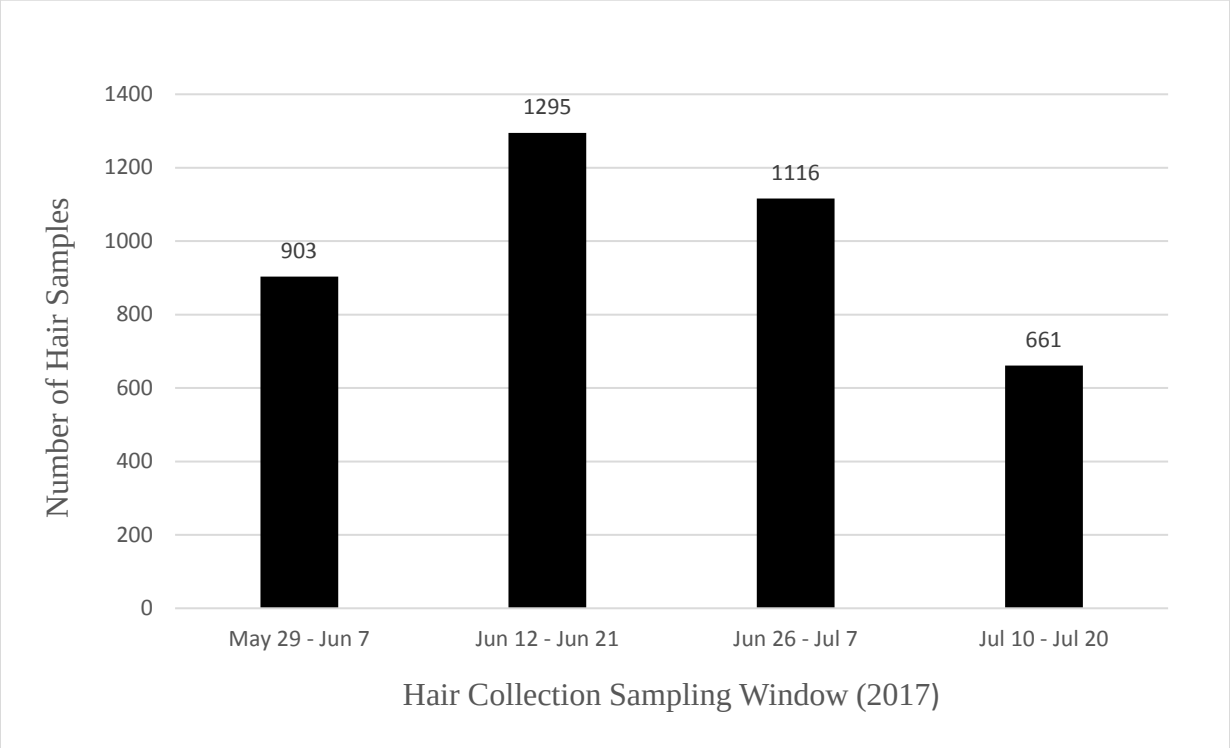


Figure 1. Number of Bear Hair Samples Collected per Sampling Window in Bear Management Area 1 in 2017.

## 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**

A strand of barbed wire approximately 16 metres in length was affixed to four trees to create an enclosure. Lure was then poured on the ground in the center of the enclosure to encourage bears to enter the site facilitating hair collection on the barbed wire. In this photo, Alberta Conservation Association biologist John Hallett applies lure to the rub site as a final step prior to departing for the next site. Photo: Amanda Rezansoff

While collecting hair samples from rub sites located in Bear Management Area 1, Alberta Conservation Association wildlife technician Mike Ranger captured this photo of an adult grizzly bear track in the fresh mud. Photo: Mike Ranger

Using lured barbed wire corral hair trap sites is an easy method for staff to collect genetic information from bears in a safe, effective, and non-invasive way. In this photo, Alberta Conservation Association biologist John Hallett gently works to remove a sample of bear hair snagged on the barbed wire at a rub site. Photo: Amanda Rezansoff

Closed-canopied deciduous, coniferous, and mixedwood forests characterize much of the boreal ecoregion of Alberta in which the BMA1 study area lies. While travelling by helicopter to the next remote rub site, Amanda Rezansoff snapped this photo of the Chinchaga River undulating across the expanse of boreal forest common to this area. Photo: Amanda Rezansoff