Alberta Conservation Association (ACA)

Date: 2014-2015

Project Name: Wildlife Habitat Initiative in Low Disturbance Zones – Grizzly Bear Monitoring Project

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Partnerships

- Alberta Environment and Sustainable Resource Development
- Alberta Innovates – Technology Futures
- Alberta Parks
- Landowners in southwestern Alberta
- Parks Canada

Key Findings

- Identified 65 major trails that we used as survey routes to locate bear rub objects in Bear Management Area 5 in southwestern Alberta.
- Completed surveying 48 of the 65 routes, covering more than 580 km of trail by all-terrain vehicle and on foot.
- Divided survey routes among 14 staff and located 415 rub objects used by grizzly and black bears.
- Collected ecological information and attached short strands of barbed wire to each rub object to collect hair for DNA analysis.

Introduction

Grizzly bears 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 increasing 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 marked difference in grizzly bear estimates in the southernmost bear management area in Alberta. Early results from a University of Alberta study, based on individuals identified from DNA in hair samples collected from naturally existing rub trees, suggest roughly 2.5 times more grizzly bears occur in that area compared to the 51 bears estimated using previous methods. Hence, this result suggests that estimates in other bear management areas might also be understated. Our goal is to identify naturally existing bear rub objects, collect hair samples and perform DNA analysis to 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 of 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 will continue to intensively search for rub objects on private land in Bear Management Area 5. This region is just east of the area surveyed in 2014 and is more than 1,200 km^2. In 2016, we will burn off all hairs present on identified rub trees and revisit each site at set time intervals to collect hair samples along a subset of known routes. We will collect hair samples from the barbs and send them to a laboratory that specializes in bear DNA analysis. The DNA will identify species, gender and unique individuals. This information will assist us in estimating the minimum number of individuals in the area. Data from the DNA analysis will also be used to perform a mark-recapture population analysis of the entire bear management area in collaboration with other partners. Collecting hair from rub objects is considered to be a safe, non-invasive and effective technique to gain valuable information on population size, density and distribution of grizzly bears.

Results

In 2014, we completed surveying 48 of 65 routes identified in our study area. In many areas, several factors prevented us from accessing the backcountry. For this reason, we only partially completed an additional 10 routes. Logistical constraints that contributed to partially completed and uncompleted routes included high water flows, washed-out trails and bridges, and technical terrain. Despite these challenges, approximately 580 km of trail were surveyed by 14 people along various routes from June to October 2014. We located and set up (attached barbed wire and identification tag) 415 rub trees on Crown land in Bear Management Area 5 in southwestern Alberta.

Conclusions

Ongoing concern exists over the frequent conflict between humans and bears in southwestern Alberta. Bears and the ranching community are attempting to coexist on the landscape, although natural attractants and abundant food sources found in agricultural operations (livestock depredation, grain bins or silage) often lead to conflict. A large industrial footprint also exists in the region with an associated network of access 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. An accurate population estimate will be important for understanding human-bear conflicts and for proactive land-use planning designed to reduce these conflicts.

In 2015, we will continue to intensively search for rub objects on private land in Bear Management Area 5. These rub objects will contribute to the detection of more individuals, and DNA analysis will provide information on coarse-scale habitat considerations, bear movement corridors, landscape linkages and areas of human-bear conflict.

Communications

- Helped organize and presented at grizzly bear working group discussions (Alberta Conservation Association, Alberta Environment and Sustainable Resource Development, Alberta Parks, Alberta Innovates – Technology Futures, and Parks Canada).

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 motion-triggered trail camera captured this black bear sow and cub checking out a naturally existing rub tree on a well-travelled game trail on October 15, 2014. Photo: Alberta Conservation Association

Each rub tree has a unique appearance! Alberta Conservation Association summer intern Jennifer Baker documents ecological characteristics such as tree species, rub surface size and condition, presence of hair, hair type, presence of claw/bite marks and the location of the rub tree. Photo: Mike Verhage

Unbelievably, some very active rub trees have a well-defined path, displaying individual steps on the forest floor leading up to and away from the tree, forming what is known as a “bear trail.” Photo: Mike Verhage

Though colour can be highly variable, bear hair is typically flexible and will not kink when bent. We will revisit each rub tree and collect hair samples, which will be sent to a lab for DNA analysis to identify species, gender and individual. Photo: Mike Verhage