Collect the Poop, Get the Scoop!

A Grizzly Bear Scat DNA and Citizen Science Pilot Project

www.grizzlyscatapp.ca

Alberta
Environment and Sustainable Resource Development

Alberta Conservation Association

fRI Research Growing Into Practice

INTRODUCTION

Non-invasive approaches to determine population size and monitor population trend are essential for grizzly bear recovery in Alberta. Current grizzly bear DNA inventories (barb wire hair snags) tend to be expensive and difficult to implement across large areas. In Scandinavia, bear managers advocate the use of hunter volunteers to collect scat DNA samples as a model for cost-effective bear inventory and monitoring. This approach has a distinct advantage in that it offers a robust way to assess populations and trends across large geographic areas with reduced costs, and the added benefit of engaging citizens and stakeholder groups in the collection of scientific data that is used to make management decisions. Recently, the Foothills Research Institute Grizzly Bear Program (fRI GBP) and our international collaborators in Scandinavia have made significant advancements in extracting DNA from Alberta grizzly bear scats. With this exciting development we are ready to implement a pilot project that will assess the feasibility of using scat DNA and citizen science to determine population size, abundance, and distribution of grizzly bears in Bear Management Area (BMA) 3 (see maps below).This year, the fRI GBP is also conducting a repeat of the 2004 DNA population inventory in BMA 3 using barb wire hair collection techniques. This presents a unique opportunity to test and compare the results of the scat DNA inventory against the more traditional hair DNA inventory.

To date this project has received funding support from Alberta Environment and Sustainable Resource Development (AESRD), the Alberta Conservation Association (ACA), and the Norwegian Laboratory who has agreed to process all the samples from this research project.

Project Goals

1) Engage local outdoorsmen and women to participate in grizzly bear inventory work within the Yellowhead population unit by sampling scats for DNA during the fall 2014 hunting season.
2) Compare population distribution, size and trend estimates using hair DNA and scat DNA alone or in combination.
3) Evaluate the costs and benefits associated with hair and scat DNA methods relative to population estimation, trend monitoring, and the value of engaging citizens.

CITIZEN SCIENCE… HOW YOU CAN HELP!

Citizen science aids researchers by improving the ability to collect large volumes of data across extensive areas and at a lower cost, while also contributing to the preventative and educational components of conservation. Your assistance in collecting DNA through scat sampling contributes to inventory work and trend monitoring of bear populations, which has implications for the recovery and status designation of grizzly bears.

HOW DO I GET STARTED?

Step 1

Download the app (available mid-August 2014)

Step 2

Open the app and register as a citizen scientist

Step 3

Obtain a scat collection kit from a local depot

Step 4

Get familiar with the app in advance of your first trip

Step 5

Before heading out open the app and initiate a trip so we can gauge search effort

Step 6

Head out on your first trip

WHY SCAT?

READILY AVALIBLE
Scat is fresh and plentiful in the fall as bears prepare for hiberation.

COMPLEMENTARY
DNA from scat samples relates well to existing data-sets and complements ongoing research activities.

LESS INVASIVE
Scat collection doesn't require any human/bear interaction making it less invasive than other sample methods.

EASY TO COLLECT
It is easy to collect with our provided collection kits. All you need is the app and a collection kit from one of our regional depots.

AFFORDS PARTICIPATION
Using scat DNA as an inventory method allows citizen scientists to participate in grizzly bear research.

TRANSPORTABLE
Scat is easy to carry once you have collected it in vials and it is also easy to ship to our lab in Norway for processing.

YOUR ROLE AS A CITIZEN SCIENTIST

We are asking interested citizens to take small scat sampling kits out with them during trips into the pilot study area. When a grizzly bear scat sample is found, citizen scientists will need to collect a sample of the scat. Once collected, they will log the information automatically by using the Grizzly Scat App and their smartphone to scan a QR code on the collection vial. If the citizen scientist does not have a smartphone or will be in the bush for an extended period of time, they will be provided with a portable GPS unit, where they can manually record the date, time and location of the sample collected.

We only require a small piece of the scat – approximately the size of a thumbnail – to be inserted into a vial of silica beads. The vial will be pre-labelled with a unique ID and QR code. It will also have room to manually record other pertinent information. Samples can then be submitted by dropping them off at one of our regional collection depots or through a designated representative of the study.

The app will be freely available for download from the Apple app store and the Google play store. Collection kits can be picked up at the regional collection depots. Portable GPS units will be provided by a designated representative of the study.

WHY A SMARTPHONE APP?

The provincial distribution of Grizzly Bears makes collecting large amounts of trend monitoring data (scat and hair samples) a logistical challenge. Furthermore, the human and financial resources needed are high. By developing a data collection app that runs on popular smartphones we can reach a large number of Albertans and effectively engage potential citizen scientists to collect this data on our behalf.

The smartphone app will allow citizen scientists to easily record sample information and then submit it directly to our database. Not only that, the app will keep citizen scientists informed about the status of their samples – right from its collection in the field to its arrival at the genetics lab, and the final results of the DNA analysis. As soon as we know the bear's identity, you will too, along with any other information that we may learn about that individual!

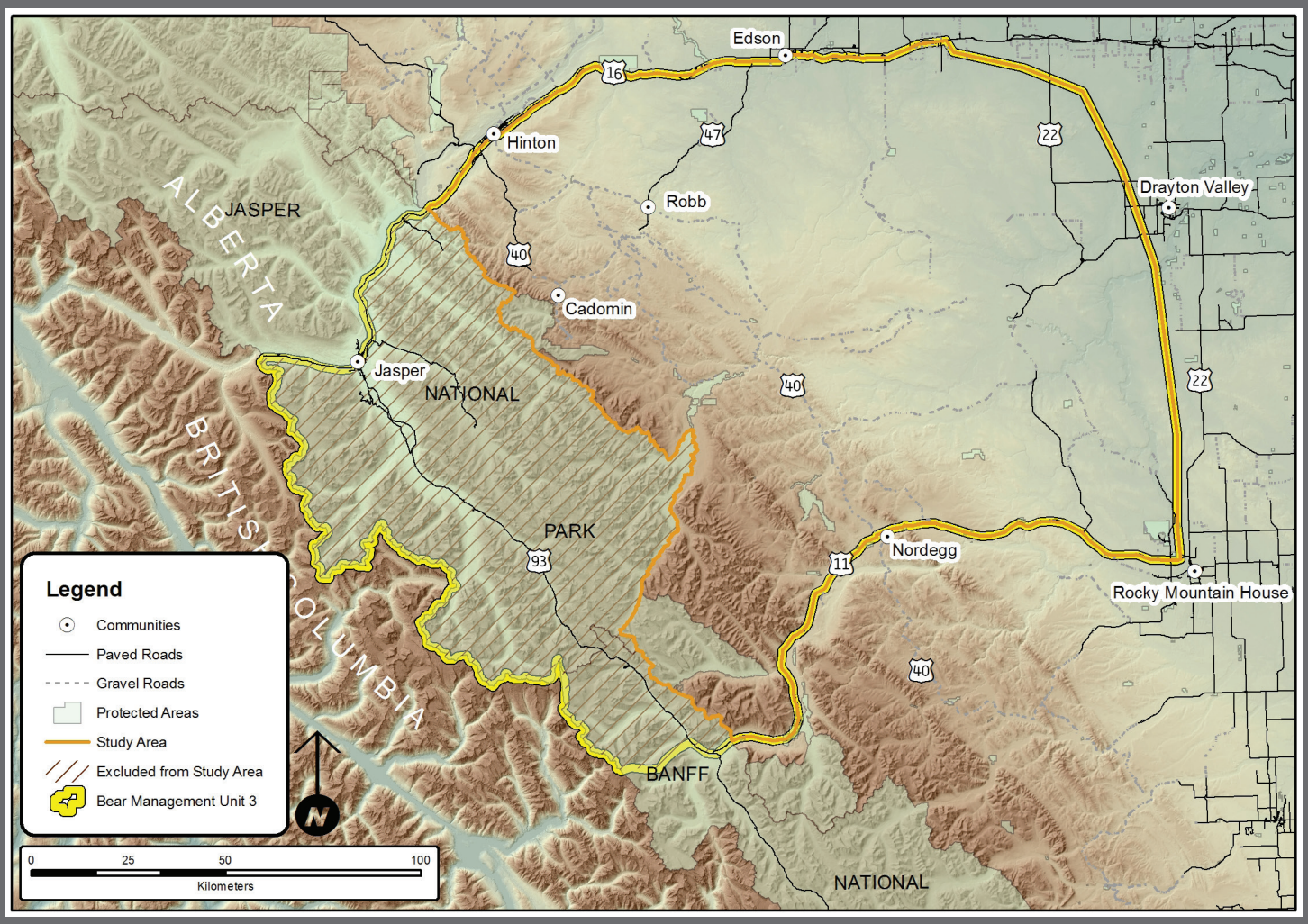
The app and data collection framework are based on three core principles: (1) easily capture data using a mobile device, (2) rapidly process live data, images or documents, and (3) transmit data to our key research applications behind our corporate firewall. More simply put, transmit the data from citizens directly into our database without the need for manual data entry and processing.

Secure – data is transmitted to our database securely
Instant – we are notified within seconds when a sample is collected
Multilayered – one app supports a variety of key research functions
Available – the app is freely available and can be downloaded by anyone

NO SMARTPHONE? NO PROBLEM!

If you don't have a compatible smartphone or will be in the backcountry for an extended period of time please contact us as you can still take part in the pilot study. We have a limited number of portable GPS units that can be used to log time and location based information when you are out in the field. The process will require more manual effort but the results are just as valuable as those collected by citizen scientists using a smartphone application. These units have a longer run time (multiple days) compared to that of a smartphone. Please contact us for more information.

PROJECT LOCATION



CONTACT INFORMATION

www.grizzlyscatapp.ca

Sean Kinney

Communications and Extension Program Lead

skinney@foothillsri.ca

780-865-8329

cell 780-817-1844

Anja Sorensen

Wildlife Biologist, Grizzly Bear Program

asorensen@foothillsri.ca

780-865-8288

Sarah Rovang

Wildlife Biologist, Grizzly Bear Program

srovang@foothillsri.ca

780-865-8312

Gordon Stenhouse

Research Scientist and Grizzly Bear Program Lead

gstenhouse@foothillsri.ca

780-865-8388

Alberta
Environment and Sustainable Resource Development

Alberta Conservation Association

fRI Research Growing Into Practice