Grizzly bears and pipelines: response to unique linear features.

2012 Project Work Plan

Foothills Research Institute Grizzly Bear Program
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1. OVERALL PROJECT GOAL:

With continued development and expansion of oil and gas pipeline operations in grizzly bear habitat, it is important to gain an understanding of the potential impacts of pipeline development on grizzly bears. At the present time, there is limited research documenting how grizzly bears respond to pipelines in western Canada. Results from this research will help resource managers to understand and predict where, when, how, and to what extent grizzly bears may utilize active pipeline right of ways (RoWs). It is our intention that this project will provide new knowledge to aid in pipeline planning and construction in grizzly bear habitat.

2. STUDY AREA:

The 2012 Kakwa study area includes the region south of the Grande Prairie agricultural zone, west to the British Columbia border, east to the Smoky River, and south near the boundary with the Kakwa Wildland and Willmore Wilderness parks (Figures 1 and 2).

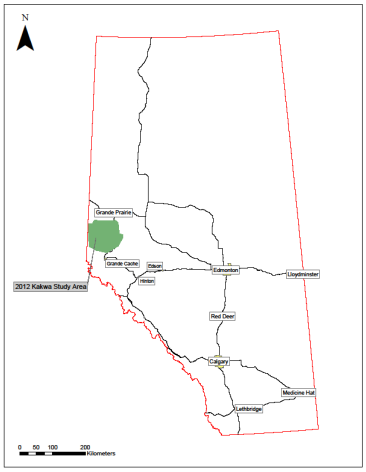

Figure 1: Kakwa study area in Alberta.

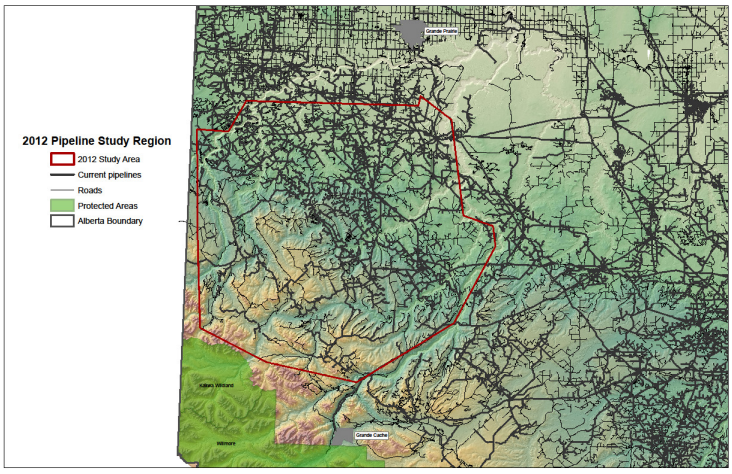

Figure 2: Kakwa study area, including existing pipelines, roads, and protected areas.

3. RESEARCH OBJECTIVES AND WORKPLAN:

1. Determine if and how grizzly bears respond to pipelines and/or how grizzly bears use pipeline RoWs, and understand whether RoWs act as travel corridors;
2. Understand how grizzly bear use of pipeline RoWs may differ from their use of roads and from travel patterns through undeveloped terrain;
3. Determine characteristics of pipeline RoWs with low, medium, or high use by bears, and/or understand how differences in habitat characteristics between different size and age classes of pipeline RoWs may affect grizzly bear pipeline use;
4. Understand if/how the use of pipeline RoWs by grizzly bears may be related to access to plant food resources, habitat, cover, or access to prey (preliminary results from Year One, completion in Year 2);

- Objectives 1 through 4 will be addressed by utilizing and expanding upon our existing grizzly bear location dataset (2006-2011) in the Kakwa study area (Figure 1) along with fieldwork completed in 2012/2013.
- Additional collars have been purchased, and five adult bears will be collared within the Kakwa study area in May/June 2012.
- Pipeline datasets are currently being assembled. To establish pipeline ROWs, pipeline data from Alberta Energy (in the form of line data) may be buffered to represent the average RoW width. Alternatively, to establish more spatially accurate pipeline ROW widths and locations, we are currently investigating the use of LIDAR data to delineate the ROWs.
- Bear movement patterns (determined from GIS analysis of location points) will be analyzed and compared along pipeline ROWs, roads, and within undeveloped terrain. Detailed analysis methods are currently being developed.
- GIS analysis will be supplemented by fieldwork investigations at selected sites within the study area during May through August of 2012.
    - Two field crews will travel pipeline ROWs and visit bear location clusters (as defined by GIS analysis) along and adjacent to pipelines.
    - Field crews will complete study plots following previously established methods of data collection at grizzly bear use sites, including: abundance/percent cover of bear foods, canopy cover, presence of beds, kill site evidence, and evidence of other bear activities (e.g. browsing, anting, digging).

5. Determine levels of human use along pipeline RoWs and probabilities of bear-human interactions.
6. Based on results from Objective 5, propose mitigation strategies for pipeline RoWs in core grizzly bear conservation zones in Alberta.

- In the summer/fall of 2012, FRI field crews will collect information regarding human use along pipelines, including:
    - Monitoring levels of human use along pipeline RoWs, using trail counters and/or remote cameras, including seasonality and type of use.
    - Determining sightability (i.e. line of sight) down pipeline RoWs that intersect with roads.
- We also plan to create GIS planning tools to assist in planning and evaluating pipeline routes in Alberta; however, research results will dictate the direction this tool development will take.

4. DELIVERABLES:

We will provide a Final Project Report of Year One activities and findings by April 1, 2013. Formal research presentations will be made at AUPRF workshops and forums each year, as well as any additional requests made by other program partners. A non-technical summary article will be provided to AUPRF for inclusion with newsletters or other communication tools. The support of AUPRF will be recognized in all papers, posters and presentations related to this research.

We will also provide AUPRF with our FRI Grizzly Bear Program Annual Report and program deliverables. Our research team will strive to present the results of this work at international scientific symposiums and conferences (International Bear Association Conferences, Wildlife Society Annual General Meetings) once this project is completed.

As is the case for all research undertaken within our research program, all results from this work will be published in recognized peered reviewed scientific journals on a timely basis.

5. PROJECT SCHEDULE:

Milestone	Timeline
1. Order Iridium GPS satellite collars (4) and capture supplies.	Completed in January 2012
2. Spring capture and collaring of 4-5 adult grizzly bears – Kakwa region.	May 1- June 30th 2012
3. Collect field data on GPS point clusters and bear foods within pipeline buffer areas.	May – August 2012
4. Collect field data regarding levels of human use and sightability along pipeline RoWs.	May – October 2012
5. Analysis of existing bear location data related to pipeline and road use.	April – October 2012
6. Monthly data collection from collared bears.	May 2011 until denning (aerial flights)
7. Analysis and reporting initiated.	September – December 2012
8. Presentations prepared for fall AUPRF workshops.	September 2012
9. Draft manuscripts underway for journal paper.	September – October 2012
10. Final analysis with fall GPS data incorporated into data sets.	November – March 2012
11. Final program report completed and submitted to AUPRF and program liaison.	March 31, 2013
12. Journal papers submitted.	May 2013
13. Application for Year 2 with AUPRF.	June 2013