

SCEK Project Profile

Project Name:	Decrease Predator Use of Petroleum Development Roads (PDR)
Project Number:	BCIP-2015-06
Proponent:	Nexen Energy ULC
SCEK Funding Envelope:	Boreal Caribou
Timeframe:	March 1, 2014 to December 31, 2014 (year 1)

Project objectives

The objectives of this project (year 1) are to:

- develop and test potential mitigation methods for minimizing predator use of Petroleum Development Roads (PDRs) and adjacent soft linear features; and
- understand current predator movements and linear feature use by establishing a baseline monitoring program.

Longer term objectives for the project (year 2) are to further test mitigation methods developed in year 1 at larger spatial scales.

Project description

This project focuses on the development and testing of innovative mitigation methods for inhibiting predator use of PDRs and the soft linear features (i.e. seismic lines) immediately adjacent to roads. Preliminary analyses of predator movement data from northeast British Columbia suggest that PDRs function as primary travel corridors for wolves (*Canis lupus*) and black bears (*Ursus americanus*; C. DeMars, unpublished data). For wolves, roads may be particularly important in the winter when plowing and snow compaction on roads offers considerable gains in movement efficiency compared to the surrounding deep snow terrain. For bears, roadsides are often the first areas to green up in the spring and could lead to bears travelling along roads into caribou habitat during the calving season. Thus, inhibiting predator use of PDRs may be key in land management strategies aimed at decreasing predator movement rates within caribou range.

The project will strategically align and collaborate with ongoing projects in Alberta that seek to develop effective mitigation techniques specifically for soft linear features. Outcomes of this project are anticipated to enhance industry operating practices aimed at reducing impacts within caribou range and effectively inform management actions for conserving boreal caribou populations in multi-use landscapes.

Project approach

Year one of the project will involve the following approach:

1. **Literature Review and Traditional Ecological Knowledge Survey**—conducting a broad literature review of mitigation techniques applied to roads and other linear features. This review will include accessing gray literature and conducting interviews with persons involved in the application of such techniques. A Traditional Ecological Knowledge (TEK) survey will also be carried out in collaboration with Fort Nelson First Nations. This survey will be used to gain First Nation insights into wolf behaviour and historical habitat use to guide the selection of study sites within the study areas.
2. **Pilot Study of Mitigation Methods**—an initial pilot study will be carried out in the Dilly region using an experimental design to evaluate a variety of mitigation techniques, including those aimed at specifically keeping wildlife off of roads (e.g. fencing methods). Based on the findings from the literature review and the TEK review. Adequately testing mitigation techniques will require selecting sites that are, or will be, frequently used by predators and, for safety reasons, away from human activity. Historical predator observation data collected by Nexen will be used to identify areas known to have been used by wolves and/or black bears and then select study sites that consist of well access roads leading to abandoned well sites (i.e., roads that are rarely, if ever, used by vehicles). Within these site(s), the use of scented bait stations and lures to draw predators into the site will be used while at the same time employing mitigation methods to keep them away from such stations. To evaluate the efficacy of potential mitigation methods, remote wildlife cameras will be used to monitor rates of predator access to pilot study sites.
3. **Baseline Monitoring in the Cordova Study Area**—remote wildlife cameras will be deployed at 1-km intervals along the proposed 34-km route to understand baseline predator activity. An equal number of cameras at a similar spacing but situated at randomly generated distances between 1-5-kms away from the proposed route will also be deployed. These “random” cameras will be maintained throughout the study and used as controls to monitor potential temporal changes in predator activity in the general area.

In the project’s successive years, the mitigation methods deemed effective from the pilot study will be expanded spatially to further evaluate those mitigation methods:

- the sampling unit will be road segments sharing similar attributes (e.g. adjacent land cover, topography) within and adjacent to primary caribou habitat. Because roads likely serve as jumping off points on to adjacent seismic lines, the sample units will include a buffer of 400-m on either side of the road. The response metric will be predator use of these road segments, which will be monitored using a combination of GPS radio collaring of wolves and camera-trapping. Previously collected data in NE BC will be used to conduct a power analysis to determine the number of road segments needed to adequately assess the remediation techniques.
- To adequately monitor wolf movements in the study areas, 6-8 radio collars will be deployed among 2-3 packs.
- After testing mitigation methods at the larger spatial scale, a cost-benefit analysis of those techniques found to be effective at minimizing predator use of PDRs and linear features will be carried out. Based on these final analyses, mitigation methods will be selected for use on the to-be constructed Cordova road. An assessment of the efficacy of the mitigation methods will be carried out through the monitoring post-construction and post-mitigation.

Project deliverables

The following project deliverables will be provided:

1. Final report describing the results, conclusions and recommendations.