

SCEK Project Profile

Project Name:	Image Age Classification System for Anthropogenic Features
Project Number:	BCIP-2015-07
Proponent:	Caslys Consulting
SCEK Funding Envelope:	Boreal Caribou
Timeframe:	May 15, 2014 to November 30, 2014

Project objectives

The objectives of this project are to:

- develop a cost-effective approach to updating the status of old linear features to improve the temporal accuracy of the data.

Project description

Conduct a pilot (using three to four SPOT scenes) to assess the cost, practicality and accuracy of using SPOT imagery to attribute existing features (e.g., seismic lines and roads) with an age class. The classification method will facilitate the addition of any unmapped linear features (i.e., recent disturbances) absent from the current datasets (i.e., Terrain Resource Information Management (TRIM) dataset and the province’s Integrated Transportation Network map).

The resultant data layers will be used to generate density maps depicting the level of human disturbance within a given area. These density maps will be used to examine the potential effects of human disturbance on the habitat of boreal caribou.

Project approach

The project will involve the following approach:

- 1. Image processing:** A classification method will be developed and applied to isolate linear features (e.g., active roads and seismic lines) from SPOT imagery.
- 2. Manual editing:** Linear feature extracted from the SPOT imagery will be manually edited to refine the results of the automated classification. This step will involve the removal of erroneously captured features, improving feature delineation, and filling in gaps resulting from shadows in the imagery. In addition, the results will be evaluated to determine the best approach to assigning an age class to each feature (i.e., establishing a threshold for overgrown features).

- 3. QA/QC and accuracy assessment:** At several stages in the process, quality assurance and quality control (QA/QC) procedures will be conducted to ensure accuracy requirements are being met. These will include the development of procedures at each step of the data capture process to quantify the accuracy of the method (i.e., what percentage of active features are being captured perfectly, only partially, or are being missed; how many features required manual editing, how well are inactive features being identified). This will facilitate a better understanding of the strengths and weaknesses of each component of the chosen approach. In addition, an accuracy assessment will be conducted to determine the quality of the resultant dataset (i.e., the assignment of date attributes). These results will be provided for review throughout the project and summarized in the final report.
- 4. Generate disturbance densities:** The attributed linear features will be used to generate density coverages depicting the level of disturbance within a given area (e.g., per square kilometre or within a watershed).
- 5. Reporting, project data packaging and documentation:** The final report will describe the methods used to capture and date the linear features. The report will provide a statistical breakdown of the captured dataset to help quantify the success of the pilot project. For example, the total length and number of missing features successfully captured, the number of overgrown features (presented as absolute numbers and percentages), the number of features in existing digital datasets not present on the imagery, and the attribute and spatial accuracy of the final product.

Project deliverables

The following project deliverables will be provided:

1. Vector format dataset containing the linear features (e.g., roads and seismic lines) attributed with an age class value.
2. Raster format dataset mapping the density of linear disturbance features.
3. Final report describing the results, interpretations and recommendations for future projects.