PAW Semester Progress Report

Project ID: Q1.1
Title: Grizzly-PAW

Institution: UBC, Vancouver
Project Supervisor: Dr. Nicholas Coops
HQP Name: Sean Patrick Kearney

Committee Members

- ▫ See Progress Report Year:__2019___ Semester___
- ▫ Names:_____ _____

Report Period

Year: ▫ S1 Summer May-Aug ▫ S2 Fall Sep-Dec ■ S3 Spring Jan- Apr

Number of Courses Left to Complete

N/A (Post-doctoral Fellow)

Tasks Completed this Semester

In February, a manuscript was submitted to the journal Forest Ecology and Management based on the analysis of the Landsat time series data combined with GPS telemetry data from collared grizzly bears across 4 BMA's to evaluate habitat selection after various types of forest disturbances. This manuscript is still under review.

Preliminary analysis was completed to model the use-intensity of road segments using social media posts, recent forest harvest disturbances, well sites and road network connectivity. Results of this analysis were presented at the Global Land Programme's Open Science Meeting in Bern, Switzerland in April.

Throughout S3, I continued supervising a worklearn student to develop a machine learning algorithm to automatically detect roads from RapidEye satellite imagery. Different parameters were tested and the final algorithm applied to a test dataset consisting of a single RapidEye tile. Post-processing steps to clean up the predicted road layer were developed using a combination of tensor stick voting, least-cost path analysis and several rulesets. The post-processing workflow is nearly complete. In addition, I requested the mobile devices used to collect road location and condition data back from industry partners and will be using the data they collected to develop a final calibration/validation dataset to improve the final model, assess accuracy and ultimately apply it to the entire Yellowhead study area.

I also organized several datasets to begin analysis on the spatial and temporal patterns of human activity within the study area. This research is being conducted in coordination with Greg Rickbeil.

Annual General Meetings		
AGM1 ■ Attended ■ Reported results	AGM2 ■ Attended ■ Reported results	AGM3 ▫ Attended ▫ Reported results

Research Targets for next Semester

In May I will be presenting a poster at the European Space Agency Living Planet Symposium. This poster will include a variant of the analysis used to produce the manuscript submitted to Forest Ecology and Management, focused on how the remotely sensed forest recovery variable contributed to modelling grizzly bear habitat selection. I will be preparing several manuscripts in S1 related to the road detection and attribution work. One manuscript will focus on the detection of roads and how a satellite-predicted road network compares to the one provided by the Government of Alberta. The other manuscript will use the

road use intensity estimates to evaluate how grizzly bears are responding to high and low intensity use roads in different catagories.
HQP Signature:  Project Supervisor Signature:  Date: May 22, 2019 Date: