Notice of the Final Oral Examination
for the Degree of Master of Science

of

JULIE FORTIN

BSc (McGill University, 2015)

“Landscape and biodiversity change in the Willmore Wilderness Park through repeat photography”

School of Environmental Studies

Wednesday, April 18, 2018
10:00 A.M.
Clearihue Building
Room B019

Supervisory Committee:
Dr. Eric Higgs, School of Environmental Studies, University of Victoria (Supervisor)
Dr. Jason Fisher, School of Environmental Studies, UVic (Member)

External Examiner:
Dr. Jeanine Rhemtulla, Faculty of Forestry, University of British Columbia

Chair of Oral Examination:
Dr. Laura Parisi, Department of Gender Studies, UVic

Dr. Stephen Evans, Acting Dean, Faculty of Graduate Studies
Abstract

Repeat photography, the process of retaking an existing photograph from the same vantage point, can give insight into long-term land cover dynamics. I reinforce the use of repeat photography to quantify landscape change in two ways: first, I demonstrate that rigorous field and post-processing methods can lead to highly accurate co-registration of images; second, I show that oblique photographs can provide land cover composition information similar to conventional satellite (Landsat) imagery for dominant land cover types, and that oblique photographs are better at resolving narrow or steep landscape features. I then present a novel approach to evaluate long-term biodiversity change using repeat photography: I measure land cover composition in 46 historical and modern photograph pairs in the Willmore Wilderness Park, Alberta, Canada, and use that land cover information as input into species-habitat models to predict the probability of occurrence of 15 songbird species. I show that coniferous forest cover increased over the past century, leading to a homogenization of the landscape which increased the probability of occurrence of forest-adapted species but negatively impacted non-forest-adapted species.