University of Victoria | Graduate Studies

Notice of the Final Oral Examination for the Degree of Doctor of Philosophy

of

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MSc (University of British Columbia, 2008)
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"Mapping and Monitoring Indicators of Terrestrial Biodiversity with Remote Sensing"

Department of Geography

Friday, December 4, 2015
9:30AM
David Turpin Building
Room B215

Supervisory Committee:
Dr. Trisalyn Nelson, Department of Geography, University of Victoria (Supervisor)
Dr. Michael Wulder, Department of Geography, UVic (Member)
Dr. Trevor Lantz, School of Environmental Studies, UVic (Non-unit Member)
Dr. Nicholas Coops, Faculty of Forestry, UBC (Outside Member)

External Examiner:
Dr. Jennifer Psyllakis, Ministry of Forests, Lands and Natural Resources, BC Government

Chair of Oral Examination:
Dr. Francis Lau, School of Health Information Science, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies

Abstract

Biodiversity is a complex concept incorporating genes, species, ecosystems, composition, structure and function. The global scientific and political community has recognized the importance of biodiversity for human well-being, and has set goals and targets for its conservation, sustainable use, and benefit sharing. Monitoring biodiversity will help meet conservation goals and targets, yet observations collected *in-situ* are limited in space and time, which may bias interpretations and hinder conservation. Remote sensing can provide complementary datasets for monitoring biodiversity that are spatially comprehensive and repeatable. However, further research is needed to demonstrate, for various spatial scales and regions, how remotely sensed datasets represent different aspects of biodiversity. The overall goal of this dissertation is to advance the mapping and monitoring of biodiversity indicators, globally and within Canada, through the use of remote sensing. This research produced maps that were rich with spatially explicit, spatially continuous data, filling gaps in the availability and spatial resolution or scalability of information regarding ecosystem function (primary productivity) at global scales, tree species composition at regional scales (Saskatchewan, Canada), and ecosystem structure at local scales (coastal British Columbia, Canada). Further, the remotely sensed indicator datasets proposed and tested in each of the research chapters are repeatable, ecologically meaningful, translate to specific biodiversity targets globally and within Canada, and are calculable at multiple spatial scales. Challenges and opportunities for fully implementing these or similar remotely sensed biodiversity indicators and indicator datasets at a national level in Canada are discussed, contributing to the advancement of biodiversity monitoring science.