



Theme 3, Project 3.6:

Understanding the trade-offs among ecosystem services

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Abstract

Nearly all forests on Vancouver Island, BC are managed for timber production with wide-spread impacts on non-timber benefits people derive from these forests. I estimate the long term recovery of a forest's capacity to provide ecosystem services, including: timber, carbon storage, edible berries, habitat for an endangered sea bird (marbled murrelet), botanical forest products, regulation of aquatic environments, and the large cedar used traditionally by First Nations. I use two approaches. First, I estimate the recovery trajectories of these ecosystem services over a 215 year period using generalized additive modelling based on data from a forest chronosequence. Second, I contrast the ecosystem services provided by second-growth and old-growth forests in two different ecosystems: a high-productivity riparian forest and a medium-productivity forest located on mountain slopes. I collected the data for the second chapter using field sampling in August 2014 at Clayoquot Sound with help from local First Nations. A key methodology I have developed and which I use in both chapters is the use of forest stand structural features (eg, trees, logs, understory plants and forest floor thickness) as biophysical indicators to estimate capacity of different ecosystem services.

Geographic Location:

Tofino Study area, BC, Canada

Vancouver Island, BC, Canada

Keywords: ecosystem services recovery, regulating ecosystem

services, riparian forests, British Columbia, salmon

How does your project link to Canadian aquatic ecosystem services?

I study the temporal dynamics of tradeoffs from logging, including terrestrial forest harvesting interactions with aquatic ecosystem services. I am also leading a multi-author CNAES collaboration, the RegES project, which seeks to conceptualize how regulating services interact to maintain the quality of aquatic ecosystem services in face of external pressures.