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

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BSc (Vancouver Island University, 2019)
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“Examining the Influence of Depth and Tidal Current on Nearshore Fish Communities Using Scientific and Citizen Science Data”

Department of Biology

Tuesday, April 6, 2021
2:00 P.M.
Virtual Defence

Supervisory Committee:
Dr. Francis Juanes, Department of Biology, University of Victoria (Supervisor)
Dr. Sarah Dudas, Department of Biology, UVic (Member)
Sharon Jeffery, Aquatic Biologist, Fisheries and Oceans Canada (Outside Member)

External Examiner:
Dr. Scott Wallace, Senior Research Scientist, David Suzuki Foundation

Chair of Oral Examination:
Dr. Jane Ye, Department of Mathematics and Statistics, UVic

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

Learning about marine ecosystems is challenging; organisms move, abiotic conditions cycle or are changing, sampling in an environment not conducive to human life is dangerous and spatially and temporally limiting, and in BC, the coastline is lengthy and largely remote. One solution to these challenges is to determine environmental conditions, that are relatively easy to sample, that correspond to changes in biodiversity. We can then infer characteristics of marine biodiversity based on the intensity or extent of the abiotic surrogate. This information can then be used to identify habitats critical for commercially important or endangered species, or habitats that support increased biodiversity or ecosystem services. To determine the success of these surrogates in explaining biodiversity requires information about taxa abundance. Gathering these data on wide temporal and spatial scales is expensive and difficult to achieve with small scientific diving crews. However, the recreational SCUBA diving community is well-positioned to aid in filling biological data gaps. In this study, depth and current speed are evaluated for their effectiveness at explaining fish community biodiversity using a scientifically collected data set and a citizen science collected data set. We found depth to be a suitable abiotic surrogate for fish species richness and abundance, but tidal current speed was ineffective at determining trends in fish biodiversity. Citizen science data were further examined to demonstrate how robust these data are for use in scientific studies.