University of Victoria | Graduate Studies

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

of

LAUREN ECKERT

BSc (University of Notre Dame, 2014)

"Towards Indigenous Marine Management: A Case Study of Yelloweye Rockfish on the Central Coast of British Columbia"

School of Environmental Studies

Friday, April 21, 2017
1:00PM
David Turpin Building
Room A144

Supervisory Committee:
Dr. Natalie Ban, School of Environmental Studies, University of Victoria (Supervisor)
Dr. Nancy Turner, School of Environmental Studies, UVic (Member)
Dr. Alejandro Frid, School of Environmental Studies, UVic (Additional Member)

External Examiner:
Dr. Christopher Darimont, Department of Geography, UVic

Chair of Oral Examination:
Dr. Stephen Lindsay, Department of Psychology, UVic

Dr. David Capson, Dean, Faculty of Graduate Studies

Abstract

Coastal Indigenous peoples worldwide have relied on fish and other marine resources for millennia, and continue to do so despite recent degradation of ocean systems. Their traditional ecological knowledge, comprised of experiences, observations, beliefs, and lifeways, is relevant for modern marine management and conservation. This thesis explores the utility of traditional and local ecological knowledge in extending scientific data baselines where such data were previously unavailable.

This thesis had three goals: 1) undertake research that is collaborative and inclusive, and addresses priorities established by involved First Nations; 2) contribute to fisheries management and conservation recommendations by focusing on a species of cultural importance and exploring the applications of traditional and local ecological to species-level understandings; and 3) contribute a marine social-ecological case study that investigates extending data baselines using traditional and local ecological knowledge and provides appropriate context. Two main objectives allowed me to accomplish my goals: 1) demonstrate the application of traditional and local ecological knowledge to establish historical baselines that extend farther back in time than scientific surveys, and investigate reasons for changes, and 2) investigate the utility of a social-ecological trap framework in assessing impacts to a social-ecological system and identifying ways to escape such a trap.

My case study occurred in collaboration with four First Nations (as many Indigenous Peoples of Canada are called) on the Central Coast of British Columbia, Canada. My methods included semi-structured interviews with knowledge holders to examine traditional and local ecological knowledge of a culturally and economically important species, Yelloweye rockfish (*Sebastes ruberrimus*). In this study, I interviewed First Nations fishers and Elders (n=43), asking about: observed changes to the body sizes (length) and abundance of this species over the last ~60 years, the factors driving these changes, stewardship principles or traditional management strategies, concerns for marine resources, and perceived opportunities for cultural revitalization. I then quantified interview participants' current and historical estimates of size and abundance, compared interview data to current biological survey data, and qualitatively analyzed responses regarding stewardship, culture, perceived threats, and cultural solutions. I utilized the framework of a social-ecological trap to analyze responses about stewardship, traditional stories or management, and threats to culture, selecting illustrative quotes to contextualize the lived experiences of participants.

Overwhelmingly, respondents had observed a decrease in Yelloweye rockfish body sizes since the 1980s. Median historical length observed by participants was nearly twice the reported modern length. Participants reported substantial decrease in Yelloweye rockfish abundance since the 1950s-1980s, and most suggested that this change was evident in the early 2000s. Sizes of modern Yelloweye rockfish estimated by participants resembled measurements from ecological data recorded concurrently at the study region. Thus, my study extends baseline historic data of Yelloweye rockfish reliably by about 50 years. Questions about traditional stories and culture revealed the presence of a social-ecological trap created and reinforced by the interplay between species decline and colonization (e.g. the residential schooling system). When asked about traditional management or stewardship practices, only one participant could remember specific traditional stories about

Yelloweye rockfish, though all participants expressed adherence to the stewardship principles of taking only what is needed and respecting all life. Though participants expressed concern about the loss of traditional ecological knowledge, culture, and language, they also highlighted key ways towards revitalization and Indigenous resurgence. The ubiquitous presence of stewardship principles suggests there are ways beyond the social trap: participants described on-going cultural revitalization efforts, recovery of depleted species and ecosystems, and the reassertion of Indigenous management rights as ways to overcome problems inherent to the social-ecological trap.

My research adds to a growing body of literature that supports the use of traditional and local ecological knowledge in marine management and conservation science. Adding to this literature, my work suggests the significant value of traditional and local ecological knowledge for filling gaps in historical scientific data or in data-poor regions, and highlights the importance of appropriately contextualizing Indigenous knowledge. To overcome the social-ecological trap of knowledge loss elicited in my study and to achieve informed marine management, reassertion of Indigenous management rights and application of traditional management strategies to modern fisheries management is vital.