

GRANTEE:

Andrea Reid

PH.D. THESIS TITLE:

Interactive stressor effects of infectious disease, climate change, and fisheries capture on the fate of Pacific salmon bycatch.

I. OBJECTIVES:

As outlined in my application, the funds granted by RCGS were used to directly support the field research required for Chapter 5 of my Ph.D. thesis, entitled “Emerging threats in an ancient context: Indigenous Elder perspectives on future Pacific salmon management.”

The primary objectives of my Chapter 5 field research in summer 2018 were to (i) conduct semi-structured interviews with Indigenous Elders residing in all reaches [lower, middle and upper] of the Fraser, Skeena and Nass watersheds in British Columbia (BC) in order to allow me to (ii) assess Elders’ threat perceptions and collate their recommendations for management with respect to Pacific salmon fisheries in their respective watershed and river reach.

Additional themes covered in the scope of the interviews included but were not limited to: changes in the timing and location of fishing activities; traditional fish-related practices; intergenerational transmission of knowledge; customary land/river tenure systems and stewardship implications; connections between stewardship, language and culture; interconnectivity of perceived threats; waste avoidance principles; and important knowledge and information-sharing gaps.

2. CHALLENGES:

There were several, mostly logistical, challenges inherent to the study design, but these did not prove insurmountable. The 17 communities included in the study spanned two-thirds of the province of BC from Vancouver to Gingolx (north of Prince Rupert) so much time was spent on the road. They were often in highly remote locations, some accessible only by forest service roads (FSR) or by boat. A concurrent issue was the distribution and severity of forest fires this past summer. My interview schedule thus required a great deal of flexibility to allow me to visit each area while minimizing each of the associated potential risks. As I was principally travelling and camping solo throughout the summer, this meant that I was solely responsible for taking all necessary safety precautions and being alert to potential dangers. These ranged from being fire-aware (e.g. always monitoring the wildfire map), to preventing wildlife encounters (e.g. ensuring no attractants at camp), to using appropriate communication technologies (such as my InReach for weekly check-ins with my Ph.D. advisors, as well as a handheld radio to avoid surprise encounters with logging

trucks on narrow FSRs). For two key, albeit short, portions of the work, I was able to employ two assistants which alleviated some of these stressors and risks.

3. SUCCESSES:

I was able to meet my main study objectives, with the content and quality of interviews exceeding my expectations, as well as those of my Ph.D. advisors. My research relationships with the nine different First Nations and 17 communities involved in the study could not have been more positive and encouraging. I received research clearance from each group and fully adhered to any established research commitments or agreements. In many instances, I was invited to introduce myself and my work at community meetings or special events. Notably, no First Nations communities or individual Elders declined to participate in the study (except for occasional logistical constraints, e.g. finding a mutually-convenient time to meet). Additionally, I was able to lead interviews with Elders in all reaches of the target watersheds. The preliminary outcomes of the research (some of which are highlighted in section 4) are so rich and varied that my Ph.D. advisors are proposing a book published by a university press as the primary deliverable. I will keep RCGS apprised of any forthcoming publications or related media.

4. OBSERVATIONS OF SPECIAL INTEREST:

The observations presented here are all anecdotal and subject to modification following the transcription, coding and formal analysis of interviews.

- *A year in fish:* Despite a singular focus on Pacific salmon, Elders frequently described an entire year in fish. For instance, starting with the return of eulachon in February (which marks the Nisga'a New Year), running through the cascade of fish that follow, and ending with late-run salmon and steelhead.
- *Use of indicator species:* Many Elders referred to indicator species used to predict the arrival of specific salmon species. For instance, when the buttercups blossom, it is time to collect spring salmon; when the crickets begin their mating chirps, it is time to begin drying sockeye salmon. This was predominantly a historical practice, but there is still some reliance on indicators to this day. Notably, there was some mention of desynchronization of indicators and the return of salmon.
- *Customary tenure systems:* This is where individuals/communities hold stewardship responsibilities for particular areas or resources. There was repeated evidence of tenures being passed down, often matrilineally. This practice seems to contribute to the generation of traditional ecological knowledge (TEK) since it is inherently place-based. Many Elders shared awareness of a high-level of detail of land and river tenures.
- *Connecting language, culture and fish:* In response to a question about what Indigenous youth can do to aid in securing a future for salmon, many Elders suggested that they first learn their language. The thinking is that by learning their

mother tongue, they necessarily are connecting with their culture, becoming 'cultural', and inherent to that is an understanding and care for the fish.

- *Social-ecological traps*: Nearly all Elders raised attending residential school (without prompting). In describing their life history, a definite pattern emerged where in their youth, they were taken to residential school, then they were forced to leave once they could read/write/do basic arithmetic at around 14-16 years old. Untrained and undereducated with a need for money to support young families, they mostly sought employment where they could – many in resource extraction industries (e.g. logging, mining etc.). They now lament how these practices have undermined their communities, propagated further poverty and damaged the fish. This could be pushing the next generation down a very similar path as they continue to be underserved, poorly educated and without alternative options.
- *Threat perception*: In response to a task where Elders were asked to select the top five threats to Pacific salmon from a list of twelve options (including an 'other' category which they can define), 'fish farming', 'pollution', 'industry', 'disease' and 'predation' dominated the responses. Many Elders noted the interconnectedness of many of the threats, and there was also a notable geography to the threats perceived – proximity to a dam, for instance, coincided with its selection as a threat. All threats were selected at least once.
- *Waste avoidance principle*: There were very frequent mentions of not wasting any part of the fish, returning fish bones to a water body, not participating in catch-and-release or "playing with food", and taking only what one needs. Most of these activities are with the ultimate aim of leaving a reproductively viable population for future generations.
- *Management recommendations*: The most common response to this prompt is that we collectively (across fishing sectors) need to give the Pacific salmon "a break", time to recover from the immense fishing pressure being placed on them in addition to other abovementioned threats present in their habitats. Many Elders advocated for shutting down the fishery for three sockeye generations (12 years). Some Elders recommended that the Truth and Reconciliation 94 Calls to Action provide a platform for Indigenous equity in Canada and could be a jumping off point for justifying more Indigenous voices heard in policies and management practices related to Pacific salmon.
- *Knowledge and information-sharing gaps*: The most common responses included: what diseases are present in Pacific salmon and do they pose a threat to people; and how are specific harmful environmental practices (e.g. specific local mines, pipelines etc.) affecting Pacific salmon. I plan to collate these questions, provide answers to Elders where possible, but also draw attention to what they identify as under-shared knowledge on behalf of the government, academics and managers.