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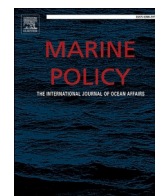
June 2020

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This article was originally published at:
<https://doi.org/10.1016/j.marpol.2020.103971>

Citation for this paper:

Beveridge, R., Moody, M., Murray, G., Darimont, C., & Pauly, B. (2020). The Nuxalk *Sputc (Eulachon) Project*: Strengthening Indigenous management authority through community-driven research. *Marine Policy*, Vol. 119, 1-11.
<https://doi.org/10.1016/j.marpol.2020.103971>.



The Nuxalk *Sputc* (Eulachon) Project: Strengthening Indigenous management authority through community-driven research

Rachelle Beveridge^{a,b,*}, Megan Moody^c, Grant Murray^{d,e}, Chris Darimont^e, Bernie Pauly^f

^a Social Dimensions of Health Program, University of Victoria, Victoria, BC, V8P 5C2, Canada

^b Institute for Resources, Environment, and Sustainability, University of British Columbia, BC, V6T 1Z4, Canada

^c Nuxalk Nation Contractor, Nuxalk Fisheries Biologist Consultant, Victoria, BC, V8T 3M9, Canada

^d Duke University Marine Lab, Nicolas School of the Environment, Duke University, Beaufort, NC, 28516, USA

^e Department of Geography, University of Victoria, Victoria, BC, V8W 2Y2, Canada

^f Canadian Institute for Substance Use Research, University of Victoria, Victoria, BC, V8P 5C2, Canada

ARTICLE INFO

Keywords:

Indigenous
Eulachon
Management
Authority
Governance
Community

ABSTRACT

Indigenous peoples and their leadership remain steadfast in their commitment to manage and protect ancestral lands and waters throughout the world. In this regard, the landscape currently known as the central coast of British Columbia, Canada represents a complex and dynamic site of collaboration, negotiation, and conflict, as Indigenous leaders assert inherent rights, responsibilities, and authority to manage ancestral territories. However, while many scholars and practitioners advocate for Indigenous involvement in today's complex environmental management domain, there are few detailed examples of how Indigenous management authority is established and practiced at the community level. In this paper, we apply a decolonizing lens to examine how Indigenous authority may be advanced from the ground up. We begin with an argument for the Nuxalk Nation's jurisdiction in the management of eulachon (*Thaleichthys pacificus*), a cultural keystone species functionally extirpated throughout Nuxalk territory. We show how the community engaged *Sputc Project* strengthened the Nation's inherent authority to manage eulachon by articulating and representing Nuxalk knowledges, broadly engaging community, and strengthening local systems of governance. Articulating key priorities for eulachon management, we suggest that the case of eulachon presents the Canadian state with an opportunity to align with inherent Indigenous rights and responsibilities and embrace collaborative, Nation-to-Nation management approaches. As such, this case study provides a practical example to inform those working toward Indigenous resurgence and self-determination, and those who wish to understand and respect these processes.

1. Introduction

For thousands of years, Indigenous peoples around the world, including Canada's coastal First Nations¹ (FN), have been sustainably managing ancestral lands and waters based on rights and responsibilities that predate colonization [1–4]. Now, Indigenous leaders and decision-makers are re-asserting these rights and responsibilities, and seeking to strengthen local management authority, including that related to marine management [5–11]. With increasing calls for Indigenous involvement in environmental management, an emerging literature details how Indigenous management authority can be supported or strengthened [5,6,8,10,12,13]. In this paper, we examine eulachon

(*Thaleichthys pacificus*) in the territory of the Nuxalk Nation as a case of contested jurisdiction in environmental management, showing how a community-driven project strengthened Indigenous authority from the ground up, and exploring its implications for the management of this endangered fish.

Given our affiliations, locations, and experiences in relation to this work, we primarily ascribe to *decolonizing* perspectives on environmental management, which emphasize Indigenous self-determination, robust if not radical resurgence [14–18], and transformative reconciliation [16]. These perspectives put into relief the processes of dispossession and resource extraction by settler-colonial states [13,19–23]. This may be contrasted with *adaptive* perspectives commonly referenced

* Corresponding author. P.O. Box 324 Hagensborg, BC. V0T 1H0, Canada.

E-mail addresses: rachelle.beveridge@ubc.ca (R. Beveridge), meganmoody@gmail.com (M. Moody), grant.murray@duke.edu (G. Murray), darimont@uvic.ca (C. Darimont), bpaul@uvic.ca (B. Pauly).

¹ First Nations are one of three categories of Indigenous peoples according to Canadian law (alongside Inuit and Metis).

<https://doi.org/10.1016/j.marpol.2020.103971>

Received 10 July 2019; Received in revised form 1 April 2020; Accepted 2 April 2020

Available online 6 June 2020

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in the environmental and resource management literatures, which focus on Indigenous participation in environmental management and integration of Indigenous knowledges into existing western processes, taking interest in social learning, collaboration, and transformation of existing institutional landscapes [24–26]. This distinction has important implications for how we conceive of Indigenous peoples' management authority, and related assumptions about the use and interpretation of Indigenous knowledges, the nature of sovereignty, the legitimacy of Indigenous legal systems, and the role of Indigenous Nations in decision-making processes involving the state [5,7,8,19,27].

Taking interest in how management authority is strengthened, we begin by articulating some key concepts. Governance includes “the mechanisms and processes by which power and decision making are allocated among different actors” [28]. Meanwhile, we define environmental management as the purposeful protection of social-ecological systems for present and future generations; this includes species and habitat conservation, planning, stewardship, and restoration, as well as enforcement of norms and laws related to harvesting, access, and allocation/distribution. Authority is created and held by defining, communicating, and enforcing norms, rules, and laws [29–32] through governance institutions that form a continuum “from the conscious to the unconscious, from the legally enforced to the taken for granted” [33]. While the state presupposes absolute sovereignty over Canadian lands and subjects, many argue that the basis of its authority (i.e. its legitimacy) is muddled, complex, and contestable [13,16,34]. Jeremy Webber (2016) details four claims related to sovereignty, one of which suggests that multiple assertions of sovereignty might exist “in a continual, unresolved – perhaps never resolved – tension” [29]. Beyond state (e.g. Canadian) law,² Indigenous peoples' authority can be sourced from inherent rights, responsibilities and relationships embedded in ancestral governance systems [29,30,35,36]. These may be derived from formalised laws or implicit norms encoded by oral histories, place names, kinship systems, and cultural practices and upheld by collective, interactive processes [30,32,37]. In this context, “law ... originates in social interaction and activities on the land” [30] and may not be distinguished from other forms of Indigenous knowledge.

Following Pasternak (2017), we suggest that jurisdiction is where the ‘rubber meets the road’ when it comes to management authority; where multiple authorities might exist, it is at the scale of jurisdiction that possible authorities are confirmed or contested, as determined by the legitimacy of related institutions and local peoples' actions on the ground [12,13,30]. As such, jurisdiction - “the power to speak the law” [13] - is essential to understanding how Indigenous authority is advanced, providing a means by which to question the state's assertion of exclusive sovereignty and interrogate the processes and institutions that have served to dispossess Indigenous peoples. It is through this reality of incomplete and potentially ungrounded jurisdiction that the potential for Indigenous authority and self-determination emerges, rather than (or in addition to) through negotiation within the mechanisms of the state. Enacted through jurisdiction, legitimacy is derived from collective recognition and understanding, as well as from the application and enforcement of related rules and norms [12,30–32]. For example, it is widely recognized that if legitimacy is contested or unrecognized by local resource users, then authority is undermined, and related conservation efforts are inefficiently enacted [12,38,39]. As individuals and communities struggle to parse local priorities (e.g. food security, cultural values) and global realities (e.g. fish scarcity, climate change) that affect access [40], their reactions to larger-scale injustices (e.g. commercial fisheries' priority) have the potential to compromise

local conservation action unless “the protection of valued resources is viewed as a shared responsibility rather than an obligation imposed from external powers” [11]. Authority matters because it determines peoples' behaviors in relation to the environment [12,38], with social and ecological implications on the ground.

The definitions above situate governance dynamics in the ancestral territory of the Nuxalk Nation, which represents a complex landscape of Indigenous leadership, contested authority, and mixed jurisdiction in environmental management [6,8–10,39,41]. Located in a region currently known as Canada's central coast, Nuxalk have never ceded rights to inhabit or manage ancestral Nuxalk territory. In this context, there is a long history of FN dispossession from ancestral lands and waters, which has undermined knowledge systems and compromised social-ecological well-being [2,42–45]. Practically speaking, the Canadian state's obligation to consult with FN regarding activities conducted on unceded territories is often poorly or symbolically executed; state institutions' biases and bureaucracies continue to replicate and reinforce colonial relationships, while management processes systematically sideline FN priorities and involvement in related decision-making [5,7,19,27,46–48]. However, resources for centralized (i.e., state) environmental management are eroding [49,50], and a rapidly evolving legal and policy context is increasingly supporting FN management authority [5,8,9,41]. For example, the Supreme Court's Tsilhq'otin decision (2014) includes both “the right to decide how the land will be used” and “the right to pro-actively use and manage the land” [51]. Meanwhile, reconciliation agreements or frameworks with state (provincial, federal) actors support – at least in principle – Nation to Nation relationships [41,52,53].

This dynamic and somewhat ambiguous governance context is creating renewed opportunity for FN leadership and self-determined initiatives in environmental management [8,10,54,55]. Challenging federal management authority, FN are taking their places as legitimate stewards of ancestral waters by upholding and formalising traditional forms of management, implementing locally-derived management priorities and practices, and exercising inherent and constitutional rights to fish and manage marine resources [6,8–10,39,41,54,56–59]. For example, Haida, Heiltsuk, and Nuu-Chah-Nulth Nations have been successful in closing highly exploitative commercial herring fisheries using court injunctions [8–10], while nearby Nations have closed crab and sea cucumber fisheries by demanding voluntary compliance with local laws by commercial fishers [39,56]. In practical terms, these examples of successful contestation of state jurisdiction represent a movement toward *de facto* legal pluralism [60,61] that recognize multiple management authorities [6,29,41]. This reality may demand substantial increases in capacity on the part of both state and Indigenous decision-makers. However, while there are increasing recommendations for negotiating authority between FN and the state [7,8,10], there are few examples in the scholarly literature of the practicalities of strengthening Indigenous management authority from the ground up in Canada.

Here, we present the case of eulachon in the territory of the Nuxalk Nation as an example of contested authority and resurgent Indigenous management. In this case, state management has failed to prevent eulachon loss in the marine environment, resulting in eulachon loss in Nuxalk territory while *de facto* management authority has been uninterrupted in areas where *Nuxalkmc* (Nuxalk people) claim continued jurisdiction [62,63]. As such, this represents a salient case through which to examine the assertion and limits of Indigenous authority. This work is based on over four years of observation, participation, and leadership in the Nuxalk *Sputc (Eulachon) Project*, a community-engaged process that documented and articulated Nuxalk knowledges about the values and management of eulachon [64]. Sharing learnings and reflections from the first two (co-lead) authors' positions as a non-Nuxalk researcher/coordinator (AA) and Nuxalk leader and director of stewardship (BB) (2013–2017), this paper constitutes a kind of ‘research-on-research’ with several objectives: (1) to present the case of contested jurisdiction

² In Canada, Aboriginal and treaty rights are recognized and affirmed by section 35(1) of the Canadian constitution (1982); supported by subsequent decisions of the Supreme Court, these rights include use and management of ancestral lands and waters (e.g. Calder (1973), Sparrow (1990), VanDerPeet (1996), Delgamuukw (1997); Tsilhqot'in (2014)).

in the management of eulachon in Nuxalk territory (outlined in study context); (2) to describe how Nuxalk management authority was bolstered by the *Sputc Project*; (3) to detail the practical management priorities that arose through the project process; and (4) to share insights about (a) what is required to assert Indigenous management authority from the ground up; and (b) how to strengthen inter-jurisdictional engagement with Indigenous authorities. In so doing, we address questions raised by coastal FN leadership, including those related to how Indigenous communities are strengthening and revitalizing their own self-governance capacities [5,11]. This work therefore has the potential to inform others working toward (or interfacing with) Indigenous self-determination, resurgence, and transformative reconciliation within and beyond state structures.

2. Methods

This paper is grounded in the first two (co-lead) authors' involvement in the *Sputc Project*, which was initiated and led by the Nuxalk Nation's Stewardship Office after being identified as a need by the community (see study context). The project employed an iterative, community-engaged methodology informed by Nuxalk ways of knowing and being [64]. The final product of the project was a full color, 172-page book called *Alhquh ti Sputc (The Eulachon Book)* [65], described in detail elsewhere [1,2]. Divided into nine sections, the book situates Nuxalk eulachon management knowledges in the context of a complex, holistic system of governance, detailing the origins of eulachon and their relationship to Nuxalk management authority, eulachon uses and values, fishing technologies, stewardship practices, cultural histories, science, and contemporary management priorities. The book details how Nuxalk knowledges inform sophisticated, sustainable methods of eulachon management, including their relevance to present and future management practices. While useful as a reference document and educational resource for Nuxalk people, the contents of *Alhquh ti Sputc* also provides a material foundation for asserting Nuxalk management authority [65,66]. The *Sputc Project* and its product thus comprise an important foundation of this paper.

Before the outset of the project and associated research, a number of permissions and approvals were obtained, based on ethical principles outlined by both community-engaged and Indigenous researchers [67–76]. First, permission was obtained from *Stataltmc*, the hereditary leaders and decision-making authorities over Nuxalk territory. Technical research agreements were signed with the Nuxalk Stewardship Office, which takes direction from *Stataltmc*, and provides technical support for decision-making by Nuxalk leadership. Approval by Band Council Resolution was also obtained as a requirement of university ethics, whose approval was also obtained through the University of Victoria's REB (protocol # 14–075, 2014–2019). Explicitly reviewing and re-visiting these foundations and their limitations established mutual expectations and understandings of research responsibilities, rights, and benefits, highlighting the importance of relationship, responsibility, relevance, and reciprocity, and provided a set of resource documents for use by future researchers.

Based in extensive participation, observation, and reflection, this paper is informed by critical and decolonizing theories [23,77–79] and an inductive, interpretive approach to knowledge documentation, assessment, and sharing. These methods are congruent with – but not equivalent to – Indigenous methods of representing and relating knowledge [80–82] employed by the *Sputc Project* itself (see Ref. [64]). As a doctoral candidate without prior relationships with the community, the first author (AA) was invited to contribute her capacity and service to coordinate the project by the second author (BB) [details redacted for anonymous review process]. BB initiated and directed the project, while AA coordinated its technical and practical aspects. Other key collaborators on the project provided cultural direction on ancestral governance history and its practical guidance of the project and related thinking (see acknowledgements).

As described in detail in Ref. [66], this research is based in the experiences and observations of AA over the course of the *Sputc Project* and her time living full-time in the community for over four years. It is informed by engagement with project materials, including historic recordings of elders (12), personal photos contributed by community members (230), maps and aerial photographs (94), videos (~200 min), and archival photographs (90). AA was also granted permission to use 12 project interviews for the purposes of this research, in addition to 12 additional interviews from a previous TEK study on eulachon [83] and dozens of unpublished documents. Over 350 pages of meeting minutes and observational field notes over the course of the project were also reviewed to inform this paper. These notes captured observations and insights from advisory meetings, informal conversations with community members, community events, feasts, and ceremonies, as well as reflections of participants and community members after project completion. Emergent themes and learnings based on these diverse sources were then developed through a series of conversations with BB to design and inform this paper.

Through her involvement in the *Sputc Project*, AA came to know its collaborators and contents intimately. Her gradual integration into the project and Nuxalk community were essential to the integrity of this research and its outcomes. Informed by relationships formed during the project, this paper therefore draws on knowledges shared by a diversity of *Nuxalkmc* community members and leaders, including cultural knowledge holders, Elders, fishers, and eulachon grease-makers. By the end of the project, the team had one-on-one conversations with sixty knowledge holders, and interacted with at least 180 of approximately 700 adult *Nuxalkmc* in the valley (through community events, workshops, and elders' luncheons). Because it focused on knowledge of a fish that has not existed in the community for upwards of 20 years (see below), participants tended to be over 40, and youth were largely excluded. Recognizing gendered roles in fishing and food preparation, both men and women were included and represented in the project.

Beginning as an outsider to the community, *reflexivity* [75,80,84–86] and *relational accountability* [71,75,82,87] were an essential to AA's research process as her position and relationships in the community evolved. Over the course of nearly four years, she recorded over 350 meeting synopses and observational fieldnote pages, documenting the project process from initiation to completion. These notes captured observations and insights from community committee meetings, informal conversations, and events, as well as responses and reflections of key participants and community members after formal project completion. Several dozen regulatory documents and related grey literature were also consulted. Fieldnotes (recorded in Evernote, imported into NVivo10) were reviewed by AA, extracting key reflections related to Nuxalk management practices and authority. Emergent themes and learnings were then summarized and developed through a series of conversations between the two lead authors.

3. Study context: eulachon management in Nuxalk territory

The region currently known as the central coast of British Columbia (BC) is home to the largest coastal temperate rainforest in the world, and a diversity of marine and terrestrial life [88]. The people of the Nuxalk Nation (*Nuxalkmc*) have inhabited this region for thousands of years, and once occupied over thirty villages in a territory of 1,800,000 ha [89, 90]. After the decimation of Nuxalk villages by smallpox in 1862, survivors moved to *Q'umk'uts* (Bella Coola); most *Nuxalkmc* there remain, at the intersection of a steep, glacier-fed river valley and the North Bentinck Arm of the Pacific Ocean [89,91]. Today, *Nuxalkmc* – including a growing number of children and youth - comprise approximately 50% of the total Bella Coola Valley population. With extractive resource industries (logging and fishing) in decline, and the impacts of colonialism ongoing, unemployment and poverty in the valley are high, with many families supplementing food and income with subsistence harvesting and food production practices.

The *Sputc Project* engaged with *Nuxalkmc* (vs. settler community members) as the original harvesters of eulachon, and as exclusive holders of ancestral management rights and responsibilities. The Nuxalk Nation is a patrilineal society, but in more recent years women and youth have been placed in leadership roles, including spiritual and technical advisors trained over a lifetime. Decisions over Nuxalk ancestral territory is the responsibility of the hereditary leaders (*Stataltmc*) and their expert entourage after discussions with their families. In this adaptive governance structure, management decisions are enacted by Nuxalk experts (e.g. river guardians), upheld by community members, and confirmed during political events, potlatches, and ceremony.

Prior to colonial contact, *Nuxalkmc* had a thriving relationship with eulachon, or *sputc*, a smelt that spawns in glacial-fed rivers in each of the four regions that constitute Nuxalk territory. A cultural keystone species [92], eulachon remain vital to Nuxalk well-being, culture, and identity [63,66,93], supporting ancestral systems of knowledge and governance [62,66,89]. Eulachon's anadromous biology means that this fish occupies two distinct bodies of water, living its adult life in largely unknown areas of the Pacific Ocean, and returning to spawn in glacier-fed rivers along the coast (see Fig. 1) [63,94,95].

Below, we outline the case for Nuxalk jurisdiction in the management of eulachon in Nuxalk territory. Given that *de facto* eulachon management by the Nuxalk Nation has been uninterrupted since colonization, *Nuxalkmc* assert authority to manage eulachon in territorial inlets and rivers, where eulachon return to spawn each year [62,65]. Moreover, whereas the marine environment outside of Nuxalk territory (i.e. Queen Charlotte Sound, a marine area) remains an area of state jurisdiction and responsibility, a lack of commercial interest or state involvement in management of the species means that it remains, in the eyes of many in this region, an Indigenous fish. Ambiguity related to jurisdictional responsibility, however, was highlighted by a sudden regional loss of eulachon. Following a gradual decline in returns attributed to changes in environmental conditions and fishing technologies [63,94], eulachon simultaneously failed to return to all rivers in Nuxalk territory in 1999. Some rivers in neighboring territories of the Central Coast have since experienced small returns of eulachon. However, on the Bella Coola River, returns have been insufficient to enable harvest (i.e. kilograms, not tonnes, of spawners). While the reasons for functional eulachon loss may be characterized as complex [95], *Nuxalkmc* experts recognize that its timing coincided with eulachon bycatch associated with an expansion of the shrimp trawl fishery into the Queen

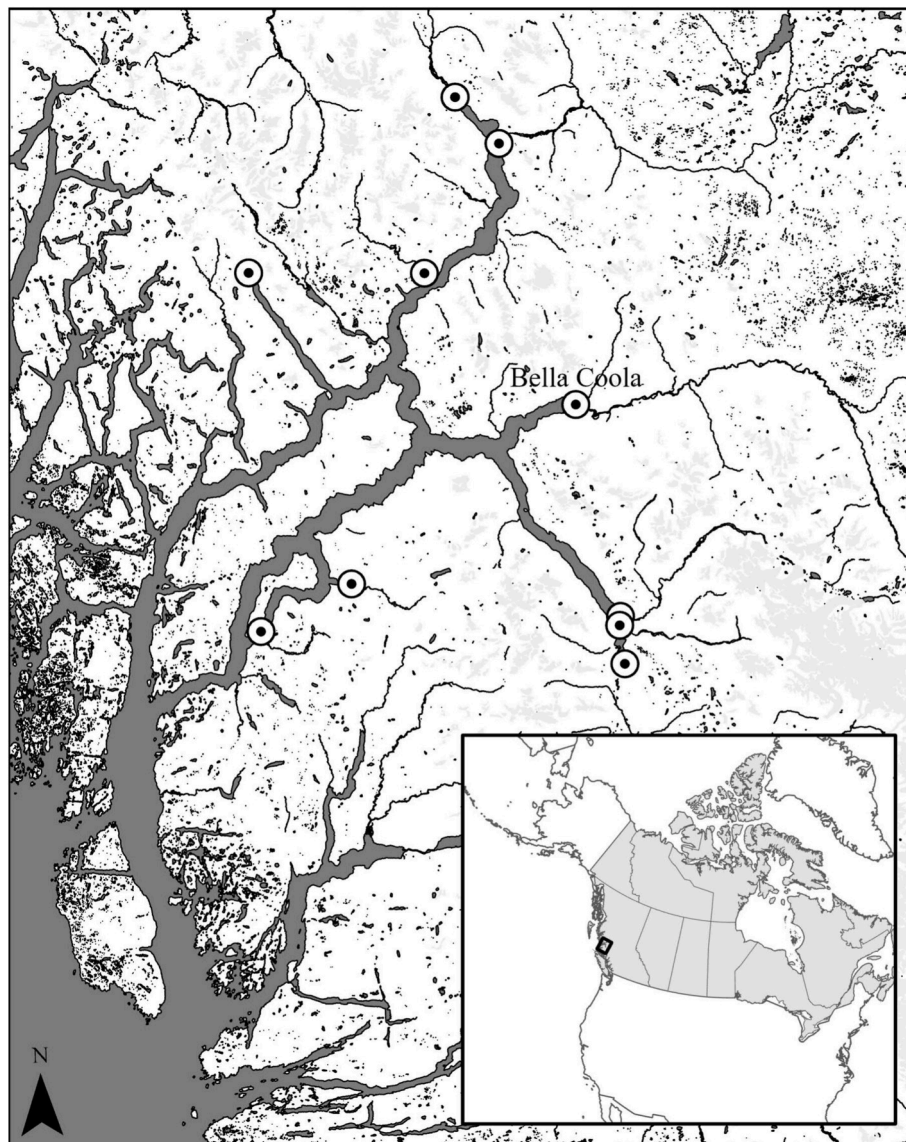


Fig. 1. Nuxalk eulachon rivers: black dots indicate rivers where eulachon were historically harvested by *Nuxalkmc* and/or significant eulachon runs in Nuxalk territory.

Charlotte Sound management area during the mid-1990s [62,63]. In response, the federal Department of Fisheries and Oceans (DFO) subsequently closed the area to shrimp trawling and imposed mandatory bycatch reduction devices in 2000. In Southern offshore management areas, additional bycatch limits have been imposed [95], while on the North coast, seasonal shrimp trawling closures have been imposed to prevent impacts to migrating eulachon. However, the effects of the latter actions to central coast eulachon populations remain unknown because the offshore areas of Central Coast eulachon remain up for debate, while the ongoing impact of shrimp trawling in nearby areas (e.g. inlets) is expected. Additional conservation intervention by the state has been slow, and research on eulachon in the marine environment has been relatively absent. As such, *Nuxalkmc* consider the federal fisheries management system as having failed to protect eulachon in the marine environment, impacting management rights, resource access, and related benefits [62,96].

Further, considering the differential impacts of eulachon loss, coastal FN involvement in state eulachon management and conservation processes has been insufficient, and input into decision-making has gone unheeded. For example, *Nuxalkmc* recognize that there is morphological diversity among different eulachon runs within Nuxalk territory [65]; a lack of consideration of input related to this diversity has resulted in the application of ecologically and culturally inappropriate management units identified by the federal government, with significant implications for future conservation action or assessment. Interview and other sources of information revealed that involvement in conservation planning has been considered limited to tokenistic consultation without meaningful consent-based engagement in the development of foundational documents. As such, the Nuxalk Nation has been reduced to participating in state management processes as one of many stakeholders, rather than a marine management process based on a Nation-to-Nation relationship. Further, although *Nuxalkmc* have advocated a precautionary approach to shrimp trawling, advising on area closures, follow through by DFO on this advice is perceived by many FN as being compromised by commercial interests.

Contested jurisdiction in the management of Nuxalk eulachon was further underlined by an official assessment of central coast eulachon as 'endangered' in 2011 under COSEWIC [97], which legally triggered their consideration for listing under the Canadian *Species At Risk Act (SARA, 2002)*. *Nuxalkmc* are concerned about SARA's potential to infringe on existing (*de facto*) Nuxalk jurisdiction. Listing under SARA would explicitly bring Nuxalk eulachon under federal regulation for the first time, such that any fishing, management, or even monitoring activities by *Nuxalkmc* would require permits and permissions. *Nuxalkmc* do not want their eulachon fishing practices determined by the federal government (DFO) dictated through the IFMP process [98]. According to *Nuxalkmc* involved, these concerns have not been explicitly addressed through the SARA consultation process. After years of inaction and uncertainty, federal decision-makers appear to be stalling on a listing decision and unwilling to consider alternative models that would recognize FN jurisdiction. A case for Nuxalk jurisdiction in the management of eulachon in Nuxalk territory is particularly relevant given the state's lack of capacity and/or will to consider and engage *Nuxalkmc* expertise, in combination with the jurisdictional challenge imposed by potential SARA listing.

Since the disappearance of eulachon, Nuxalk community members and leadership have been demanding action based on Nuxalk management priorities and authority. Beginning shortly after eulachon's collapse, *Nuxalkmc* hosted emergency meetings (2000, 2007) to garner wide-ranging support and attention for eulachon [99]. Complementing abundant ancestral knowledges generated and refined over generations, *Nuxalkmc* have become experts in eulachon science and monitoring, leading independent studies on eulachon abundance and biology in Nuxalk territory since 2001 [63]. Eulachon's possible return or restoration, paired with a widespread concern about the potential loss of eulachon-related knowledges and authorities [66,99], has highlighted

the need for *Nuxalkmc* to document and articulate remaining knowledges, including laws, values, and practices, to strengthen local eulachon management authority. As detailed above, it is in this context that the *Sputc Project* was born.

4. Results

Having presented the context of contested eulachon management authority above, in this section we address the second and third goals of this paper. First, we detail how the *Sputc Project* process strengthened Nuxalk management authority, in today's world. Then we describe the substantive nature of the knowledge and priorities documented through the *Sputc Project*, including recommendations for eulachon management in Nuxalk territory and beyond.

4.1. Strengthening Nuxalk eulachon management authority

Our experience and reflections suggest that the *Sputc Project* strengthened inherent Nuxalk eulachon management authority by: (1) enhancing local capacity for appropriate, respectful knowledge documentation, articulation, and representation; (2) upholding Nuxalk governance processes and decision-making practices; and (3) engaging *Nuxalkmc* through broad community engagement and collective responsibility. This process offered Nuxalk leadership the knowledge, background, and tools to speak strongly on behalf of eulachon, with the full support of *Nuxalkmc* and the authority of Nuxalk law. As a result, the project has been upheld by Nuxalk leaders as a model for future projects, including and beyond those related to environmental management (i.e., health, governance). Below, we detail each of these elements, while their relevance to the broader context of management of valued species (e.g. bears, salmon) in coastal areas and beyond is elaborated in the Discussion.

4.1.1. Respectful knowledge articulation and representation

During interviews, meetings, and informal conversations, it was often expressed that eulachon are central to "being Nuxalk"; the fish comprise an essential aspect of Nuxalk economics, governance, social networks, cultural values, well-being, and spirituality (see Ref. [66]). Through the *Sputc Project*, we documented and shared ancestral and contemporary Nuxalk laws, practices, relationships, norms and values, roles and responsibilities related to eulachon by purposefully engaging Nuxalk ways of knowing. In this spirit, *Alhqulh ti Sputc (The Eulachon Book)* interwove past, present and future using stories, quotes, photographs, illustrations, language, place and personal names. Contents were presented in a circular format, such that the final chapter, *Standing up for sputc*, lead back to the first chapters on Nuxalk law, eulachon origins, and story as a foundation for action. Throughout the project, we were committed to respecting Nuxalk knowledges' integrity, and strove to represent and articulate them without compromising their social-cultural context. *Alhqulh ti Sputc* was produced without referencing external knowledge systems or corroboration from Western science. Moreover, and knowledge sources and context were retained through the use of images, names, and stories in Nuxalk language, enabling direct interpretation of materials by Nuxalk knowledge holders. We aimed to promote project materials' accessibility and utility by Nuxalk Nation members and leaders, engaging the ancestral governance system to generate community-level consensus and authority to take position and act on locally-derived management priorities (see below). Over the course of the project, skills and capacity for documentation, interpretation, and representation of Indigenous knowledges and laws were built within the core project team and beyond (see Ref. [64]).

4.1.2. Upholding Nuxalk governance processes and decision-making practices

From its inception, the *Sputc Project* was intended to support a

broader agenda of Nuxalk ancestral governance revitalization, cultural strengthening, and political resurgence. Indeed, in order to articulate Nuxalk ways of knowing and managing eulachon, it was necessary to engage the ancestral governance system as a whole. Because of the deep value of eulachon to *Nuxalkmc* and a unified interest in the fish within the community, the project provided an accessible, motivating context in which to deepen this learning. Over the course of the project, we purposefully applied ancestral decision-making protocols and practices. In recognition of *Nuxalkmc*'s distributed, collective governance system (described in the study context section), the *Sputc Project* engaged as decision-makers all active *Statalmc* in their leadership roles, and involved the community at large, including cultural and technical knowledge-holders. Community consent was obtained by asking *Statalmc* to represent their families in the initiation of the project, and review and approval of the project outcomes. Other cultural and technical experts also provided advice throughout the project.

By deliberately engaging Nuxalk governance systems and decision-making processes, we intended for the *Sputc Project* to strengthen self-governance capacity within Nuxalk leadership and beyond. However, after a long history of colonial imposition, the community's detailed knowledge of the ancestral governance systems was limited. Contemporary interpretation of and engagement with the ancestral governance system remains an ongoing project involving much thought and attention, and not yet fully reestablished. As such, the project required a great deal of time, patience, resources, and human capacity (on the part of leaders, coordinator, and advisors) to learn, apply, and adapt local protocols and processes in a research context. While imperfect and ongoing, this learning is being adapted by core project team members to inform other projects (e.g. ancestral governance) and has been upheld by community members as an example of appropriate Nuxalk research methodology. By providing a platform for strengthening *Nuxalkmc* capacity and engagement in the application of Nuxalk law, we hope that the *Sputc Project* also contributed to a collective understanding of Nuxalk management authority in other management contexts (e.g. salmon, wildlife, forestry).

4.1.3. Broad community engagement and collective responsibility

Consensus and understanding around a shared responsibility to protect eulachon constitutes the foundation of Nuxalk management authority. According to Nuxalk law, management knowledges, values, and practices need to be broadly owned by the community, including family representatives and other recognized leaders, for management decisions (e.g. local regulation of fishing) to be recognized, supported, or implemented. For Nuxalk authority to be relevant at the local level, it is essential for *Nuxalkmc* to share a collective responsibility to eulachon. Otherwise, conflicting priorities and external activities impacting eulachon (e.g. commercial bycatch, federal regulation) could be perceived as unfair impediments to Nuxalk harvesting, compromising local regulation of future fishing that might infringe on important cultural identities (e.g. fisher, river guardian). With this in mind, the *Sputc Project* gathered and shared Nuxalk eulachon knowledges and laws in a participatory, iterative, and consensus-based process that facilitated extensive, long-term community engagement. This included affiliation with lands-based cultural, spiritual, and ceremonial practices (e.g. annual *Sputc Ceremony*, grease-making, knowledge exchanges with other Nations) that sought to strengthen *Nuxalkmc*'s connection to eulachon - see Ref. [64]. Enabling project recognition and buy-in from a diversity of Nuxalk community members allowed a broad range of knowledges and perspectives to guide the project, as detailed in Ref. [64]. As a result, *Alhquh ti Sputc* [65] was accessible and meaningful to a broad range of *Nuxalkmc*, and there were very few disagreements on its main messages and priorities (detailed below).

In the case of the *Sputc Project*, community agreement and collective responsibility were evidenced by well-attended community feasts and Nuxalk community open houses, and by the continued support of the annual *Sputc Ceremony* by Nuxalk organizations after the project was

finished. Distributed to almost 700 *Nuxalkmc*, *Alhquh ti Sputc* [69] was endorsed in writing by 19/21 current *Statalmc* – an unprecedented level of agreement among hereditary leadership. Following the *Sputc Project*, *Statalmc* assigned a standing committee responsibility to follow through on the priorities identified in *Alhquh ti Sputc*, including management planning and restoration, celebration, and ceremony. As such, we expect that the project will serve to increase the legitimacy of future eulachon management actions by *Nuxalkmc*, increasing local management authority. While there has been little opportunity for active management (due to continued absence of the fish), community agreement around eulachon management priorities were demonstrated during a small eulachon return in 2018, where *Statalmc*, Nuxalk guardians, and fisheries technicians successfully monitored community interactions with the fish to minimize disturbance. Meanwhile, references to the book as a source of knowledge and authority are regularly made on Nuxalk radio and community announcements. Nuxalk Stewardship Office actively plans to support the continued utility of this resource to guide Nuxalk leadership on eulachon management into the future, particularly – and critically – when harvestable numbers return.

4.2. Nuxalk eulachon management knowledges, priorities, and recommendations

The previous section outlined how the *Sputc Project* process affirmed Nuxalk management authority from the ground up. This section articulates how this authority might be practically expressed, sharing Nuxalk eulachon management knowledges and priorities within and beyond Nuxalk territory based on the substantive content of *Alhquh ti Sputc*.

During the *Sputc Project*, *Nuxalkmc* emphasized their inherent rights and responsibilities to protect and manage eulachon according to Nuxalk laws and ways, based in a long, uninterrupted history of sustainably managing the local eulachon fishery for the benefit of all beings. While *Nuxalkmc* have been deeply impacted by eulachon loss, place-based eulachon knowledges have been maintained and transmitted through everyday practices, norms, relationships, and ways of knowing and being [65,66]. We learned from knowledge holders that some specific rules and protocols (called *sxayaxw*) related to eulachon management exist, including those related to fishing commencement and allocation, and limitations on harvest techniques and technologies. However, much of what historically supported *Nuxalkmc*'s relationship with eulachon was part of *stl'cw* – the ethics, practices, and behaviors that are part of “being Nuxalk” but are rarely formally taught or explicitly stated (i.e. as in Western education); rather, they are learned through cultural teachings and lands-based practices (see Ref. [66]). These include management practices (e.g. let the first run of fish spawn uninterrupted by harvest), conservation values (e.g. not disturbing spawning habitat, respecting non-human life), appropriate, low-impact fishing technologies (e.g. using traditional cone-shaped nets that do not harm spawning habitat and primarily catch eulachon after they have spawned), cultural protocols (e.g. ensuring equitable distribution to community members, minimizing waste), roles and responsibilities (e.g. river guardians), and values (e.g. *putl'alt* – for those not yet born).

By communicating both *sxayaxw* and *stl'cw*, the *Sputc Project* supported the legitimacy of Nuxalk knowledges and institutions on their own merit; that the articulation of ancestral laws for external audiences is not necessary for their application by *Nuxalkmc*. *Alhquh ti Sputc* was not intended for use by external decision-makers without the cultural knowledge to interpret it, nor was it intended to be extracted, simplified, or otherwise decoded. Indeed, access to the book is limited primarily to community members and does not appear online. Rather, it is intended to affirm *Nuxalkmc* as self-determined decision-makers in their own right. Having independently monitored eulachon abundance since 2001, *Nuxalkmc* are also supported by Nuxalk technical and scientific presence and expertise that exceeds that of federal managers. In keeping with these strong foundations of knowledge, and supported by inherent and constitutional rights, *Nuxalkmc* consider Nuxalk jurisdiction in local

eulachon management to be non-negotiable. Eulachon management, conservation, and restoration in Nuxalk ancestral territories should be conducted by *Nuxalkmc* according to the knowledges set out in *Alhquh ti Sputc* and enacted by local leaders.

Because of the importance of eulachon to *Nuxalkmc*, what happens to eulachon in the open ocean is also deeply relevant to Nuxalk interests. However, Nuxalk eulachon management authority is complicated by the fact that the greatest impacts on Nuxalk eulachon, including commercial shrimp trawling and climate change, are occurring beyond Nuxalk territory. *Nuxalkmc* leadership therefore recognizes that conservation action in marine environments must be conducted collaboratively with other actors, including federal governments, other Nations, regional bridging organizations, and industry. Many of the insights and priorities that arose during the *Sputc Project* may be instructive in this collaboration. While the project was focused on documenting eulachon knowledges for application by *Nuxalkmc*, it enabled clear articulation of Nuxalk priorities for other actors as well. Specific management priorities beyond Nuxalk territory identified during the *Sputc Project* included: (1) closing all marine areas in Nuxalk territory, including inlets, to shrimp trawling; (2) monitoring the impacts of new bycatch technologies on marine eulachon mortality; (3) revising management areas and assessments to reflect current and historic eulachon morphological and genetic diversity; (4) increasing resources to support research about eulachon's marine range, critical habitat, and genetic diversity.

However, as detailed in the study context section, Nuxalk expertise in eulachon management (both within and beyond Nuxalk territory) is often unrecognized, and financial resources for eulachon protection and management by *Nuxalkmc* are scarce. Our experience suggests that Nation to Nation relationships in eulachon management will require an increase in state capacity and a shift in perspective on the part of the Canadian state (see discussion). Among others, Nuxalk leadership in eulachon management could affect the representation of conservation priorities and goals; for example, outcomes such as fish returns quantified based on cultural values that include fish available to eat and make eulachon grease, not just spawners on the ground. Greater involvement in management involving eulachon in the marine environment would enable *Nuxalkmc* to provide leadership based on a wealth of knowledge, balancing the disproportionately powerful influence of commercial and non-Indigenous interests over decision-making that ultimately affect Nuxalk well-being.

5. Discussion

In a complex and rapidly evolving institutional landscape, Indigenous leaders and decision-makers on what is known as Canada's central coast and beyond are asserting inherent rights and responsibilities to manage ancestral lands and waters based in their own knowledges and expertise [5,7,8,56,58,67,100]. Management authority and jurisdiction are key to decolonizing and resurgent perspectives in that they are explicitly centered on the control of lands and waters, moving beyond theoretical debates to the practicalities of what is happening on the ground [13,14,17,23,79]. Jurisdiction "differentiates and organizes the "what" of governance - and, more importantly because of its relative invisibility, the "how" of governance" [13,101]. Ultimately, jurisdiction is determined by who has established legitimacy on the ground [12,38]. In the case of eulachon, a species used almost exclusively by Indigenous people, trust in federal management processes is largely eroded, and any related regulation is unlikely to hold sway among community members. As such, it is imperative to uphold Indigenous management authority if returning eulachon are to be protected; exclusive management authority of the state must be - and will remain -contested.

In the past decade, coastal FN have asserted management authority using the tools and strategies of confrontation, negotiation, litigation, collaboration, ceremony, and celebration [8,10,39,56]. Based in our experience of the *Sputc Project*, we now explore how Indigenous jurisdiction might be advanced in the context of eulachon management, both

in terms of internal authority (legitimacy) and external authority (accepted jurisdiction). Above, we detailed how a community-driven project strengthened Nuxalk management authority by supporting internal governance capacity and broadly engaging the community in the articulation of local priorities and outlined the eulachon management knowledges and priorities generated by the project. Below, we discuss our insights related to: (1) what processes, relationships, and capacities are required to assert and strengthen Indigenous management authority from the ground up; and (2) implications of this work for inter-jurisdictional engagement of Indigenous leadership and knowledge.

5.1. Strengthening internal management authority (legitimacy)

Our learning underlined that strengthening Nuxalk management authority required engaging Nuxalk governance institutions, roles and responsibilities, and related decision-making processes, in order to enable community-engaged articulation of related knowledges and priorities. As detailed elsewhere [70], such processes cannot be separated from related cultural and spiritual practices. While FN rights and responsibilities to manage ancestral lands and waters are indisputable, the systems supporting them have been undermined by generations of settler-colonialism; as such, it cannot simply be assumed that related knowledges are intact and ready to be applied [102]. Indigenous legal scholars suggest that FN need to research and re-articulate their particular intellectual processes and ways of knowing, and how these inform both formal and informal management systems, including formal and informal decision-making processes, cultural practices and ethics, roles and responsibilities, relationships and kinship networks [30-32, 102]. This comprises, in part, what the *Sputc Project* set out to accomplish.

Unfortunately, the *Sputc Project* is only one of many examples of the challenging conditions faced by FN leaders, who often gather and protect their cultural and ecological knowledges on shoestring budgets and in a piecemeal fashion. Our experience confirmed that articulating and sharing Nuxalk knowledges required extensive internal capacities often restricted by limited human, financial, and educational resources [5,7, 12]. Working through these issues required significant financial and personal reserves. However, leveraging our initial investments and the momentum they created, and continuing to engage in similar work, has the potential to enhance the development and retention of local capacity, and to support appropriate engagement with decision-makers within and beyond Nuxalk territory.

Through this work, we also confirmed that enacting Indigenous governance institutions, decision-making protocols, and knowledge sharing practices required engagement with both political and cultural bases of authority [5,11,13,17,31,103]. Others have similarly noted that in Indigenous legal systems characterized by decentralized institutions, distributed organization, and interactive processes, collective understanding and consensus are necessary to maintain legitimacy and authority, which "result from the continual exercise of individual and collective agency and collaboration" [30]. During the *Sputc Project*, articulating Nuxalk knowledges in an accessible and relevant manner was integral to regenerating community-level agreement and responsibility around management priorities. Indeed, given the distributed nature of Nuxalk governance structures and decision-making processes [62,89], community engagement processes and collective ownership of *Sputc Project* knowledges and outcomes were key in protecting eulachon prior to colonization, and remain central to upholding Nuxalk management legitimacy. Following Shawn Wilson (2008)'s influential book, *Research is Ceremony* [86], this work therefore suggests that *management is ceremony*.

Recognizing that Indigenous knowledges should not be separated from knowledge holders [19,21,22,104,105], *Alhquh ti Sputc* was designed to be accessible, meaningful, and relevant to a wide range of Nuxalk members and leaders, such that they could participate in local

management processes as the rightful interpreters and users of that knowledge [5,105,106]. This underlined the importance of collective deliberation and interpretation of Indigenous knowledges in the process of environmental management, recognizing that “without community research participation and ownership in management processes ... the ability to interpret local knowledges is fundamentally compromised” [107]. Rather than soliciting knowledge from an elite minority of community members - as often occurs when external researchers conduct “participatory” research [68,108] - the project was set up to derive authority from a range of recognized knowledge-holders, engaging complex cultural protocol and ancestral leadership. While resource-intensive, this process provided foundation of legitimacy in the eyes of the community that will enable unified, cohesive action on identified priorities, bolstering *Nuxalkmc* capacity to engage with both community constituents and interjurisdictional management processes. Community-derived authority will help pre-empt challenges to future fishing regulation by the Nation, which may otherwise go unheeded if perceived to be externally-imposed limits on harvesting rights and meaningful access [40].

5.2. Nation to Nation relationships and indigenous knowledge

As detailed above, the case for *Nuxalk* eulachon management authority is complicated by the fact that the most important impacts occur in the marine environment, beyond *Nuxalk* control [63,94,95]. Addressing *Nuxalk* eulachon management priorities therefore also requires collaboration with actors at other levels of jurisdiction. The importance of relationships with non-state actors, including industry, NGOs and supportive public, and other FNs is recognized as key to strengthening management authority [5,8–10,109]. While negotiating directly with industry (e.g. shrimp trawlers) poses a geographic and political challenge in this case, increasing exposure via social media and public advocacy could be helpful [8]. The *Sputc Project* and other concurrent cultural, ceremonial, spiritual activities strengthened *Nuxalk* relationships with other coastal eulachon Nations, which constitute a broader alliance than those already existing. Inter-Indigenous collaboration and solidarity among eulachon Nations could support further Indigenous eulachon authority in the region, and might benefit from the example of herring management on the outer coast [8–10].

However, given the current governance structure, the state’s actions, relationships, and capacities remain of central concern when it comes to *Nuxalk* eulachon. Despite legal precedents and rhetorical attention to collaborative decision-making institutions and reconciliation, significant limitations remain in the state’s apparent willingness and capacity for Nation-to-Nation engagement [5,14,31,39,110,111]. Indeed, many have underlined how current management institutions and associated bureaucracies, biases, and funding structures reinforce colonial relationships and maintain inequitable decision-making authority and power sharing [5,7,7,19,21,22,27,108]. In addition to failing to protect eulachon from commercial shrimp trawling harms, *Nuxalk* priorities related to ocean management and research (e.g. further area closures, ocean range research, consideration of genetic diversity) have been largely ignored by the state management apparatus; as in other contexts [9], research is promised but not delivered, and extractive commercial interests predominate. As described above, the repercussions of these biases for eulachon ecology are experienced daily by *Nuxalkmc*.

For FN, interacting with state management institutions and neoliberal interests requires development of different capacities and resources than those required for local management [11,31,112], creating a semblance of low capacity beyond the local scale. Without attending to their underlying reason or source (i.e. systemic racism, settler-colonialism), it seems that these limitations are used to justify the state’s continued disengagement with Indigenous governance systems. We maintain that some Nations’ limited capacity to engage with external systems does not limit the state’s and other actors’ obligation to interact responsibly [75,85]. Indeed, while funding constraints and

internal capacity may play a role in FN collaborative potential, power dynamics and institutional biases are also essential factors [5,22,113]. Echoing others [5,114,115], we suggest that the focus of collaboration should at least equally be on increasing the capacity of external actors to engage Indigenous leadership of management processes. In a political and legal context that aspires to reconciliation and holds an increasing expectation of FN collaboration in environmental management [5], it is the responsibility of the state to “level the playing field” to engage and mediate respectful and responsible relationships [7,9]; a lack of understanding and systemic biases should not be a burden on FN.

On the part of the state, addressing institutional weaknesses involves recognizing that engaging FN “is not sufficient if it is not connected in real terms to decision-making” [5]. We are not the first to identify policy issues related to scale of management, incongruence of DFO and Indigenous laws, a lack of recognition of Indigenous rights [9], and misguided integration of Indigenous knowledges [5,7,19,27,116,117]. To this end, critical scholars have detailed necessary conditions for appropriate state engagement with FN, including retaining Indigenous knowledges with knowledge-holders, a commitment to cross-cultural dialogue and relationship-building, and institutional changes that enable Indigenous decision-making authority [5,7,24,105,114,115,118]. This entails a shift in emphasis from technical approaches to consistent, trusting relationships [5], and involves working with Indigenous people (leadership, decision-makers, and knowledge holders) rather than extracting Indigenous knowledges [22,105]. In the context of coastal management, several have detailed what this kind of change might look like on the ground in terms of systemic and relational change [2,5,7,8,28,96,116]. Among others, Nancy Turner (2008) suggests six processes to develop “a more positive and equitable basis for decision-making” around land and resources: focusing on what matters to the people affected; describing what matters in meaningful ways; making a place for these concerns in decision-making; evaluating future losses and gains from a historical baseline; recognizing culturally derived values as relevant; creating better alternatives for decision-making [2]. Suzanne von der Porten and colleagues suggest that state actors “find ways to support Indigenous nations in their own continued environmental decision making and self-determination” and “identify and engage with existing or intended environmental governance processes and assertions of self-determination by Indigenous nations” [7], creating policy that empowers Indigenous managers “to implement their own Indigenous policies” [9].

The context of eulachon management poses some unique constraints and opportunities when it comes to advocating Indigenous management authority. That many impacts on eulachon occur outside of *Nuxalk* territory reduces *Nuxalk* leverage. However, low commercial stakes, in combination with diffuse state authority on the ground [5,6,31], and legal grounds for contesting state authority [62] provide a strong rationale for *Nuxalk* eulachon jurisdiction. The case of *Nuxalk* eulachon could provide a low-stakes opportunity for the Canadian state to practice aligning with inherent Indigenous rights and responsibilities, interfacing with Indigenous authorities in a forward-thinking manner that recognizes the efficacy of local management [28,38]. Learning from recent coastal First Nations’ experiences with assertion of herring management authority [8–10,41], DFO could appropriately engage FN as self-determining governments, rather than so-called ‘stakeholders’ or actors with equal standing to other groups [27,117,119]. There is room for a shift in jurisdiction in current regulatory and legal domains of eulachon management. If the Canadian state is truly interested in reconciliation with FN, then the shifts in authority and jurisdiction suggested here are not unreasonable; indeed, they are increasingly supported by court decisions (e.g. *Delgamuukw*, *Tsilhq’otin*) [6,51], international agreements (e.g. UNDRIP), and reconciliation agreements and frameworks [41,52,53]. For the state, recognizing *Nuxalk* jurisdiction could resolve issues related to litigation and capacity, uncertainty and frustration [9]. Given increasing legitimacy on the ground, *Nuxalk* authority is also likely to be more effective in conserving and regulating

local actions.

Ultimately, from a decolonizing perspective, engaging Indigenous decision-making authority begins with an understanding of Indigenous processes and priorities. In turn, this requires revision of outdated structural and institutional frameworks, including assumptions about the exclusivity of the state's sovereignty and jurisdiction [5,7,8,20,29,105,120]. According to Leanne Simpson, the alternative to extractivism is responsibility, relationship, and deep reciprocity [14]. However, "[r]eciprocity requires time and resources" [75]. Respectful engagement of Indigenous leadership in eulachon management will require substantial capacity and resourcing, in order to be able to consider and heed, for example, Nuxalk priorities related to marine conservation and research, while supporting Nuxalk-led science, monitoring, conservation, and restoration activities in areas of Nuxalk jurisdiction. Employing the case of eulachon, state capacity could be improved by learning from a forward-thinking institutional arrangement that prioritizes Indigenous leadership.

6. Conclusion

British Columbia's coastal landscape represents a rapidly evolving site of collaboration, negotiation, and conflict related to environmental management. In the face of ongoing frustration with management processes and dissatisfaction with related outcomes, BC's FN are asserting inherent and constitutional rights to manage territorial lands and waters by articulating and applying ancestral laws, responsibilities, and practices. However, while many scholars and practitioners advocate for Indigenous involvement in environmental management, there are few detailed examples of how Indigenous management authority is established and practiced at the community level, or what is required to support Indigenous leadership. In this paper, we explored the case of eulachon as a site of potential conflict or collaboration in environmental management. We showed how a community-engaged research project (the *Sputc Project*) supported the Nuxalk Nation's management authority by articulating Nuxalk knowledges and management priorities, ensuring broad community participation, and upholding local governance and decision-making processes. In particular, this work demonstrated that broad engagement of Indigenous community members and their knowledges and establishing the cultural and political bases of authority are necessary steps to building management legitimacy within a community. Upholding *Nuxalkmc* as the rightful eulachon management authorities in Nuxalk territory, we contest exclusive state jurisdiction. Rather, in light of a political and legal context that aspires to reconciliation and holds an increasing expectation of FN collaboration in environmental management, we suggest that the case of eulachon presents the Canadian state with an opportunity to recognize *Nuxalkmc*'s inherent Indigenous rights and responsibilities related to eulachon in Nuxalk territory and embrace respectful, collaborative, Nation to Nation management approaches to eulachon outside of Nuxalk territory in offshore marine areas. More broadly, this case study provides a practical example to inform those working toward or supporting Indigenous resurgence and self-determination.

Funding

This research was supported by doctoral research fellowships from the Canadian Institutes for Health Research (CIHR), Vancouver Island University's Institute of Coastal Research, and the SSHRC Ocean Canada Partnership. The *Sputc Project* was supported by Tides Canada, Nature United, and the Vancouver Foundation. These funding sources played no role in the study design, collection, analysis, and interpretation, in article writing or in publication decisions.

Declarations of competing interest

None.

CRedit authorship contribution statement

Rachelle Beveridge: Conceptualization, Data curation, Formal analysis, Funding acquisition, Investigation, Methodology, Project administration, Writing - original draft, Writing - review & editing. **Megan Moody:** Conceptualization, Project administration, Formal analysis, Writing - review & editing, Supervision. **Grant Murray:** Conceptualization, Funding acquisition, Methodology, Writing - review & editing, Supervision. **Chris Darimont:** Conceptualization, Funding acquisition, Methodology, Writing - review & editing, Supervision. **Bernie Pauly:** Conceptualization, Methodology, Supervision.

Acknowledgements

Stutwiniitscw (thank you) to Nuxalk *Statalmc*, community members and leaders for allowing this research to take place, and to Nuxalk lands and ancestors for allowing us to be here. Nuxalk ancestral governance workers Snxakila (Clyde Tallio) and Nunanta (Iris Siwallace) for their generosity in helping us understand what is shared here; to core *Sputc Project* community advisors Sinuxim (Russ Hilland), Q'isinay (Horace Walkus), Numutsta (Louise Hilland), and Suulxikuuts (Joanne Schooner); to co-researcher Nuximlaycana (Fiona Edgar) and Stewardship Office staff; to other key *Nuxalkmc* collaborators whose perspectives informed this work, including Qwaxw (Spencer Siwallace), Asits'aminak (Andrea Hilland), Slts'lani (Banchi Hanuse), and Sq'mlhh (Jason Moody), and Wiaqa7ay (Lyle Mack); to many other *Sputc Project* colleagues and collaborators. Thanks also to others who helped us develop some of the ideas shared here, including Marianne Nicolson, Nicole Kaechele, Jennifer Silver, and journal reviewers.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.marpol.2020.103971>.

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