

Priority 5 Annotated:**How can Indigenous Knowledge Systems and governance (i.e. traditional knowledge, Indigenous science, and Coast Salish legal orders) be meaningfully applied in ecosystem recovery?**

* = not local

- (1) Breslow, S. J. (2014). Tribal science and farmers' resistance: a political ecology salmon habitat and restoration in the American Northwest. *Anthropological Quarterly*. 87(3), 727-758. DOI: [10.1353/anq.2014.0045](https://doi.org/10.1353/anq.2014.0045)

In this article, Breslow details the political clashes between commercial farmers and Indigenous tribes attempting to restore native salmon habitat in current agricultural zones, in which, paradoxically, farmers consider themselves stewards of the land while Indigenous tribes cite scientific evidence to regain treaty fishing rights. Breslow points out that while tribal leaders conduct general management of the process, the majority of Western Washington tribal scientists and attorneys are not Indigenous themselves, despite the implication of their titles, and rely on conventional Western science for research and implementation of ecosystem recovery goals. This lack of integration of Traditional Ecological Knowledge and Indigenous participation contradicts the growing movement of resurging traditional knowledge and resource management practices. Simultaneously, non-Indigenous farmers are relying heavily on local knowledge and social science to combat ecosystem recovery efforts and defend their agricultural areas which they argue they have stewarded over multiple generations. Breslow argues that conventional Western science fails to establish the social and cultural importance of environmental relationships between people and the land, in tribal or other context, yet it is still largely the primary approach to environmental management by the state. The author conducted over two cumulative years of ethnographic research in addition to conducting over 150 semi-structured interviews of tribal members, farmers, and other stakeholders. This article is useful for priority

five as it details how Indigenous knowledge fails to be recognized in the legal system and the implications of removing socioecological context from environmental management agenda.

- (2) Donatuto, J., Campbell, L. and Gregory, R. (2016). Developing responsive indicators of Indigenous community health. *International Journal of Environmental Research and Public Health*. 13(9), 1-16. <https://doi.org/10.3390/ijerph13090899>

This article describes how Indigenous community health evaluations, which are used in decision making and policy, typically do not receive input or approval from and thus are not supported by the very communities they are intended to assess, ignoring their key values of the people they are attempting to encompass. The authors assert that these health definitions are a primary interest of Indigenous communities due to their strong connection with the environment and its connection to their wellbeing. Thus, failure to include key components in the decision-making process can result in questionable legitimacy of results and in turn, ineffective policy. In collaboration with tribal representatives from six Coast Salish Tribes, the authors developed Indigenous Health Indicators (IHI) that aligned with their priorities, resulting in six indicators with correlated attributes: Natural resource security, cultural use, education, community connection, resilience and self-determination. Additionally, they indicate four key elements that should be utilized in development of Indigenous health indicator assessments: (1) acknowledgement of community self-determination; (2) effective and complete participation in decision-making by community members based on free-will and consent; (3) consistent with Indigenous definitions of health; and (4) acknowledgement and preservation of Indigenous Knowledge systems. The authors stress that in addition to developing appropriate scales that can fit the gap between western science and Indigenous cultures while protecting proprietary knowledge, it is important to understand that to Indigenous cultures no health attribute is more important than another and representing the full scale of Indigenous relationships, values and beliefs cannot be represented by a constructed scale. Two of the authors (Donatuto and Campbell) represent the Swinomish community, and helped to develop the IHIs between 2004 and 2013 through the process of interviews with Swinomish community members, staff, leaders and outside researchers. Data was then coded and cross-referenced with ethnographic records

before consulting with tribal representatives from five additional Coast Salish Tribes to further broaden the scope of IHI priorities. This article proves extremely pertinent to priority five as it addresses the current lack of recognition of Indigenous knowledge systems in policy development, and methods that can help to improve Indigenous involvement and governance in environmental decision-making.

- (3) Christie, P., Fluharty, D., Kennard, H., Pollnac, R., Warren, B. and Williams, T. (2018). Policy pivot in Puget Sound: Lessons learned from marine protected areas and tribally-led estuarine restoration. *Ocean and Coastal Management*. 163, 72-81.
<https://doi.org/10.1016/j.ocecoaman.2018.05.020>

In this article, Christie et al. describe two methods of multi-benefit planning in restoration, Marine Protected Areas (MPAs) and estuarine restoration (ER), approaches which can lead to more inclusive and collaborative decision-making and greater recognition of Indigenous treaty rights and governance. Unfortunately, MPAs have been declining in popularity largely due to a lack of support from local tribes who feel that no-take MPAs could potentially impact their fishing and harvest rights. The authors suggest that future MPAs should have an inherent focus on tribal responsibilities, rights, and policies; be inclusive of a diversity of values; and work towards important and recognized ecosystem recovery objectives. In addition to lack of knowledge and respect for tribal rights, current MPA planning appears to have minimal public involvement (Christie et al. cite 4% of those surveyed were involved in the decision-making process), suggesting that more effort should be invested in building trust and fostering relationships between all parties (state, federal, tribal governments as well as the public) to develop support for MPAs. The authors conducted a multi-method approach through partially randomized in-person social surveys, interviews, workshops, personal communication, and literature analysis. One limitation is a lack of tribal interviewees for the MPA case study due to lack of tribal government approval. This literature is relevant to priority five as it emphasizes the importance of Indigenous governance recognition for ecosystem recovery.

- (4) Hanson, E.M. (2008). Coast Salish law and jurisdiction over natural resources: a case study with the Tsleil-Waututh Nation (Masters Dissertation). The University of British Columbia, Vancouver

This dissertation examines impacts of the Crown's legal mandates on the Tsleil-Waututh Nation of Vancouver, British Columbia, specifically, the implications of the development consultation process on tribal jurisdiction over natural resources and how this impacts the tribe's ability to affirm their own governance. The author asserts that Canadian law fails to protect constitutionally-protected tribal authority and rights, instead considering them an aspect of the Crown's decision-making process rather than a separate self-governing entity, while undermining their control over natural resources within their territory. Hanson elaborates that the First Nations face the difficult decision of participating in a continued colonial relationship of historical dispossession, or remain silent and risk loss of territory through projects implemented without their consent. The author states that while the consultation process is touted as a method of reconciliation, it is constructed in a way that eliminates tribal authority in the decision-making process by overwhelming the tribe's resource capacity, instead of positioning them to regain jurisdictional control. Hanson conducted interviews and observations of Tsleil-Waututh Nation community members, staff, legal counsel, and consultants, as well as reviewed case laws and public documents. This dissertation proves relevant to priority five as it details how Canadian legal systems limit Indigenous governance and what this means in regards to ecosystem recovery. It also discusses tribal management of natural resources under Indigenous laws and governance.

- (5) Fediuk, K. and Thom, B. (2003). Contemporary & desired use of traditional resources in a Coast Salish community: implications for food security and aboriginal rights in British Columbia. *26th Annual Meeting of the Society for Ethnobiology*, Seattle, Washington

This article examines the actual and desired harvest rates of traditional foods for the Hul'qumi'num Treaty Group of Canada, and barriers to desired rates of harvest. The authors argue that despite legal recognition to harvest through the Canadian Constitution Act of 1982, the Hul'qumi'num peoples still experience significant political, cultural, and logistical barriers to

traditional life ways including competing worldviews, privatization of lands and resources, governmental restrictions, overharvesting, pollution, development and zoning, and poverty. Recent statistics show that only a small amount of fish, meat and poultry consumed by the Hul'qumi'num tribes are harvested through traditional methods such as fishing and hunting, with only 2 of 188 culturally relevant species being cited as adequately sourced. Government barriers was the highest referenced barrier to resource access by 31.1% of all respondents, with many citing legislations, permits and licenses, mismanagement of resources, firearm restrictions, harvest restrictions and fear of arrest. The data analyzed was collected in a 2001 study including 191 households within the Hul'qumi'num community, consisting of 77% on reservation and 23% off-reserve households. Limitations of this literature including limited historical data on traditional harvest rates of which to provide a baseline for comparison. This article proves relevant to priority five as discusses barriers to tribal access and management of traditional resources and governance, and how legal systems (the Crown) influence Indigenous jurisdiction.

- (6) Muller, M.K. (2018). Promoting or protecting traditional knowledges? Tensions in the resurgence of Indigenous food practices on Vancouver Island. *The International Indigenous Policy Journal*. 9(4), 1-18. DOI: 10.18584/iipj.2018.9.4.4

In this article, Muller details the contradictory forces occurring among the renewal of traditional food practices among Indigenous peoples in Western Canada between increasing efforts to build awareness and inclusion in natural policy and safeguarding Indigenous knowledge and resources. The re-establishment of traditional food practices (including harvesting and preparation of wild foods) is intended to be a resolution for food insecurity, cultural suppression and limited sovereignty among Indigenous communities who have historically been deprived of these rights and in turn subjected to increased diet-related diseases as well as social and environmental obstacles. The author highlights the complications of incorporating Indigenous knowledge systems into a Western policy framework, including the extraction and potential commodification of context-based sacred knowledge, the potential associated environmental costs (e.g., potential decline of biodiversity), and the possibility of land privatization. Muller asserts that policy makers should consider the risks that Indigenous communities are subjected to

when openly sharing this information, and that by sharing this knowledge they are not forfeiting control of it. This data was collected by the author over the period of a three-month 2013 field study in Nanaimo, British Columbia in which they attended community events and public protests and conducted unstructured interviews. Potential limitations include lack of trust between interviewer and interviewees. This article is extremely relevant to priority five as it details barriers of operationalizing Indigenous knowledge in policy, as well as potential tools to overcome these challenges.

- (7) Norman, E. S. (2012). Cultural politics and transboundary resource governance in the Salish Sea. *Water Alternatives*. 5(1), 138-160.

This article reviews the social and political influence of the Coast Salish Aboriginal Council on transboundary water governance across the U.S.-Canada border. Norman emphasizes the “scaling up” of individual tribes into a collective Council, accentuating the connectedness of the Salish Sea ecosystem despite political (U.S. and Canadian) boundaries as part of the effort to reassert traditional Indigenous governance. The author suggests that remodeled governance systems such as the Coast Salish Aboriginal council can aid in breaking down imposed borders by created socially defined geographic regions (through shared values) while reconnecting Indigenous tribes and bands across these borders to aid in the fortification of self-determination and jurisdiction of historical Indigenous space. Norman, a Coast Salish Tribal college faculty member, attended Coast Salish gatherings between 2005 and 2008, in addition to conducting interviews of natural resource management tribal employees and council members. This article is useful for priority five as it details Indigenous governance of natural resources across Salish Sea boundaries.

- (8) Norman, E. S. (2019). Finding common ground: negotiating downstream rights to harvest with upstream responsibilities to protect- dairies, berries, and shellfish in the Salish Sea. *Global Environmental Politics*. 19(3), 77-97.

https://doi.org/10.1162/glep_a_00516

This article details the Portage Bay Partnership between the Lhaq'temish people of Lummi Nation and agricultural stakeholders in Lynden, Washington, with the goal to reduce upstream pollution from agricultural applications which render traditional shellfish beds unusable. The article details the challenges of the agreement including disagreements between parties, farmers lack of willingness to accept responsibility (for the pollution), opposing worldviews, differing governance systems, and differing starting points. Norman expresses that partnerships such as this one, despite its setbacks, are a step forward in reversing colonial framework which disenfranchises Indigenous communities by connecting diverse peoples through shared goals, values, and trust. The author stresses the importance of context of human-environmental relationships when acknowledging Indigenous governance frameworks; while in Western management, natural resources are often commodified and disconnected, Indigenous relationships with the environment are more reciprocal and entwined with wellbeing, requiring a deeper awareness and understanding of cultural differences in policy development. Norman witnessed the signing of the partnership agreement as well as several key meetings between parties first-hand. This article proves relevant to priority five as it discusses methods (e.g., partnerships) that can aid in operationalizing Indigenous knowledge in environmental management and what this can mean for ecosystem recovery.

- (9) Von der Portnen, S. and de Loë, R. C. (2013). Collaborative approaches to governance for water and Indigenous peoples: a case study from British Columbia, Canada. *Geoforum*. 50, 149-160. <http://dx.doi.org/10.1016/j.geoforum.2013.09.001>

This article examines the barriers and conflicts to collaborative water governance between the Canadian Crown and Indigenous peoples. The authors suggest that current collaborations fail to recognize Indigenous self-governance as defined by the First Nations people, and instead are considered to be among the numerous stakeholders which fails to acknowledge Indigenous peoples as the original landowners. Suggestions for improved collaboration from the First Nations peoples include: engaging and building relationships with the First Nations people; select processes and venues representative of Indigenous processes. Additionally collaborators should take into consideration current or planned environmental governance programs or efforts under First Nations environmental governance; re-evaluate preconceived outcomes; and strive

for significant and purposeful collaboration that involves First Nations people throughout the decision-making process. The authors conducted a series of interviews with both Indigenous and non-Indigenous peoples involved in the collaborative water governance process which was then coded and analyzed via QSR NVivo 8, in addition to personal observations and literature reviews. This article is relevant to priority five as it suggests tools and methods to overcome barriers that arise during the collaborative governance process.