Inclusion of Indigenous Knowledge Systems in collaborative fisheries management can improve fisheries sustainability and strengthen ecosystem resilience

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Summary

Indigenous Peoples have long interacted with the biosphere in ways that promote reciprocal relations between human and other-than-human beings, supporting resilient societies and ecosystems. These relationships are upheld by laws, values, and empirical ways of knowing that thrived until colonization disrupted Indigenous cultures. Yet despite those disruptions, across the world Indigenous Knowledge Systems (IKS) endure. As countries wrought from colonial violence seek to reconcile colonial systems that cause harm to address and rectify systemic injustice through acts of decolonization, settler scientists and resource managers increasingly recognize that the complementarity of IKS and Western science can advance ecological knowledge and improve the policies that govern human relationships with the biosphere. In Canada, Fisheries and Oceans Canada (DFO)—the federal department responsible for ecosystem and resource management in marine waters—is tasked with implementing recent legislation that mandates the inclusion of IKS in fisheries management. Yet despite DFO's good intentions, operationalizing the pairing of IKS and Western science into policies and practice can be difficult. Accordingly, this report summarizes concepts, arguments, and recommendations for how DFO policies and management actions could be transformed to make collaborative fisheries management inclusive of IKS and better support fisheries sustainability, ecosystem resilience, and social justice.

1. Introduction

Canadian fisheries management arose from injustices to Indigenous Peoples. On the Pacific Coast prior to European arrival, for example, populous societies thrived and developed advanced technologies to selectively harvest marine life (e.g., Morin *et al.* 2021). These societies developed systems to intentionally and respectfully manage their relationships with the species and ecosystems that provide food, medicines, and materials, allowing thousands of people to live in place while enhancing local biodiversity (Campbell & Butler 2010; Mathews & Turner 2017; Salomon *et al.* 2023). Colonizing Europeans disrupted these relationships, commodifying marine life and endeavouring to eliminate or assimilate Indigenous Peoples (Claxton 2019; Silver *et al.* 2022). As commercial fisheries and salmon canneries expanded during the 1800s, "Indigenous [P]eoples' fishing methods and rights clashed with industrial fishing, and Indigenous fishing methods, such as weirs and inland netting, were blamed for poor salmon runs and subsequently banned or destroyed in some areas (Castañeda *et al.* 2020)." A similar history of power imbalance between Indigenous stewardship and Eurocentric exploitation extends to Canada's Arctic and Atlantic coasts (Denny & Fanning 2016; McMillan & Prosper 2016; Snook *et al.* 2022).

Canada's Eurocentric framework for fisheries management was formalized in 1867 when the federal agency now known as Fisheries and Oceans Canada (DFO) was established. DFO is tasked with ecosystem and resource management for marine waters and, until recently, has excluded Indigenous Knowledge Systems (IKS, see Box 1) from all aspects of fisheries management (Claxton 2019; Castañeda *et al.* 2020).

Box 1. Defining Indigenous Knowledge Systems. (Adapted from *Frid et al.* 2023).

Indigenous Knowledge Systems (IKS) encompass concepts that vary between Indigenous cultures while maintaining key centralities. Anishinaabe scholar Deborah McGregor (2021:3) defines IKS as "the broader political, legal, economic, and cultural systems that enable the continued generation and renewal of Indigenous peoples to ensure their well-being." Similarly, Potawatomi scholar Kyle Powys Whyte (2013:5) refers to IKS as "the living environmental governance of indigenous peoples stemming directly from their cosmologies in relation to the environmental challenges they have faced over many generations." Both authors highlight the inseparability of IKS from the people and lifeways from which they originate.

Despite the damages wrought by colonization, Indigenous Peoples endure. Recent decades have seen an upsurge in the revitalization of their cultures and authority. As part of this renewal, Indigenous Peoples in Canada and elsewhere have demonstrated their adaptability and willingness to complement IKS with new methods and technologies, including Western science, to inform *their own* decisions pertaining to marine spatial planning, fishery management, and other human behaviors in their territories (Reid *et al.* 2022; CHN *et al.* 2023; McAllister *et al.* 2023). Over time, the adaptability of IKS gave rise to the notion of Two-Eyed Seeing—a term coined by Mi'kmaw Elder Albert Marshall to encapsulate the pairing of Indigenous and Western knowledge systems in ways that meaningfully embrace pluralism and social justice (Reid *et al.* 2021).

At the same time, Canada is becoming more willing to reconcile with ongoing systematic marginalization of Indigenous Peoples. Recent agreements between Indigenous, federal, and provincial governments are creating a new legal landscape that could, potentially, allow collaborative fisheries management to become inclusive of IKS and Two-Eyed Seeing. In this context, collaborative fisheries management is defined as joint management of fisheries (including spatial protections) by Indigenous Peoples and DFO, as structured under co-governance agreements. Examples of such agreements in British Columbia include the Fisheries Resources Reconciliation Agreement (FRRA) (FRRA 2021) and governance of the proposed Marine Protected Area Network for the Northern Shelf Bioregion (MPA Network BC Northern Shelf Initiative 2023). If supported by commensurate policies and management practices, these and similar agreements could enable a new era in which collaborative fisheries management meaningfully supports social justice, fisheries sustainability, and ecosystem resilience.

Existing policies, however, are insufficient to enable this potential. Since 2009, the management of all federally managed fisheries has been guided by the *Sustainable Fisheries Framework*, a policy umbrella that incorporates the precautionary approach, strives for ecosystem-based management, and prescribes requirements for stock assessments (DFO 2009b). The policy, however, has been largely exclusive of IKS. Intentional or not, that exclusivity

does not align with the *United Nations Declaration on the Rights of Indigenous Peoples Act* Action Plan (i.e. UNDA Action Plan) (Department of Justice Canada, 2023), DFO's Reconciliation Strategy[1], or the Government of Canada's commitments outlined in "Principles respecting the Government of Canada's relationship with Indigenous peoples."[2] This problem prompted Frid *et al.* (2023) to examine how the precautionary approach inherent to the Sustainable Fisheries Framework could be revised to make collaborative fisheries management inclusive of and compatible[3] with IKS.

This document summarises and builds on the main arguments developed by Frid *et al.* (2023) to highlight potential ways to operationalize collaborative fisheries management in ways that are meaningfully inclusive of IKS and Two-Eyed Seeing. Its objectives are to (1) summarize the concept of Two-Eyed Seeing and its role in improving management decisions (Section 2), (2) describe the current paradigm for fisheries management in Canada and its incompatibilities with IKS (Section 3), (3) summarize arguments for how policies for collaborative fisheries management could be transformed to become more inclusive of and compatible with IKS, (Section 4), (4) suggest a suite of indicators for measuring progress towards that transformation (Section 5), and (5) describe the current policy landscape enabling progress and recommend policy changes (Section 6).

2. Why Two-Eyed Seeing is important for managing human-ocean relations

Despite the global diversity of Indigenous cultures, IKS throughout the world tend to have an important commonality: they uphold respect, balance, interconnectedness, intergenerational knowledge, and reciprocity as key principles governing relations between human and other-than-human beings (McMillan & Prosper 2016; McAllister *et al.* 2023; Salomon *et al.* 2023). Adaptability is another commonality, which has led many Indigenous Nations to embrace Two-Eyed Seeing as a framework for transforming relations between people and the biosphere (Reid *et al.* 2021; McAllister *et al.* 2023).

IKS holistically intertwine governance, ethics, values, empirical observations, harvesting practices, and other elements that support and enrich—spiritually, socially, and materially—the peoples who give rise to such knowledge (Whyte 2013; McGregor 2021; McAllister *et al.* 2023). IKS recognize the primacy of interconnections between species and between spaces to the resilience of socio-ecological systems[4], and therefore overlap with elements of Ecosystem Based

[1] DFO's Reconciliation Strategy. Available at: https://www.dfo-mpo.gc.ca/fisheries-peches/aboriginal-autochtones/reconciliation-eng.html

[2] Principles respecting the Government of Canada's relationship with Indigenous peoples. Available at: https://www.justice.gc.ca/eng/csj-sjc/principles-principes.html

[3] The term "inclusive of" refers to the actual participation and contribution of IKS practitioners in fisheries management, whereas "compatible" refers to EBFM approaches that reflect IKS principles.

[4] As defined by the Resilience Alliance: "Resilience is the capacity of a social-ecological system to absorb or withstand perturbations and other stressors such that the system remains within the same regime, essentially maintaining its structure and functions. It describes the degree to which the system is capable of self-organization, learning and adaptation." In addition, "Social-ecological systems are complex, integrated systems in which humans are part of nature." Available at: https://www.resalliance.org/resilience

Fisheries Management (EBFM)[5] (reviewed in Frid *et al.* 2023). Yet the overlap is incomplete. Among other differences, IKS often encompass longer historical baselines and have superior knowledge of local ecologies, while Western science applies general theories derived from global perspectives and technologies that extend observation beyond the unaided human senses (e.g., satellite imagery, hydrophones) (Ban *et al.* 2018).

Critically, IKS encompass legal and ethical responsibilities to manage human activities in ways that support reciprocal and respectful relationships between human and other-than-human beings, transcending many limitations of Western science (McGregor 2021; McAllister *et al.* 2023; Salomon *et al.* 2023). That is, IKS explicitly recognize human values as important drivers of ecosystem dynamics and resilience, intentionally guiding ethics, decisions, and behaviours that uphold those values. In contrast, human exceptionalism and utilitarian views of "nature" often influence the goals and applications of Western science, even in an EBFM context (Muradian & Gómez-Baggethun 2021; McAllister *et al.* 2023; Salomon *et al.* 2023).

As summarized by Jennifer Walkus, Two-Eyed Seeing practitioner from the Wuikinuxv Nation, "When the Indigenous eye and the Western scientific eye look at the same problem together, they can create a much clearer picture. They can pair the holistic, place-based, deep-time-rooted knowledges of Indigenous Peoples with the technologies and methodologies of Western science to create a more ecologically balanced view of the world (Frid *et al.* 2023)."

3. The current paradigm for fisheries management in Canada

Many Canadian fish stocks began to decline in the 1980s and remained depressed in the early 2000s (Hutchings *et al.* 2012). These negative trends prompted DFO to implement in 2009 the *Sustainable Fisheries Framework* (DFO 2009b), which contains policies that contribute to biodiversity protection via bycatch management, protection of sensitive benthic habitats, and other measures. The framework includes *A Fishery-Decision Making Framework Incorporating the Precautionary Approach* (for brevity, the PA), the policy which determines targeted fishery removals (DFO 2009a) and arguably has the strongest influence on marine ecosystems outside protected areas. Further improvements came in 2019, when changes to the *Fisheries Act* mandated rebuilding plans to inform management decisions (Parliament of Canada 2019). These policy improvements have merit but as detailed below, the PA excludes IKS and prioritizes commercial fisheries yields over broader socio-ecological objectives, leaving much room for improvement.

Key features of the PA policy

The PA policy is intended to be consistent with ecosystem approaches to fisheries management and contains aspirational language for "factoring in ecosystem considerations" into decisions (DFO 2009a). In practice, however, management decisions are made, almost entirely, at the level

[5] Ecosystem Based Fisheries Management (EBFM) is a branch of fisheries management which considers interactions among species (including people) and physical elements of ecosystems, as informed by Western science.

of single stocks of commercial value (Pepin *et al.* 2022) and focus on the short-term, limiting the consideration of long-term environmental trends (Pepin *et al.* 2023).

The PA policy applies biological reference points[6] to determine the status of individual stocks and their allowable catches. Individual stocks are deemed to be in the "healthy zone," where the largest catches are allowed, if abundance exceeds an "upper stock reference point (USR)". If abundance drops below the USR, the stock's status enters a "cautious zone" where catches are downscaled proportionally to declining abundance. If the decline continues below a "Limit Reference Point" (LRP)", the stock's status enters a "critical zone," where fisheries mortalities should be set as a low as possible. While the PA policy does not define the lowest possible level, this is often applied by allowing for some bycatch from fisheries targeting healthier stocks with unselective gear (e.g., trawls, longlines). Stocks in the critical zone require a rebuilding plan. Additionally, fishery decisions may also consider a "target reference point" for which abundance exceeds the USR, but this is only aspirational; the policy does not mandate reduced catches when stock abundances are less than the target reference point but above the USR (DFO 2009a). Biological reference points require quantitative thresholds demarcating boundaries between stock status zones. The PA policy acknowledges different options for determining those thresholds, yet it also provides default "provisional" values based on biomass levels required to support harvests at Maximum Sustainable Yield (MSY)[7]. These "provisional" values have played a major role in managing most commercial stocks (Marentette *et al.* 2021).

The *Fisheries Act* underwent amendments in 2019 to reinstate lost protections for fish habitat and necessitate rebuilding plans for critically depleted stocks prescribed in regulation, and in April 2022, the Fishery (General) Regulations were also amended to specify the requirements for these plans (Government of Canada, 2022; DFO, 2022a, 2022b). To date, the regulations apply to thirty stocks, with nearly half of them in a critical state, mandating the development of rebuilding plans within 24 months (by April 2024), extendable by 12 months if necessary. A second batch of 62 stocks were proposed to be listed in the regulations, with DFO aiming to prescribe most remaining stocks in subsequent batches (Government of Canada 2022).

Incompatibility of the PA policy with IKS

Despite the PA's intention to provide a basis for ecosystem approaches for fisheries management, decisions and management actions supported by the policy have, so far, rarely accounted for species interactions or changing ocean conditions under climate change (Pepin *et al.* 2022; 2023). More generally, the widespread use of MSY-based biological reference points under the PA policy, though consistent with current international standards, is incompatible with IKS and fails to meet broader socio-ecological objectives (reviewed in Frid *et al.* 2023). For example, abundances may have to be maintained at 50% or more of the unfished biomass (i.e.,

[6] "Biological reference points" pertain to levels of abundance or of fishery mortality that are either to be avoided (i.e., they would preclude reaching management goals) or strived for (i.e., they are consistent with management goals).
[7] To enable MSY harvests, stocks are fished down and maintained, on average, at ≈40% of their unfished biomass (this value will vary between species according to life history characteristics), which theoretically maximizes the rate at which fish replenish themselves and become available for further exploitation (Thorson *et al.* 2012).

above levels required to enable MSY-harvests) for species to fulfill their functional roles as predators and prey (Froese *et al.* 2016).

Fisheries disproportionately remove large and old individuals, yet the PA policy provides no objectives for large size and old age structures. Larger individuals within a species are disproportionately more fecund (per unit of body size) and play stronger ecological roles than smaller individuals (reviewed in Frid *et al.* 2023). Older fish are likely to hold key information on migration routes and critical habitats that younger fish acquire through social learning (Wilson & Giske 2023). Further, in some species older individuals increase the length of the reproductive season, improving the chances that young will be born under favourable ocean conditions, and produce larvae that survive better (Hixon *et al.* 2014). In failing to safeguard large size and old age structures, the PA policy may undermine the resilience of species, food webs, and ecosystems, particularly under the mounting stresses of climate change (reviewed in Frid *et al.* 2023).

By not protecting larger abundances and body sizes, the PA policy diminishes the contribution of natural carbon stores to climate change mitigation. The carbon content of fish averages 12.5% per unit of weight (Mariani *et al.* 2020) and larger individuals store carbon more efficiently than smaller ones (Falciani *et al.* 2022). When fish are caught, processed, and eaten by people, most of that carbon (94%) is released into the atmosphere during offal decomposition or human digestion and excretion. When fish die naturally, however, most of their carbon content may be sequestered into sediments (Mariani *et al.* 2020; Falciani *et al.* 2022).

Under the PA policy, stocks that are cultural keystones to Indigenous Peoples but which lack commercial value, such as eulachon (*Thaleichthys pacificus*), are low priority for assessment and recovery measures (Moody 2008; Beveridge *et al.* 2020). Additionally, most stock assessments and management decisions occur at large regional scales rather than at smaller spatial scales important to IKS, potentially failing to address species declines that affect local ecosystems, cultures, and economies (Ban *et al.* 2017; Okamoto *et al.* 2020; CHN *et al.* 2023). Examples include Pacific herring, for which regional trends dominated by stronger substocks have obscured declines and collapses at the scale of substocks important to coastal First Nations (Okamoto *et al.* 2020). Similarly, regional approaches to managing Dungeness crab have failed to detect local declines that undermine access to this traditional foods (Ban *et al.* 2017). IKS also recognize the significance of larger, older fish, and Indigenous fishers decry declines in size and age structures (Gauvreau *et al.* 2017; Eckert *et al.* 2018).

4. Towards a new paradigm for collaborative fisheries management

In contrast to the current PA policy, IKS principles govern people to "take only what you need and leave lots for the ecosystem" (Reid *et al.* 2022). In doing so, they promote greater abundances, larger body sizes, older age structures, and more resilient food webs (reviewed in Frid *et al.* 2023). For collaborative fisheries management to become more compatible with IKS, goals and objectives need to shift *away* from a focus on organisms as commodities for maximum sustainable exploitation *to* a focus on protecting species interactions that support resilient ecosystems, cultures, and local economies. Inherent in this shift are components of social justice

in which stocks cannot be considered rebuilt until local abundances are high enough to support culturally-significant harvests (Ban *et al.* 2017; CHN *et al.* 2023; Lamb *et al.* 2023).

Frid *et al.* (2023) proposed the following ways in which the PA policy could increase its compatibility with IKS[8]:

1. Shift the provisional reference points from MSY-based, which reflect the premise that marine organisms are commodities to be exploited at the maximum sustainable rate, to depletion-based reference points, which measure current abundance as proportions of a historical baseline or of the unfished biomass. Depletion-based reference points are more easily interpreted and consistent with notions of ecosystem stewardship and resilience but are currently applied to only a few Canadian stocks, such as Pacific herring.
2. Increase the provisional USR (i.e., lower bound of the healthy zone) to 60% of the unfished biomass ($0.6B_0$) and decrease the provisional fishing mortality from one that enables MSY harvests to the equivalent of 50% of natural mortality[9], better protecting size and age structures and food webs. The value of $0.6B_0$ suggested for provisional USRs has been quantitatively vetted primarily for forage fishes, yet its application to other taxa would be consistent with broader IKS goals.
3. Increase the provisional LRP (upper bound of critical zone) to one third of the unfished biomass[10]. This is consistent with recommended international best practice as a threshold to preventing serious harm.
4. Implement additional reference points for size and age structures and use them as complementary criteria for delineating the healthy, cautious, and critical zones. These reference points can be derived theoretically or from historical baselines.
5. Transition to assessment models and decision-making frameworks that account for the impacts of climate change on species productivity, distribution, and ecological processes.
6. Specify steps and requirements for management decisions to integrate information from ecosystem models—which explicitly consider multi-species interactions and oceanographic processes—with single species stock assessments.

In addition to revising the PA policy, new and/or better policies are required to support collaboration with Indigenous Peoples. Among other goals, these collaborations would determine the (a) spatial scales of management relevant to the dynamics of local stocks or substocks identified by IKS (Okamoto *et al.* 2020) and (b) the local abundances required to support successful harvest of culturally significant species, community-based commercial fisheries, and the food requirements of other predators. The outputs would then determine management

[8] These points are quoted, with minor modifications, from Frid *et al.* (2023), who provide supporting references.
[9] As detailed in Frid *et al.* (2023), for stocks in the healthy zone the PA recommends that the provisional fishing mortality, F_p, be "less" than the fishing mortality required to enable MSY harvests, F_{MSY}. The policy does not, however, specify the proportion of F_{MSY} to which F_p should be set, implicitly allowing $F_p \approx F_{MSY}$. For bony fishes, F_{MSY} is estimated to equate, on average, to ≈87% of natural mortality, M.
[10] The latest Science Advice on Guidance for Limit Reference Points under the Fish Stock Provisions identifies default policy guidance for LRPs based on unfished biomass is a key gap for future work and recommended for consideration in Canadian harvest strategy policies. Available at: https://www.dfo-mpo.gc.ca/csas-sccs/Publications/SAR-AS/2023/2023_009-eng.pdf

actions required to rebuild and/or conserve stocks and substocks (Adams *et al.* 2021; CHN *et al.* 2023; Lamb *et al.* 2023).

Additionally, marine protected areas (MPAs) are a type of spatial protection that can link Western science and IKS through a collaborative EBFM framework. The MPA network currently being developed for the Northern Shelf Bioregion illustrates this point. First Nations and their federal and provincial co-governance partners have collaboratively drafted the network's goals and objectives and generated the data required for network design using a Two-Eyed Seeing approach (Reid *et al.* 2022). In addition to traditional MPAs, Indigenous Protected and Conserved Areas (IPCAs) and other effective area-based conservation measures (OECMs) are gaining traction in Canada as an alternative approach to spatial protections that formally recognize and enshrine IKS and traditional tenure in ecosystem management. It is essential for federal support of these processes to remain strong, as MPA networks and other spatial protection measures are proven tools for rebuilding fisheries, restoring food webs, promoting resilience to climate change, and supporting biological and cultural diversity (reviewed in Reid *et al.* 2022).

5. Progress indicators

As new policies develop and existing ones strengthen, indicators will be needed to gauge the extent to which collaborative fisheries management becomes inclusive of or compatible with IKS[11]. These indicators may include, but are not limited to:

1. Number of stock assessments and management plans in which the goals and objectives are determined, from the outset, with Indigenous Peoples as equal co-governance and technical partners (Reid *et al.* 2021; Almack *et al.* 2022; CHN *et al.* 2023).
2. Number of stock assessments and management plans in which the methods for knowledge co-production pair Western science and IKS in a Two-Eyed Seeing Approach (Reid *et al.* 2021; Almack *et al.* 2022; CHN *et al.* 2023)
3. Number of stock assessments and management plans in which goals and objectives strive to rebuild and maintain biomass above MSY-harvest levels and at the higher abundances required to meet broader socio-ecological objectives (Frid *et al.* 2023).
4. Number of stock assessments and management plans in which a previously depleted stock recovered above the LRP or USR but increases to allowable catches were postponed for at least two subsequent years, thereby reducing risk of premature interpretation of stock recovery (CHN et al., 2023)
5. Number of stock assessments and management plans in which goals and objectives strive to rebuild size and age structures to historical baselines or theoretical expectations (Frid *et al.* 2023).

[11] The Departmental Results Framework and Program Inventory for Fisheries and Oceans Canada currently measures "Enhanced relationships with, involvement of, and outcomes for Indigenous people" by

1) Number of agreements / arrangements involving Indigenous groups.
2) Number of Indigenous people trained through agreements / arrangements.
3) Number of Indigenous people employed through agreements / arrangements.

Though useful, these indicators do not measure the inclusivity of IKS in collaborative fisheries management. Available at: https://www.dfo-mpo.gc.ca/dpr-rmr/2021-22/drr-eng.html#PR_table1

6. Number of stock assessments and management plans that explicitly account for observed or predicted shifts in environmental conditions and ecological processes associated with ocean warming and related changes to species productivities and distributions (Pepin *et al.* 2022).
7. Number of stock assessments and management plans that explicitly aim to balance human harvests with the food requirements of predators that utilize the same resource (Adams *et al.* 2021; CHN *et al.* 2023)
8. Number of stock assessments and management plans designed and executed at the smaller spatial scales relevant to place-based cultures and local ecosystems (Ban *et al.* 2017; Okamoto *et al.* 2020; CHN *et al.* 2023).
9. Number of cultural keystone species or stocks for which local abundances have rebuilt to levels required to support successful cultural harvests by Indigenous communities (Ban *et al.* 2017; CHN *et al.* 2023; Lamb *et al.* 2023).
10. Number of Indigenous communities with successful community-based commercial fisheries in their local waters (CHN *et al.* 2023).
11. Number of Marine Indigenous Protected Areas declared by a First Nation (e.g. Gitdisdzu Lugyeks (Kitasu Bay) Marine Protected Area[12]) that have been federally recognized and supported through legislation, funding, and other means.

6. Recommendations

The current policy landscape offers opportunities to transform national fisheries management in Canada in ways that could rebuild and maintain resilient ecosystems while meeting reconciliation obligations. The commitment to reconciliation is affirmed by the *United Nations Declaration on the Rights of Indigenous Peoples Act*[13], embedded in Section 35 of the *Constitution Acts*[14], and endorsed by the Canadian government and DFO.

To facilitate this paradigm shift, the Report of the Royal Commission on Aboriginal Peoples (Government of Canada 1996), the Truth and Reconciliation Commission of Canada (TRC)'s Calls to Action (TRC 2015), and the UNDA Action Plan (Department of Justice 2023) offer pathways for progress. Notably, the Fisheries Resources and Reconciliation Agreement (FRRA 2021), the Gwaii Haanas Gina 'Waadluxan KilGuhlGa Land-Sea-People Management Plan (CHN & Parks Canada 2018), and the proposed Marine Protected Area Network for the Northern Shelf Bioregion (MPA Network BC Northern Shelf Initiative 2023) serve as inspiring examples of co-governance agreements between First Nations and Canada in support of this shift. In addition, funding infrastructure like the new Project Finance for Permanence[15] and

[12] Gitdisdzu Lugyeks (Kitasu Bay) Marine Protected Area. Available at: https://klemtu.com/stewardship/protected-areas/gitdisdzu-lugyeks-kitasu-bay-marine-protected-area/
[13] *United Nations Declaration on the Rights of Indigenous Peoples Act* S.C. 2021, c. 14Available at: https://www.laws-lois.justice.gc.ca/eng/acts/u-2.2/page-1.html
[14] *The Constitution Acts* 1867-1982. Section 35. Available at: https://laws-lois.justice.gc.ca/eng/Const/page-13.html#h-53
[15] Project Finance for Permanence: Support for Indigenous-led conservation initiatives. Available at: https://www.canada.ca/en/environment-climate-change/services/nature-legacy/about/project-finance-for-permanence.html

programs such as Aboriginal Aquatic Resource and Ocean Management (AAROM)[16] enable support for Indigenous-led conservation initiatives.

To maintain momentum and solidify commitments already made, we propose that the federal government and DFO takes the following actions:

1. **Revise the suite of policies under the Sustainable Fisheries Framework, with a focus on the PA Policy, to be more inclusive of and compatible with IKS**, thereby achieving the intended legislative and policy goals of the Fish Stock Provisions: promoting sustainability (Section 6.1) and stock growth (Section 6.2). Over the course of seven years in which Oceana has conducted fisheries audits, DFO's fisheries management under the current *Sustainable Fisheries Framework* has often failed to meet many of its own goals. Implementing IKS and Two-Eyed Seeing approaches into policy and practices is a compelling opportunity to mitigate this problem and a reconciliation obligation.
2. **Amend and reform the *Fisheries Act* to be compatible with Canada's commitments to reconciliation and marine conservation.** The *Fisheries Act* plays a foundational role in regulating fisheries activities, ensuring sustainability, and safeguarding marine ecosystems. It is imperative to align the *Fisheries Act* with the principles and goals stated in the *UN Declaration Act* Action Plan (Department of Justice 2023), which emphasises the inherent rights of Indigenous Peoples and the need for collaborative agreements, partnerships, and transparent approaches to better deliver on the design, development, and management of fisheries, as well as conservation and protection of fish habitat.
3. **Codify how Indigenous Knowledge Systems are operationalized in fisheries management through Indigenous-led guidelines**, publishing objectives in annual work plans, and implementing collaborative agreements.
4. **Provide predictable, consistent, and flexible funding**[17] to ensure Indigenous Nations and organisations have the capacity to conduct and monitor marine-stewardship activities, as well the capacity and access to information required to participate meaningfully in aquatic resource and ocean management planning and decision-making processes (Department of Justice 2023).
5. Advance Canada's goal of conserving 30 per cent of land and waters by 2030, intended to reverse biodiversity decline and support fisheries, through **collaborative ecosystem-based fisheries management and IKS contributions to local stewardship** inherent in the establishment of marine Indigenous Protected and Conserved Areas (IPCAs) and marine protected area networks.

[16] Aboriginal Aquatic Resource and Oceans Management (AAROM) Program. Available at: https://aarom.ca/

[17] "flexible funding" refers to the allocation of financial resources in a way that provides Indigenous Nations and organizations with the freedom to use those funds according to their specific needs and priorities related to marine-related activities and ocean management. It's also important that funding remains predictable and consistent to ensure long-term planning and sustainable initiatives. This means providing a baseline level of funding while allowing for adjustments based on evolving needs and priorities.

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