Fisheries and Oceans Canada | Pêches et Océans Canada

SARP

Species At Risk Program

A Framework for Aquatic Species at Risk Conservation

Policies & Guidelines

2025

Canada

Aussi disponible en français sous le titre : Cadre pour la conservation des espèces en péril aquatiques

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Acknowledgement

Fisheries and Oceans Canada (DFO) is committed to building renewed nation-to-nation, Inuit-Crown, and government-to-government relationships with Indigenous peoples. This commitment aligns with Section 35 of the *Constitution Act* and the *United Nations Declaration on the Rights of Indigenous Peoples Act*. DFO is actively working to enhance partnerships and collaborative efforts in fisheries, marine conservation, and habitat restoration grounded in recognition of rights, respect, cooperation, and collaboration.

We acknowledge the Indigenous peoples on whose traditional territories we live and work, from coast-to-coast -to-coast. We honour their long history of welcoming many nations to this territory. Thank you. *Nia:wen. Qujannamik. Migwetch.*

Acronym list

CH: Critical Habitat

COSEWIC: Committee on the Status of Endangered Wildlife in Canada

DFO: Fisheries and Oceans Canada

DU: Designatable Unit

ECCC: Environment and Climate Change Canada

IUCN: International Union for Conservation of Nature

SARA: *Species at Risk Act*

SMART: Specific, measurable, achievable, realistic, time-bound

UN: United Nations

Executive summary

The Framework for Aquatic Species at Risk Conservation has been developed with the aim of improving the delivery of the *Species at Risk Act* (SARA) for aquatic species at risk through the use of collaborative, multi-species approaches to conservation and recovery.

The Framework focuses on aquatic species that are listed under SARA as extirpated, endangered, threatened or special concern. However, it may be possible to broaden the use of these approaches to benefit other species that are not yet listed, such as species that have been assessed as at risk by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

In general, use of multi-species approaches is encouraged where appropriate to address a common threat, for protecting or restoring shared habitat, and/or to address common needs of species or populations. The approaches can also be used to gain efficiencies in research or other conservation benefits. As well, multi-species approaches can be adopted to increase co-benefits of conservation approaches for biodiversity, ecosystems, climate resilience and even human well-being. For example, the ability to benefit species of traditional and cultural importance to Indigenous peoples, through the development of a multi-species approach, is an important cultural consideration to explore.

When developing a multi-species approach consideration should be given to whether the approach can be used to address complex issues like the presence of species with competing needs. Other factors to consider include the availability of capacity and resources to undertake multi-species approaches, as they may require more in-depth planning and extensive collaboration to be successful. In some cases these factors will mean that a multi-species approach is not the best option for conservation and recovery of aquatic species at risk.

The Framework includes 5 foundational principles to help guide the use of multi-species approaches. These principles highlight the importance of incorporating Indigenous perspectives and developing strong partnerships. They are also intended to emphasize evidence-based decision-making and DFO's intention to exercise adaptive management.

Due to legislative requirements, multi-species approaches will have varying degrees of utility for different SARA processes. One of the most direct ways that multi-species approaches can be used to improve conservation outcomes for aquatic species at risk is by focusing efforts towards the implementation of recovery measures under SARA. This can include the development of 'multi-species implementation strategies' to prioritize conservation and recovery actions focused on multiple species that co-occur in a given geographic area or are affected by similar threats. These strategies will prioritize actions that can benefit multiple

species, align the efforts of conservation partners, and bridge the gap between the level of detail for measures outlined in recovery documents and direct implementation of actions. The purpose of these strategies is to achieve better outcomes for species at risk, improved return on investment and increased co-benefits for biodiversity and ecosystems.

By using multi-species approaches to enable collaborative forums for implementation planning and action, DFO and partners can help improve conservation outcomes for aquatic species at risk through direct on-the-ground recovery actions focused on benefits for multiple species (see Overview of the Framework for Aquatic Species at Risk, Figure 1).

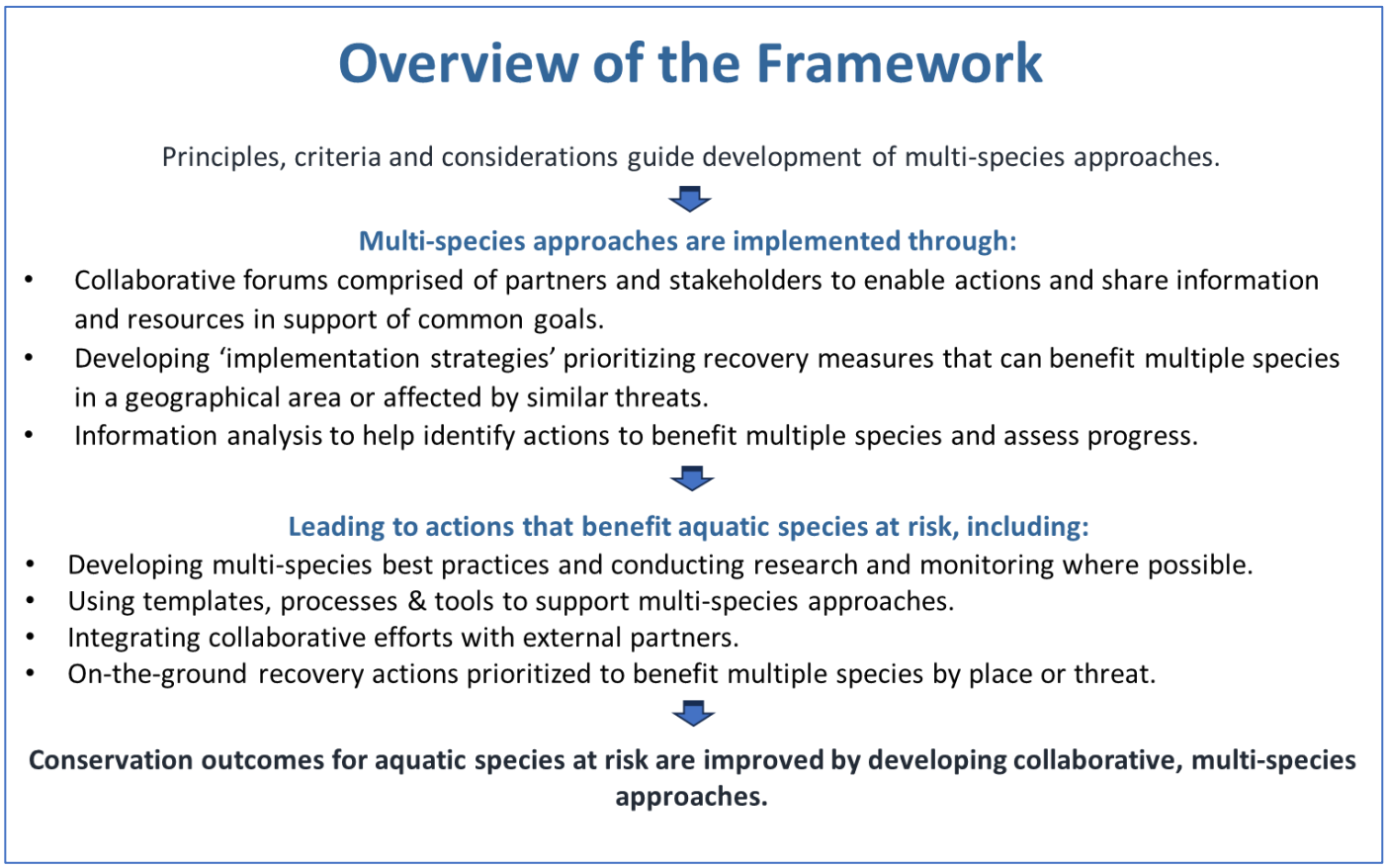

Figure 1. Overview of the Framework for Aquatic Species at Risk Conservation

1.0 Introduction

Canada's rich natural landscapes, coastlines, wetlands and waterways are home to biodiversity that all Canadians depend on for survival, security, economic growth and well-being. Often viewed as free, the ecosystem services provided by this natural biodiversity are expensive or impossible to replace (Brander *et al.*, 2024).

Globally and nationally, the biodiversity we depend on is declining (WWF-Canada, 2020). The world is experiencing an unprecedented biodiversity crisis, with more than 1 million species facing extinction globally. In Canada, 846 species are considered at risk and another 23 are extinct (COSEWIC, 2023). On average, populations of at risk species in Canada declined by 59% between 1970 and 2016 (WWF-Canada, 2020). The threats that wildlife species and their habitats are facing are becoming more complex, more interrelated and more challenging to mitigate (IUCN, 2023).

Recognizing the need for action, the Government of Canada has, under the Kunming-Montreal Global Biodiversity Framework (2022), committed to halting and reversing the loss of nature in Canada by protecting 30% of lands and waters by 2030, respecting the rights and roles of Indigenous peoples and addressing the key drivers of biodiversity loss, such as:

- climate change
- pollution
- habitat loss
- overexploitation of species
- invasive species

The Government of Canada is also maintaining Canada's nature legacy for future generations by protecting biodiversity, species at risk, and their habitats through investments such as the Nature Legacy Initiative (Budgets 2018, 2021 and 2023). This includes ongoing delivery of the *Species at Risk Act*[1] (SARA), Canada's key legislative tool for protecting wildlife species at risk.

DFO is working towards meeting Canada's biodiversity commitments and helping to address the decline in aquatic species at risk under Nature Legacy and other initiatives. Despite advancements, protecting 1 species at a time poses significant challenges due to factors such as limited resources, cumulative effects and the timeframes required to achieve improvements (Carwardine et al., 2012; IUCN, 2023).

Multi-species approaches – such as place, threat and ecosystem-based approaches (see Types of multi-species approaches, Figure 2) – are conservation and recovery measures that can address the needs of multiple species at the same time. These approaches can also help alleviate existing financial, administrative, and operational constraints (Noss et al., 2021). Accordingly, one way in which DFO aims to prevent biodiversity loss and to protect aquatic

[1] Here and throughout the document, for text in bold green, please see the Glossary.

species at risk is by supporting a greater application of multi-species approaches in implementing SARA.

The Framework for Aquatic Species at Risk Conservation (hereafter, the Framework) has been developed to serve as a policy guide for applying collaborative, multi-species approaches to delivering SARA, where it makes sense to do so. This guide is intended for use by the Department, and for those partners, stakeholders and the public with an interest in the use of collaborative multi-species approaches to advance the conservation and recovery of aquatic species at risk across Canada.

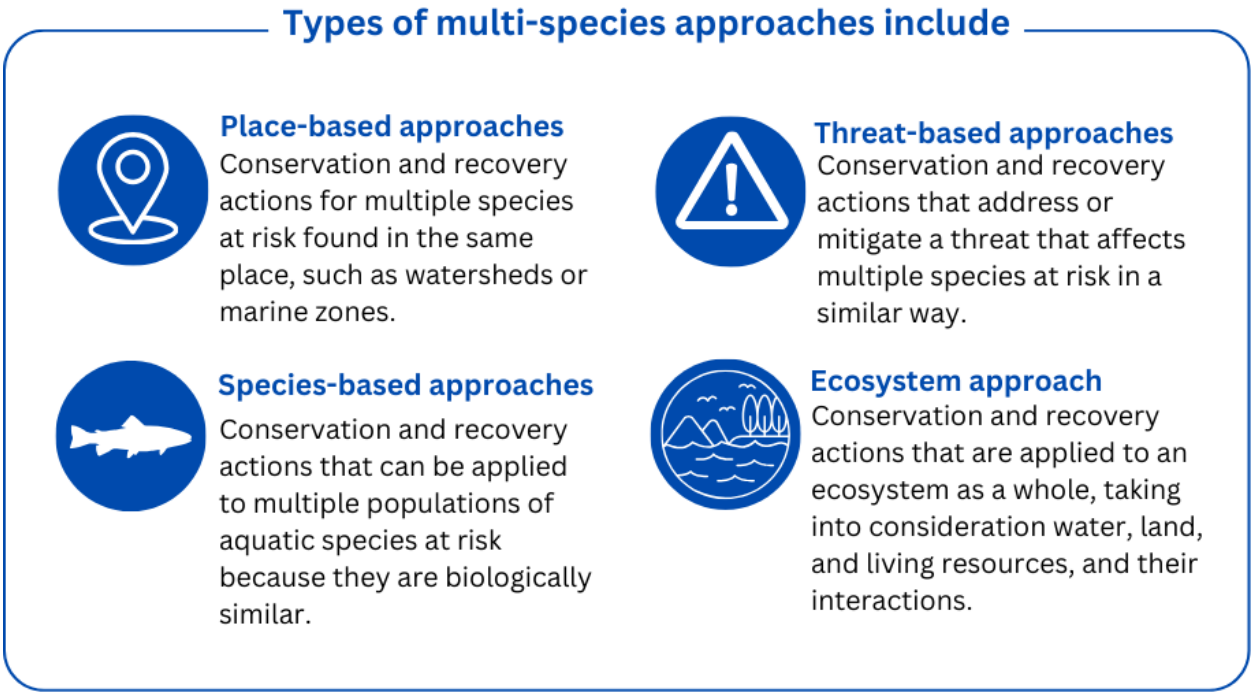

Figure 2. Types of multi-species approaches

1.1 Scope of the Framework

This Framework is intended to identify opportunities where multi-species approaches may improve the conservation and recovery of aquatic species at risk listed under Schedule 1 of SARA as extirpated, endangered, threatened, or special concern ("SARA-listed aquatic species").

For the purpose of the Framework, "multi-species" approaches refer to approaches involving more than one species and/or unit below the species level, referred to as Designatable Units (DUs) by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC).

The Framework outlines the principles, considerations, and best practices for implementing multi-species approaches, and provides recommendations for opportunities to deliver on DFO's SARA responsibilities through the use of these multi-species approaches.

The Framework provides policy guidance only and will not change the legislative requirements and provisions of SARA, or any other legislative authorities, including the *Fisheries Act* and the *Oceans Act*. The Framework will not replace any bilateral engagement mechanisms or DFO's duty to consult. It will not supersede any existing treaties or land claims agreements.

1.2 Benefits of multi-species approaches

Tailored single species approaches have many advantages for understanding and reacting to the needs of a single species. Unfortunately, the number of species that can be effectively and efficiently conserved and recovered using tailored single species approaches is overwhelmingly limited by both resources and the need for immediate action. Timely intervention requires another tool in the toolbox – the ability to address the needs of multiple species at risk at the same time.

DFO intends to use multi-species approaches to help improve conservation outcomes for aquatic species at risk because these approaches can:

- Address the needs of multiple species at the same time, through a focus on shared threats, habitats and conservation objectives (Geist et al., 2016; Kraus et al., 2021)
- Be an effective means of understanding the interactions between species and their environments (Kindsvater et al., 2018; Ovaskainen et al., 2011). This can help conservation practitioners to develop strategies that promote ecosystem resilience in the face of complex issues such as climate change (Brown et al., 2021)
- Allow for strong collaboration that enables the sharing of data, costs and resources, thereby supporting conservation actions beyond what could be achieved by a single government, community, or stakeholder (Ayambire et al., 2021; Dauwalter et al., 2019)

Multi-species conservation approaches also come with challenges, and for some situations, these challenges will mean that it is not practical or appropriate to proceed with a multi-species approach. Criteria for deciding when to use a multi-species approach are listed in section 4. Considerations related to the practicality of multi-species approaches are discussed in section 5.

1.3 Use of multi-species approaches at DFO

DFO already uses multi-species approaches to conserve aquatic species, biodiversity and habitat.

For example, DFO has worked on multi-species recovery documents to support delivery of SARA. Furthermore, in 2018, the department launched the Canada Nature Fund for Aquatic Species at Risk to support implementation of SARA recovery measures that target multiple species in priority places and to address threats across Canada.

DFO also makes use of multi-species approaches for activities related to other complementary Acts. For example, under the *Oceans Act*, multi-species approaches protect habitats in Marine Protected Areas. More details on these, and other examples of multi-species approaches developed by DFO can be found in Annex I. DFO is also involved in developing species-based approaches to address multiple populations.

Although DFO is already implementing multi-species approaches, single-species approaches are more common in SARA delivery, due to factors such as legal requirements under SARA and the lack of guidance to date. Legal requirements under SARA will be described in more detail in section 2.

2.0 SARA and multi-species approaches

To understand how to use multi-species approaches to improve conservation and recovery of aquatic species at risk, it is important to understand how this approach can be integrated within the delivery of SARA.

The purpose of SARA is to:

- prevent extinction or extirpation of wildlife species in Canada
- provide for the recovery of wildlife species that are extirpated, endangered or threatened as a result of human activity
- manage species of special concern so that they don't become endangered or threatened

Achieving this purpose occurs through sequential processes under SARA:

- assessment
- listing
- recovery planning
- implementation and monitoring

Species-based approaches to address multiple populations

DFO is developing species-based approaches that will help to address threats to multiple populations of a species.

For example, DFO is involved in developing the first-ever national strategy for Atlantic salmon. The strategy will serve as a guide for Atlantic salmon restoration, science, policy, and management activities, and be an important accountability document for Canadians as to how the species is stewarded across its Canadian range.

The Pacific Salmon Strategy Initiative is an example of a strategic and coordinated long term response to the issues affecting multiple populations of Pacific salmon. This strategy is rooted in collaborative action to stabilize and restore Pacific salmon and salmon habitat by focusing on four key areas: conservation and stewardship, salmon enhancement, harvest transformation, and integration and collaboration. Efforts in conservation and stewardship will help to improve the coordination of habitat restoration, integrate salmon ecosystem and rebuilding planning, and increase support for the external partnerships that are essential to collective efforts to rebuild vulnerable salmon populations.

Under SARA, the status of an individual wildlife species is assessed by an independent organization, COSEWIC. For species that COSEWIC assesses as at risk, the Minister of the Environment must provide a recommendation to the Governor in Council on whether or not to add the species to the SARA List of Wildlife Species at Risk, also known as Schedule 1. For species that are listed under SARA as extirpated, endangered, or threatened, DFO must develop recovery strategies and action plans. These species and their critical habitats and residences are also protected by prohibitions. For species of special concern, management plans are developed and the SARA prohibitions do not apply.

Legislative requirements under SARA influence how and to what extent multi-species approaches can be incorporated within each process to improve conservation outcomes for aquatic species at risk. The table in Annex II provides an analysis of each sequential SARA process and the opportunities for advancing multi-species approaches within each process in relation to SARA requirements.

COSEWIC assessment, SARA listing, and subsequent protections/prohibitions apply to a single species at a time, so opportunities for using multi-species approaches within these SARA processes are limited.

The use of multi-species approaches is permissible under SARA in the development of recovery strategies, action plans and management plans (SARA, s.41(3), s.67). Although the majority of recovery documents have been single-species focused, DFO has already developed several multi-species recovery documents, which identify commonalities in terms of habitat and threat mitigation for multiple species. However, developing SARA compliant multi-species recovery documents for species can be challenging due to the legislative requirements. Under SARA, recovery strategies must (among other things) address the threats to the survival of the species identified by COSEWIC and must identify critical habitat to the extent possible (or provide a schedule of studies to identify critical habitat). Because recovery strategies must address all threats to a species and its critical habitat to the extent possible, rather than just threats and critical habitat that is shared by multiple species, developing SARA compliant multi-species recovery documents is not always practical to meet the requirements of legislation.

With respect to the implementation of recovery actions, SARA includes requirements for monitoring, assessing and reporting on progress towards meeting the objectives of recovery strategies, action plans and management plans. The act does not directly require implementation of recovery measures, but instead stipulates requirements for monitoring and reporting on implementation of the measures. This means that implementation does not need to occur on a species-by-species basis.

This flexibility in implementing recovery measures is an opportunity to focus efforts on measures that can benefit multiple aquatic species at the same time. Enabling implementation of measures that can benefit more than one species is a direct means of improving conservation outcomes for aquatic species at risk. Furthermore, prioritizing implementation of

measures that can benefit multiple aquatic species can facilitate more efficient and effective use of limited resources for overall conservation benefits.

Opportunities for DFO to enable implementation of recovery actions that will benefit multiple species include:

- improved information analysis to help identify actions that will benefit multiple species and to assess effectiveness of these actions in benefiting these species
- enabling collaborative forums consisting of partners and stakeholders to enhance information-sharing and leverage existing resources and actions in support of common goals
- developing ‘multi-species implementation strategies’ that prioritize recovery actions to benefit multiple species that co-occur in a certain geographic area, and/or are affected by similar threats

To develop these opportunities to their fullest, it will be important to:

- involve Indigenous peoples and perspectives
- strengthen partnerships and knowledge
- use adaptive management to incorporate new information

3.0 Principles

The following guiding principles have been developed to guide the identification and implementation of opportunities to support DFO's delivery of SARA through multi-species approaches.

In developing these principles, DFO drew from the best available guidance, including internationally accepted guidance set out by the following:

- United Nations Declaration of Rights for Indigenous Peoples
- International Union for Conservation of Nature (IUCN)
- Convention on biological diversity
- Conservation standards

In addition, DFO's principles align with Environment and Climate Change Canada (ECCC)'s Pan-Canadian approach to transforming species at risk conservation in Canada for terrestrial species at risk, which sets out principles for applying multi-species approaches to priority places, species and sectors (ECCC, 2018).

DFO's principles are as follows:

1) Implement knowledge-based multi-species approaches where they can improve conservation and recovery outcomes
2) Respect Aboriginal[2] and Treaty Rights, incorporate Indigenous ways of being and Indigenous knowledge and enhance opportunities for Indigenous leadership
3) Form strong partnerships with:
    - Indigenous peoples of Canada
    - Modern Treaty Nations
    - Provinces and Territories
    - academic institutions
    - researchers
    - non-profit organizations
    - industry sectors
4) Use the best available information to guide actions while strengthening the knowledge base for decision-making
5) Exercise adaptive management in developing multi-species approaches

3.1 Implement knowledge-based multi-species approaches where they have been identified as likely to improve conservation outcomes

[2] The term 'Aboriginal' is used here to refer to the terminology of the Constitution Act, 1982.

Multi-species approaches can be used to address the needs of multiple species, maximizing the ability to conserve and recover species with given resources. This can improve overall conservation outcomes.

Best practices for applying this principle may include:

- Maximizing benefits for aquatic species at risk through multi-species approaches, where practical and where there is no compelling reason not to use this approach
- Clearly identifying the reasons for grouping species so that adjustments can be made to these groupings as needed in the future. Remaining flexible to splitting groups of species if more information becomes available to support this splitting, or if splitting is more appropriate at other stages of SARA delivery (Fitzgerald et al., 2022)
- In place-based approaches, considering overlaps in distribution and critical habitat amongst various species. In threat-based approaches, considering primary threats to the group of species
- To the extent possible, analyzing species data (e.g., threat and place data) at the same unit of resolution (watersheds, counties, standardized grids)
- Where species are grouped, including a description of shared methods and analysis, and clearly including species-specific information where necessary
- Incorporating the use of umbrella species (see 'Umbrella Species', p.19) in situations where there is a lack of data

3.2 Respect Aboriginal and Treaty Rights, incorporate Indigenous ways of being and Indigenous knowledge and enhance opportunities for Indigenous leadership

DFO is committed to continuing to build renewed nation-to-nation, Inuit-Crown, and government-to-government relationships with First Nations, Inuit, and Métis peoples based on respect, co-operation, and partnership. Aquatic species and habitat are of great social, cultural, spiritual, and economic importance to Indigenous peoples (United Nations, 2023).

DFO will seek to understand and implement Aboriginal and treaty rights in a manner that is consistent with section 35 of the *Constitution Act*, 1982 and to apply this understanding and recognition when working with Indigenous peoples.

The purposes of the *United Nations Declaration on the Rights of Indigenous Peoples Act* (the UN Declaration Act) are to:

1. affirm the United Nations Declaration on the Rights of Indigenous Peoples as a universal international human rights instrument with application in Canadian law
2. provide a framework for the Government of Canada's implementation of the declaration

The United Nations Declaration on the Rights of Indigenous Peoples Act Action Plan outlines a roadmap for the Government of Canada to advance reconciliation and implementation of the UN Declaration Act. The measures were co-developed with Indigenous peoples, and the action plan is divided into shared priorities, as well as priorities for First Nations, Inuit and Métis (Department of Justice, 2023). In implementing the Framework, it will be important to support implementation of the actions that DFO is responsible for. For example, development of multi-species approaches through collaboration with Indigenous Peoples can contribute to advancing the following shared priorities identified in UN Declaration Act Action Plan 2023-2028:

> 37. In a manner that is measurable, enhance collaborative tools agreements and transparent approaches to better deliver on the collaborative design, development, delivery and management of fisheries, as well as conservation and protection of fish habitat.
>
> 40. Develop and employ mechanisms that respect and incorporate Indigenous knowledge as a distinct knowledge system in the management of fisheries, fish habitat, conservation, marine safety and protection of the marine environment.

The DFO-Coast Guard reconciliation strategy outlines a roadmap for advancing reconciliation within the Department. DFO can also draw upon guidance from the Principles Respecting the Government of Canada's Relationship with Indigenous Peoples and from the principles developed under the Indigenous knowledge Policy Framework for Project Reviews and Regulatory Decisions for fish and fish habitat decisions. This means respecting Indigenous people and their knowledge, establishing and maintaining collaborative relationships with Indigenous people, and respectfully considering and safeguarding the use of Indigenous knowledge.

To enhance opportunities for Indigenous leadership, bridging organizations such as the Centre for Indigenous Environmental Resources, can help to connect groups with different knowledge and skills to facilitate the flow of concepts and ideas. Bridging organizations can also facilitate the building of trust, knowledge generation and collaborative learning (Green et al., 2015).

Building on this available guidance, best practices for applying this principle include:

- recognizing and respecting the role of Indigenous peoples and Indigenous knowledge in the conservation of species at risk, and of biodiversity more broadly
- ensuring early and active participation and collaboration and encouraging co-development with interested Indigenous peoples to facilitate the inclusion of Indigenous input, knowledge, and perspectives to inform multi-species approaches
- drawing from departmental efforts to develop improved guidance on the integration of Indigenous Knowledge into SARA delivery so that Indigenous Knowledge can be meaningfully incorporated in the development of multi-species approaches
- supporting the use of ongoing and effective engagement

    - For example, the Aboriginal Fund for Species at Risk supports the development of Indigenous capacity to participate actively in the implementation of SARA
- enhancing opportunities for involvement of Indigenous peoples in multi-species conservation and recovery actions that may allow for capacity building, training, and leadership in aquatic species at risk conservation
- supporting capacity for Indigenous-led community stewardship planning and action
- establishing and maintaining collaborative relationships and networks with Indigenous peoples (such as advisory councils, collaborative management arrangements, and bilateral discussions)
- supporting Indigenous communities in accessing training and incentives to facilitate leadership

In implementing the Framework, DFO aims to foster opportunities for Indigenous participation in developing multi-species approaches to conservation and recovery. In doing so, Indigenous knowledge and information on the cultural significance of aquatic species can strengthen decision-making.

3.3 Partnerships with Indigenous peoples of Canada, Modern Treaty Nations, provinces and territories, academic institutions, researchers, non-profit organizations, and industry sectors

DFO recognizes the importance of collaboration and partnerships in the conservation and recovery of aquatic species at risk. DFO fosters multi-species conservation approaches supports partnerships and joint processes with:

- Indigenous peoples
- provinces and territories
- other jurisdictions
- industry sectors
- academia
- non-governmental organizations
- other partners
- stakeholders
- Canadians

Collaboration networks

The creation of collaboration networks for sharing information and experience, is a key aspect of the convention on biological diversity's operational guidance for application of the ecosystem approach. Collaboration networks focused on particular places, threats, sectors, and species groupings can be important mechanisms to optimize involvement in the development and implementation of multi-species approaches.

The Indigenous Protected and Conserved Areas Knowledge Resource Database's Beyond Conservation Toolkit provides detailed steps to effectively and respectfully collaborate with Indigenous peoples and communities when working on conservation projects (IPCA, n.d.).

Indigenous peoples, provinces and territories, and the federal government manage natural resources and are responsible for decision-making that may affect and influence the conservation and recovery of aquatic species at risk. The distributions of species and the threats that impact their recovery often extend across jurisdictions, sectors, and communities. DFO recognizes that working with other governments, decision-makers and stakeholders can help to achieve common objectives for aquatic species.

Examples of best practices for applying this principle include:

- implementing effective and diverse engagement with the goal of incorporating a variety of perspectives and sources of knowledge into multi-species approaches
- providing opportunities for building partnerships
- engaging with community members from different Nations to ensure a diverse range of Indigenous perspectives are included
- sharing information, experiences, and expertise on the development of multi-species approaches across Canada

3.4 Use the best available information to guide actions while strengthening the knowledge base for decision-making

Decision-making will be required in many aspects of implementing the Framework, including in the prioritization of recovery actions to benefit multiple aquatic species at risk. Decision-making should be knowledge-based throughout the process.

This principle includes striving to obtain as complete a picture of ecological processes as possible, by considering Indigenous knowledge in conjunction with western scientific knowledge. The IUCN's Using the Ecosystem Approach to Implement the Convention on Biological Diversity discusses the importance of integrating scientific and Indigenous knowledge in decision-making for conservation. Principle 6 of the United Nations' Principles for Ecosystem Restoration to Guide the United Nations Decade 2021-2030 also emphasizes the importance of integrating all types of knowledge into restoration activities, including but not limited to Indigenous, traditional, local, and scientific ways of knowing. This helps foster inclusive decision-making and participation throughout the restoration process (UN Environment Programme, 2021). Having a robust knowledge base will also help implement multi-species approaches where they are most likely to improve conservation outcomes.

In proceeding with decision-making on species at risk, information is rarely complete, and a balanced consideration of all available information may be necessary. In these cases, the application of the precautionary principle remains important. The precautionary principle recognizes that the absence of scientific certainty is not a reason to postpone action or fail to take action to avoid serious harm to aquatic species at risk and their habitat (Fisheries and Oceans Canada, 2009). Conservation and recovery measures can, and should, be taken when there is knowledge of a risk of serious or irreversible harm to species and their habitat using the

best available information. Likewise, it is necessary to act cautiously to avoid unintended, irreversible, adverse effects on aquatic species at risk, their residences, or critical habitats through actions implemented. The use of the precautionary principle may be applied in line with other DFO policies such as the Fishery Decision-Making Framework Incorporating the Precautionary Approach.

Building on the Government of Canada's Principles and Guidelines for the Effective Use of Science and Technology Advice in Government Decision Making, decision-makers should ensure that appropriate weight is given to uncertainty associated with advice.

Examples of best practices for applying this principle may include:

- identifying and understanding knowledge gaps encountered while developing and implementing multi-species approaches
- exercising the precautionary principle and adaptive management in managing uncertainty with respect to the species, their interactions, and their ecosystems.
- communicating transparent decision-making processes in developing and implementing multi-species approaches
- being cautious when scientific information is uncertain, unreliable or inadequate and not using the absence of adequate scientific information as a reason to postpone or fail to take action to avoid serious harm to aquatic species at risk
- working towards a better understanding of species interactions within an ecosystem and their threats by the co-application of Indigenous knowledge and western scientific knowledge (two-eyed seeing)
- promoting communication with Indigenous and non-Indigenous bodies that already have knowledge of the species, place, or threat

3.5 Exercise adaptive management in developing multi-species approaches

Adaptive management is a planned process for continuously improving environmental management practices by learning from previous outcomes (Conservation Measures Partnership, 2020).

A commitment to adaptive management will allow for the opportunity to adjust conservation efforts as new information becomes available and according to place, threat, and species-specific needs. This can improve efficiency, by focusing financial and operational resources towards conservation measures that are having a positive impact (Conservation Measures Partnership, 2020). Adaptive management can also help to support flexibility and innovation in addressing complex challenges with high levels of uncertainty, such as climate change, by allowing practitioners to adjust conservation strategies in response to new information, or when changes occur in an ecosystem or threat (Brown et al., 2022).

This principle is key to the conservation standards, which provide a transparent and repeatable framework for working towards conservation goals, allowing progress to be made even when faced with the uncertainty inherent to most conservation efforts.

Adaptive management can be supported by science, policy review, and by collaborating with Indigenous peoples to include the meaningful consideration of Indigenous knowledge. Examples of this type of integration can be found in the Guiding principles for Marine Protected Areas, and in Indigenous-Led Area-Based Conservation opportunities.

Engagement with Indigenous peoples, partners, jurisdictions, and stakeholders will be important in understanding what is and is not working with the development and implementation of multi-species approaches. Feedback from this engagement may signal the need for course correction.

Best practices for implementing adaptive management include:

- setting SMART (specific, measurable, achievable, realistic, time-bound) objectives for use of multi-species approaches, so that the effectiveness of these approaches in meeting their objectives can be evaluated
- developing performance management tools, including indicators, targets for those indicators, and strong monitoring plans to evaluate the effectiveness of multi-species approaches in meeting their objectives
- considering new information by engaging with Indigenous peoples, partners, and stakeholders
- developing realistic timelines that are regularly reviewed
- ensuring all feedback received during engagement with Indigenous peoples, partners, and stakeholders is considered when planning conservation actions
- developing a reporting strategy to transparently communicate the results of performance management

4.0 Criteria

DFO aims to apply multi-species approaches where practical and appropriate to improve overall conservation outcomes for groups of species relative to the development of multiple single-species approaches. Given sufficient information, expertise and resources to carry out a multi-species approach, a focus on shared habitats, biological requirements, ecosystem interactions, and/or common threats can streamline resources and provide net benefits to conservation and recovery of multiple species.

Single species approaches should still be used as needed, including to address unique biological requirements of a species, when there is a lack of proximity to other species, to inform species-specific assessments, or when targeted conservation actions need to be applied to prevent the extirpation or extinction of a single species (i.e., a compelling reason not to use a multi-species

approach). Figure 3 provides a comparative summary of conditions under which to apply single species and multi-species conservation approaches.

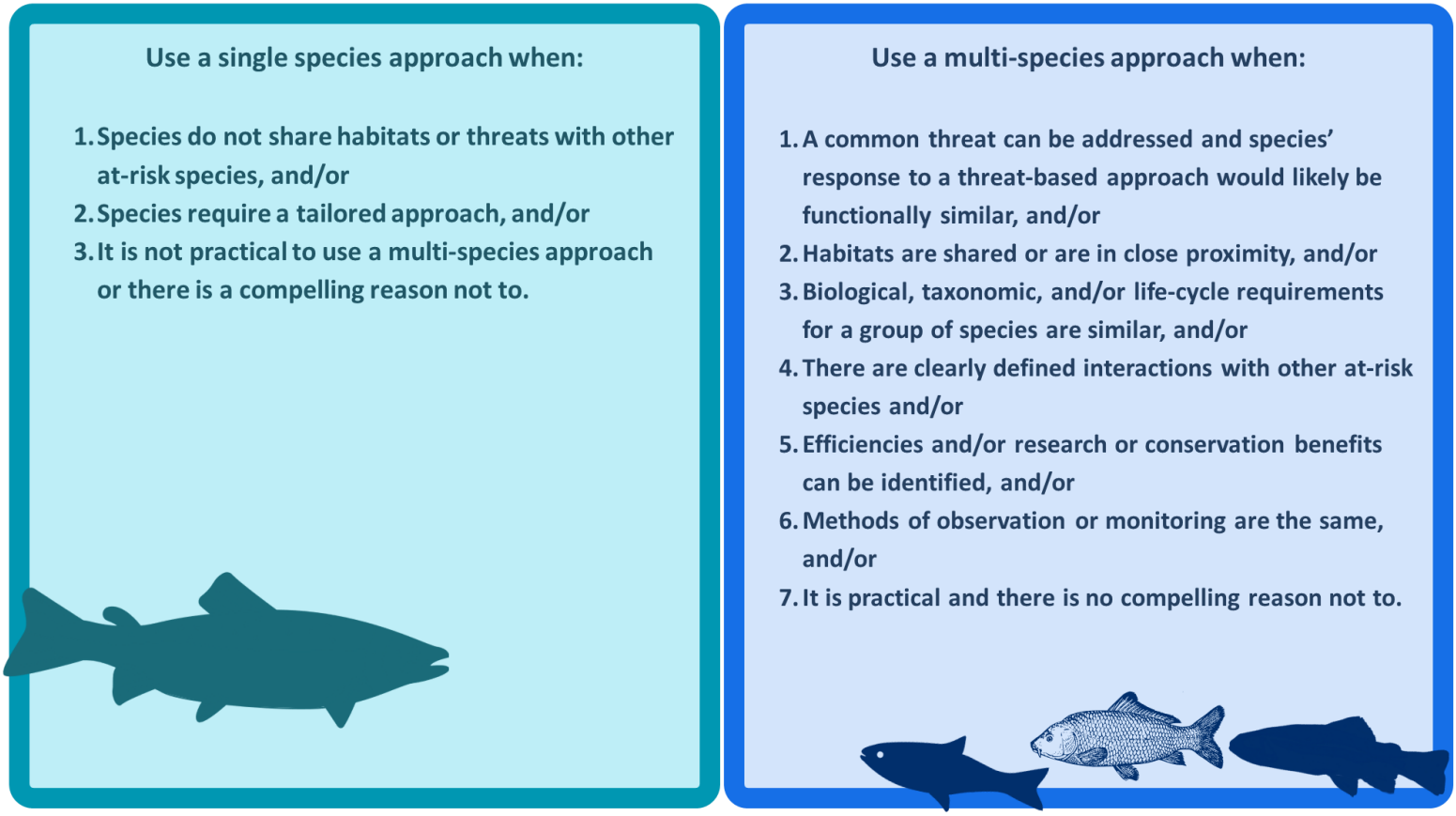

Figure 3. Criteria for when to apply single species versus multi-species approaches

5.0 Considerations in designing multi-species approaches

Research on multi-species approaches is ongoing. Results show benefits, challenges, and mitigation strategies that support the potential of multi-species approaches that provide effective and cost-efficient protection for at risk species when related factors are duly considered.

Various factors should be considered when designing and applying multi-species conservation approaches. These include factors related to the ecological, programmatic, economic and social context in which objectives for species at risk are being formed. Technical considerations are explored in greater detail in Annex III.

5.1 Technical considerations

Technical factors to be considered in designing an approach include factors related to the specific ecology of a situation and the practicality of using a multi-species approach to address those factors.

Ecological considerations are the biological and life cycle needs of species, species interactions, and variables related to the ecosystem these species inhabit (May-McNally et al., 2022). For example, where information is lacking for particular species in a multi-species approach, an important consideration would be the potential presence of an umbrella or keystone species. The need to address species with competing needs is another ecological consideration. For both these examples, a multi-species approach can offer solutions but may also raise challenges that will be important to consider in the design and implementation of the approach (see Annex III).

Practicality considerations include the availability of expertise, necessary capacity and available funding. Multi-species approaches can offer solutions to limited resources by aligning efforts to focus on actions that will benefit multiple species.

Umbrella species

An umbrella species is a species vulnerable to current or predicted threats, that has similar requirements to many co-occurring species, or plays an important role in the functioning of the ecosystem and whose conservation is thought to benefit co-occurring species (Zarri et al., 2024).

The identification and selection of an umbrella species is a management decision and is based on the specific ecosystem in question. By implementing conservation actions to protect a selected umbrella species, a wide range of co-occurring species "under the umbrella" should also be protected (Mills and Doak, 1993).

Effective umbrella species have large range sizes, complex habitat requirements, and high co-occurrence with other species (Mills and Doak, 1993).

For example, some freshwater mussel species are umbrella species because they are an important food source for other species, they filter water, and are indicators of ecosystem health (Toronto Zoo, n.d.). Because of their role in the ecosystems they occupy, their conservation is expected to benefit many co-occurring species.

Umbrella species can include keystone species, indicator species, and species of traditional and cultural importance to Indigenous peoples.

However, approaches that are too broad in scope and complexity may require more resources and expertise to achieve less specificity than a single species approach.

Practicality considerations also occur in relation to ecological factors. In the example of species lacking data, it would be impractical to design a multi-species approach for a group of species who all have insufficient data to determine expected responses to conservation and recovery measures.

These factors may influence the type of multi-species approach applied to a particular situation, the species included and how the approach is applied. In some cases, these factors may even influence the decision of whether or not to take a multi-species approach. Multi-species approaches should be designed for the situation at hand to optimize the benefits and opportunities of these approaches, while navigating the respective challenges.

5.2 Cultural and social considerations

Indigenous perspectives and the potential to advance reconciliation objectives in developing multi-species approaches should be considered through the integration of the guidance and best practices referenced in Section 3.

Strategies that advance the conservation and recovery of aquatic species at risk can have co-benefits related to other broader Government of Canada priorities and can be designed with these co-benefits in mind. Co-benefits can include social objectives, such as improving community well-being through the provision of ecological goods and services to Canadians, outreach, and development of best practices with communities, landowners, and stakeholders (Brander et al., 2024).

The Open Standards for the Practice of Conservation (or ‘conservation standards’), designed by the Conservation Measures Partnership, offer a systematic, flexible and transparent process for designing multi-species approaches with the flexibility to respond to the nuances of ecological and practicality factors. This process can also help optimize cultural and social co-benefits. There are numerous examples of how conservation standards have been used to achieve these co-benefits in ways that reinforce conservation and recovery outcomes for species at risk.

6.0 Implementation recommendations

To put the Framework into action, DFO intends to explore the development of ‘multi-species implementation strategies’. The implementation of recovery measures on a species-by-species basis is significantly limited by factors such as available resources. Multi-species implementation strategies will prioritize recovery actions to benefit multiple species that co-occur in a geographical place or are affected by similar threats. This will lead the way from

measures identified for each species in separate recovery documents to direct actions on the ground. By supporting implementation with benefits to multiple species, the department aims to advance towards improving ecosystem resilience as a whole.

These plans can inform conservation and recovery operations and monitoring and research plans, prioritize stewardship activities under contributions programs, and facilitate collaborative action focused on a particular place or threat.

A robust tool that DFO can use in guiding this shift towards multi-species conservation and recovery is the Open Standards for Conservation. The conservation standards provide an adaptive management framework that can help:

- set conservation targets
- prioritize recovery actions
- create multi-species implementation strategies
- develop monitoring and evaluation strategies

Conservation standards have been applied to thousands of conservation projects worldwide, guiding collaborative efforts towards implementing direct, on-the-ground activities that can measurably improve conservation outcomes for species at risk. The adoption of the conservation standards as an adaptive management framework also provides an accessible space for data sharing, improving evidence-based decision-making and reducing duplication of effort (Conservation Measures Partnership, 2020). DFO's federal partners, ECCC and Parks Canada, have been successful in implementing the Conservation Standards into ongoing conservation efforts (see sidebar, p.21).

DFO will undertake pilot projects as a first step towards the implementation of multi-species approaches. These projects will be undertaken with a view to developing process and allowing for adaptive management of these approaches. Technical and program guidance, best practices and tools can be developed in tandem with these projects as needed. These pilot projects can help build a better understanding of objective-setting and performance monitoring in multi-species conservation approaches and further clarify considerations.

Throughout the implementation of multi-species conservation approaches, DFO recognizes the importance of networks for collaboration among:

- Indigenous peoples
- multiple jurisdictions
- partners
- stakeholders

This collaboration brings together perspectives, expertise, information, and resources to:

- develop best practices
- implement stewardship activities
- conduct outreach and education
- monitoring and research

Models for collaboration to accommodate these approaches can be refined in the development of pilot projects.

DFO is also exploring the use of standardized language to categorize threats and recovery actions for enhanced information management. Using internationally recognized standardized language to identify threats and recovery actions can facilitate collaboration among partners and enhance data collection. It can also help in analyzing information on recovery measures for species at risk, to better understand where groups of species can benefit from multi-species approaches. To achieve these benefits, DFO aims to continue exploring the use of standardized language such as the 2016 Threats and Action Classification, developed under the conservation standards.

Because the focus of the Framework is SARA-listed species, the criteria for inclusion of specific species in multi-species approaches have been drafted with an emphasis on conserving and recovering multiple species listed under SARA as extirpated, endangered, threatened, or special concern. However, multi-species approaches can also be developed to include species assessed by COSEWIC but for which a listing decision has not been made, such as species of cultural importance experiencing decline. Decisions to broaden focus of multi-species approaches in this way can be assessed on a case-by-case basis, to balance both emerging priorities and resource limitations.

Where appropriate, development of multi-species approaches for SARA delivery under the Framework should seek alignment with the use of multi-species approaches developed under other DFO programs and initiatives, such as those outlined in Annex I. Continued and enhanced integration of these approaches will allow for information sharing, coordinated implementation and achievement of shared objectives in maintaining Canada's biodiversity.

7.0 Conclusion

Looking forward, DFO believes that collaborative multi-species opportunities can help the department and its partners meet the challenges of conserving aquatic species at risk. These opportunities will be explored through pilot projects and additional guidance, where needed.

DFO intends to move forward, with partners in conservation, towards approaches that:

- focus efforts on the implementation of recovery measures
- improve efficiency and efficacy of species recovery
- maximize the impact of limited funding by aligning priorities and informing funding decisions
- implement conservation as a shared priority by leveraging resources and expertise
- assess the performance of recovery measures while they are being implemented so that they can be adjusted as needed
- increase the co-benefits of conservation approaches

DFO thanks the Indigenous peoples, provinces and territories, industry sectors, and all other partners and stakeholders who provided feedback during the engagement on the development of this Framework. DFO hopes to develop multi-species conservation approaches and continue working with:

- Indigenous peoples
- provinces and territories
- other jurisdictions
- industry sectors
- academia
- non-governmental organizations
- other partners
- stakeholders
- Canadians

Climate Change Canada (ECCC)'s conservation implementation plans

In collaboration with partners, ECCC is developing conservation implementation plans to support species at risk recovery in 12 Priority Places as part of the implementation of the Pan-Canadian Approach to Transforming Species at Risk Conservation in Canada (ECCC, 2018). Using a defined planning approach (such as the Conservation Standards), these implementation plans take a multi-species/ecosystem-based approach to identify key conservation actions to address the greatest threats to species and their habitats. Conservation implementation plans provide the foundation for collaborative action on the ground.

The Long Point Walsingham Forest: Conservation Implementation Plan (2018-2026) is an example of a conservation implementation plan produced collaboratively by partners for a priority place in Ontario. This plan was developed using the conservation standards to identify and prioritize strategies and actions for improving ecosystem health and recovering species at risk in Long Point Walsingham Forest.

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Glossary

Adaptive management: The integration of design, management, and monitoring to enable practitioners to systematically and efficiently test key assumptions, evaluate the results, adjust management decisions, and generate learning (Conservation Measures Partnership, 2020; Palmer et al., 2023).

Aquatic species: A wildlife species that is a fish, as defined in section 2 of the Fisheries Act, or a marine plant, as defined in section 47 of that Act (SARA, 2002).

Collaboration: Diverse groups working together to understand different viewpoints, apply collective wisdom, and share resources to address ecological concerns and formulate conservation solutions that support more impactful conservation outcomes (Center for Conservation Collaboration, 2021)

Committee on the Status of Endangered Wildlife in Canada (COSEWIC): Independent advisory panel to the Minister of the Environment and Climate Change that meets twice a year to assess the status of wildlife species at risk of extinction (ECCC, 2022).

Compelling reason: Substantial and justifiable rationale for choosing a specific approach to conservation and recovery.

Conservation: The protection, care, management and maintenance of ecosystems, habitat, wildlife species and populations, within or outside of their natural environments, in order to safeguard the natural conditions for their long-term permanence (IUCN, 2020).

Conservation standard: The Open Standards for the Practice of Conservation, or Conservation Standards for short, are a widely adopted set of principles and practices that bring together common concepts, approaches, and terminology for conservation project design, management, and monitoring.

Conservation target: An element of biodiversity (species, habitat, or ecological system) at a project site on which a project has chosen to focus. All targets should collectively represent the biodiversity of concern at the site (Conservation Measures Partnership, 2020).

Designatable unit: A unit of Canadian biodiversity that is discrete and evolutionarily significant, where discrete means that there is currently very little transmission of heritable (cultural or genetic) information from other such units, and evolutionarily significant means that the unit

harbors heritable adaptive traits or an evolutionary history not found elsewhere in Canada (COSEWIC, 2020).

Ecological considerations: Important ecosystemic factors that need to be acknowledged and weighed in recovery planning, implementation and monitoring, such as biodiversity, habitat preservation, and the conservation of natural resources.

Ecological goods and services: Goods and services that intact functioning ecosystems, species, and habitats provide and that can benefit people (Conservation Measures Partnership, 2020).

Ecosystem approach: A strategy for the integrated management of land, water and living resources that promotes conservation and sustainable use in an equitable way (IUCN, 2020).

Keystone species: A native species that plays a scientifically supported, disproportionately large role in the structuring and functioning of the ecosystem they occupy relative to their abundance (Wang et al., 2023).

Multi-species approach: Approach to conservation that focuses on implementing actions that aid in the conservation and recovery of multiple species.

Multi-species implementation strategy: A plan for the implementation of prioritized conservation strategies and actions focused on multiple species and/or ecosystems to achieve better outcomes for species at risk, improved return on investment and increased co-benefits for biodiversity and ecosystems.

Place-based approach: A multi-species approach that focuses on conservation and recovery actions for multiple species at risk found in a specific place or region (e.g., watershed). These approaches are designed, targeted, and conducted at geographical units that have a special quality, are of some special significance, or are representative of a range of characteristics and/or biodiversity (National Ocean Service, n.d.).

Practical: Appropriate within the context of the project, and in light of the political, social, ecological and financial context.

Precautionary approach: Being cautious when scientific knowledge is uncertain, and not using the absence of adequate scientific information as a reason to postpone action or failure to take action to avoid serious harm to fish or their ecosystem (Fisheries and Oceans Canada, 2009).

Recovery: The return of a wildlife species to a position where the risk of extinction or extirpation is within the normal range of variability for that species (ECCC, 2020).

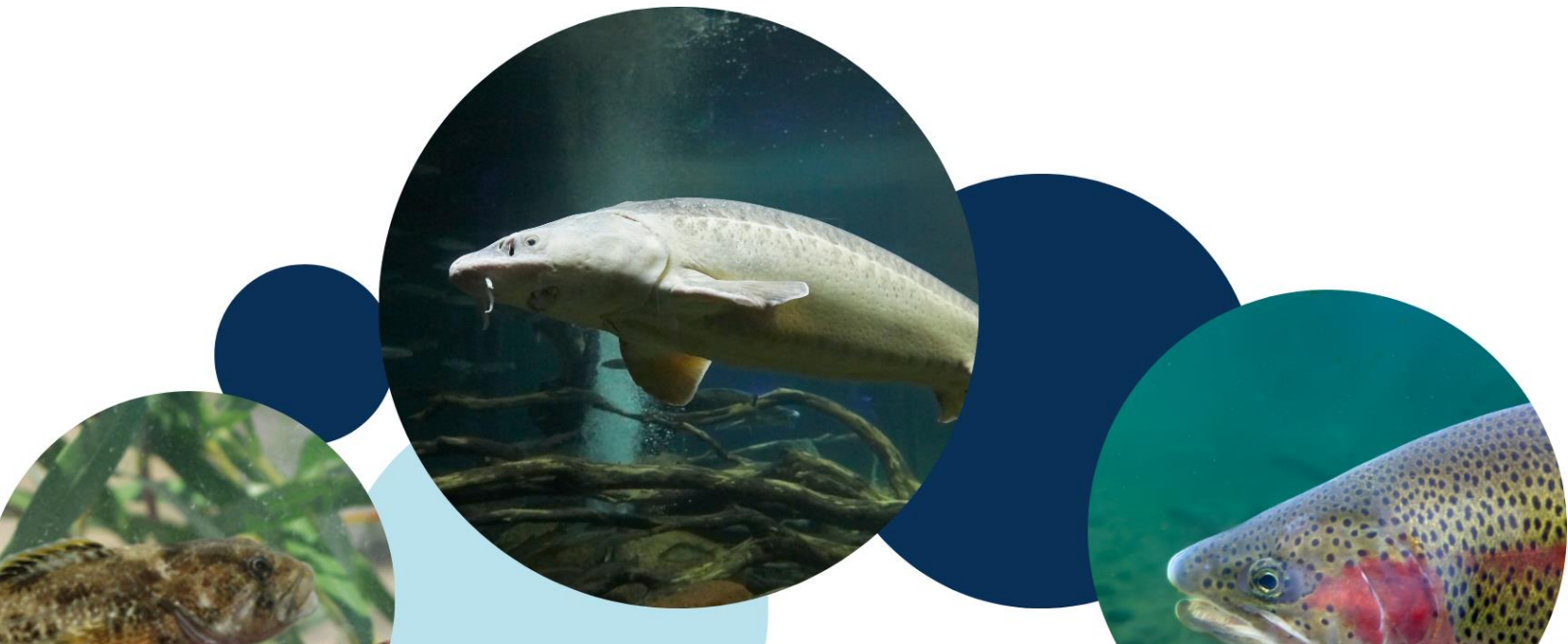
Species at Risk Act (SARA): The Government of Canada's key legislative tool for protecting wildlife species at risk. It aims to prevent wildlife species from being extirpated or becoming extinct, to provide for the recovery of wildlife species that are extirpated, endangered, or threatened as a result of human activity, and manage species of special concern to prevent them from becoming endangered or threatened (S.C. 2002, c. 29).

Species of traditional and cultural importance to Indigenous peoples: A species with an important Indigenous cultural, spiritual, and/or traditional significance including, but not limited to, food sovereignty, art, language, ceremony, spirituality and identity.

Threat-based approach: A multi-species approach that focuses conservation and recovery actions on addressing a common threat that affects multiple species at risk (e.g., acoustic disturbances).

Two-eyed Seeing: Conservation approach that brings together different knowledge systems or knowledge perspectives to better understand the natural world. (Bartlett et al., 2012).

Umbrella species: A vulnerable species whose conservation is expected to benefit co-occurring species (Zarri et al., 2024). Umbrella species can include keystone species, indicator species, and species of traditional and cultural importance to Indigenous peoples.



Annex I: Examples of multi-species approaches at DFO

Examples of multi-species approaches at DFO that support delivery of the *Species at Risk Act*, the *Oceans Act*, and the *Fisheries Act* in conserving biodiversity, species, and habitats across Canada.

Activities that support the *SPECIES AT RISK ACT*

Multi-Species Recovery Documents

DFO has developed an array of multi-species Recovery Strategies, Action Plans and Management Plans. The Sydenham River Action Plan, for example, uses a multi-species approach to recovery planning for 7 freshwater mussels and 2 fishes.

Conservation Agreements

Section 11 of *SARA* authorizes DFO to enter into conservation agreements that benefit an aquatic species at risk. These agreements can take a multi-species approach, such as one for 31 aquatic species at risk in a southern Ontario Watershed.

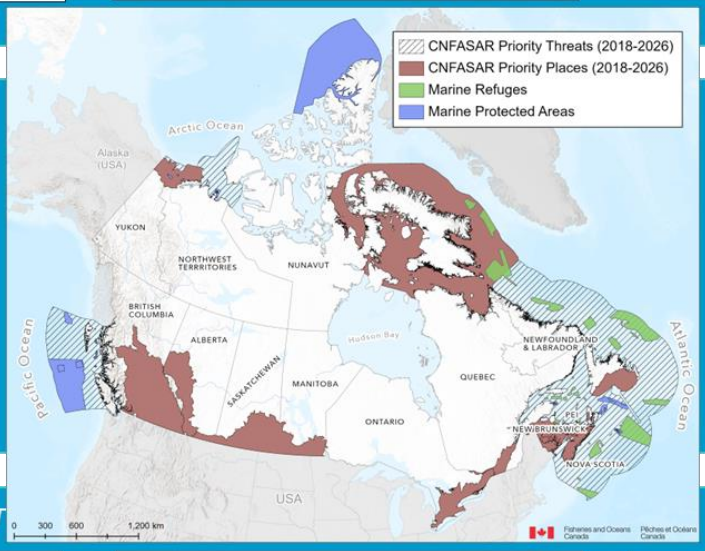
Canada Nature Fund for Aquatic Species at Risk

DFO supports stewardship activities through contribution programs such as the Canada Nature Fund for Aquatic Species at Risk which funds multi-species projects in priority places and to address priority threats, such as bycatch and entanglement.

Activities that support the *OCEANS ACT*

Marine Protected Areas

Marine Protected Areas (MPAs) established under the *Oceans Act* conserve and protect marine species (often multiple species), habitats, and ecosystems. These MPAs cover 8.43% of Canada's marine and coastal areas.



Protecting Canada's Endangered Whales

To help protect Canada's endangered whales (such as the Southern Resident Killer Whale, North Atlantic Right Whale, and St. Lawrence-Estuary Beluga), threat-based and place-based approaches are being developed to reduce disturbance from human activities.

Activities that support the *FISHERIES ACT*

Framework to identify Fish Habitat Restoration Priorities

Guided by the national Framework to Identify Fish Habitat Restoration Priorities (DFO, 2023), DFO is aiming to identify important species, areas, and ecosystem functions, and articulate local restoration goals and actions.

Ecologically Significant Areas

This regulatory, area-based conservation tool can be applied to freshwater and marine environments to provide long-term protection to fish and fish habitats that are sensitive, highly productive, rare, or unique.

Marine Refuges

Marine refuges are fisheries area closures that provide long-term biodiversity conservation benefits, including to important species (such as species at risk) and habitats. Marine refuges cover 4.25% of Canada's marine and coastal areas.

Annex II: Opportunities for using multi-species approaches to deliver on SARA processes

Table 7. Opportunities for multi-species approaches in SARA processes
Please note that SARA should be examined for further detail on particular timelines and requirements. Each process has its own legislative timelines which must be taken into account when developing multi-species approaches.

SARA process	SARA context (S.C. 2002, c. 29)	Opportunities for multi-species approaches
Assessment	COSEWIC assesses the status of a wildlife species it considers at risk. COSEWIC is responsible for determining when wildlife species are to be assessed, with priority given to those more likely to become extinct. The scientific assessment of a species' biological status includes identifying existing and potential threats to the species and assigning a classification of this species as extirpated, endangered, threatened, or special concern. Alternatively, COSEWIC can indicate that the species is not at risk or that it does not have sufficient information to classify the species, in which case they colloquially indicate that the species is "data deficient". Lastly, when a species no longer exists, it is classified as extinct. COSEWIC provides its assessments to the Minister of Environment, who must make a listing recommendation to the Governor in Council after consulting, among others, the competent minister for the species.	As COSEWIC is an independent body of experts, any change to how species are assessed is outside the scope of the Framework. There may be opportunities for COSEWIC to assess, on similar timelines, species that live in the same habitats or face the same threats. The identification and standardization of threat classifications for existing and potential threats could initiate multi-species conservation discussion and planning and help synchronize expert reviews.
Listing	The Governor inCouncil can amend the list of wildlife species	Species are listed under SARA individually. Therefore,

	at risk set out in Schedule 1 of the *Species at Risk Act* (SARA) based on the recommendation of the Minister of the Environment. The list can be amended by adding a wildlife species, reclassifying a listed wildlife species, or by removing a listed wildlife species.	opportunities to make use of multi-species approaches in listing are limited. Before making a listing recommendation for an aquatic species, the Minister of the Environment must consult the Minister of Fisheries and Oceans. In preparing advice for the Minister of the Environment, DFO can consider batches of species for listing. Where there are benefits to batching species based on geographic threat, or biological considerations, efforts can be made to do so, where policy timelines allow. This can increase the ability to implement multi-species recovery planning as the species will follow the same timeline to arrive at a decision under SARA. Multi-species approaches can also provide efficiencies in combining engagement and consultation activities, where applicable.
Protection of listed wildlife species	After an aquatic species is listed on Schedule 1 of SARA as endangered or threatened (or extirpated, if reintroduction is recommended), the general prohibitions protecting the individual and its residence apply.	Multi-species approaches are not applicable to the protection of listed wildlife species as the prohibitions apply to single species.
Recovery planning	A recovery strategy and action plan must be prepared for wildlife species listed as extirpated, endangered, or threatened. Under SARA, subsection 41(3), these recovery documents can be multi-species, ecosystem-based	DFO can continue to develop multi-species recovery documents (i.e. recovery strategies, action plans, and management plans) where they are deemed appropriate.

	(which would also allow these documents to be threat-based, although subsection 41(3) does not expressly say that) if deemed appropriate. However, deploying multi-species approaches to conservation for DUs can be challenging due to the legislative requirement for recovery planning to cover the entire DU. For species listed as threatened or endangered, recovery strategies include an identification of threats to the survival of (a) species, a broad strategy to address those threats, identification of critical habitat (CH) to the extent possible and a statement of the population and distribution objectives that will assist the recovery and survival of the species. One or more action plans must then be prepared based on the recovery strategy. Action plans include measures to be taken to implement the recovery strategy, monitoring For wildlife species listed as special concern, a management plan must be prepared, including appropriate measures for the conservation of the species. Under SARA, section 67, a management plan may apply to more than one wildlife species by using a multi-species or ecosystem approach.	The development of multi-species recovery documents could be enhanced by developing standardized templates for multi-species recovery strategies and developing criteria to identify candidate species grouping that would benefit from multi-species recovery/conservation planning. DFO can also work towards developing recovery documents for single species while using multi-species approaches to assist at the implementation stage.

Protection of CH	When a recovery strategy or action plan for aquatic species listed under SARA as endangered or threatened identifies critical habitat, it must be protected within 180 days. This is accomplished by triggering the prohibition under SARA against the destruction of any part of the CH. Although CH must be identified in both the species' recovery strategy and action plan, DFO has typically identified CH in detail only in recovery strategies to ensure transparency, while the action plan will refer to the recovery strategy rather than repeat the detailed identification.	Multi-species approaches are not applicable to the protection of CH for listed wildlife species as the prohibitions apply to CH for single species.
Implementation and monitoring	Under SARA, direct implementation of recovery actions is not addressed. Instead, SARA includes requirements for monitoring, assessing and reporting on progress towards meeting the objectives of recovery strategies, action plans and management plans. For species listed as extirpated, endangered, or threatened, the implementation of the recovery strategy must be monitored, assessed and reported on every 5 years until the objectives are achieved or recovery is no longer practical. The progress towards meeting the objectives of action plans and its socio-economic impacts must be monitored, assessed and reported	Because requirements for implementation of recovery actions are not stipulated under SARA, the implementation process offers flexibility to consider multi-species approaches. These implementation actions can improve conservation outcomes. To support implementation of recovery and conservation measures, opportunities may include improved information analysis to help identify actions to benefit multiple species and to assess effectiveness of these actions in benefiting these species, enabling collaborative forums comprised of partners and stakeholders to enhance information-sharing and leverage existing resources and actions in support of common goals and developing ‘multi-species

	on 5 years after the publication of the final action plan. For species of special concern, the implementation of a management plan and the progress towards meeting its objectives must be monitored, assessed and reported every 5 years until its objective has been achieved.	implementation strategies' that prioritize recovery actions to benefit multiple species in a geographic area or affected by similar threats.

Annex III: Factors to consider in developing multi-species approaches

Table 8. Factors to consider in developing multi-species approaches

Factors to consider	Can a multi-species approach help?	What challenges are involved in using a multi-species approach?
Addressing the needs of multiple species at the same time	Species in a particular geographic area can be grouped so that the needs of species within that area can be considered and addressed at the same time. Places may include some combination of: • a single watershed • multiple watersheds • wetlands • connectivity channels, • estuaries • marine environments Species or populations that are taxonomically similar, face the same threats or have similar biological and lifecycle requirements (e.g., food resources, temperature profiles, and connectivity needs) may be grouped so that actions can be developed to collectively account for the needs of these species or populations. Threat-based approaches provide opportunities to mitigate the impacts of a common threat to species. Species can also be	Place-based approaches work best at optimum scale. Geographical areas that are too large to develop measurable conservation actions may make it difficult to account for the needs of individual species within ecosystems. Areas that are too small may make it difficult to account for ecological fragmentation and connectivity needs. One solution is to develop conservation and recovery objectives for places of smaller scope, within larger places. These actions can also be prioritized, based on the needs of multiple species within a large geographical place. Species or populations for which approaches are developed because they are taxonomically similar may respond differently to different actions. Some species may require more tailored approaches. More tailored approaches, to account for variation in response to threat mitigation actions, may

	grouped with respect to shared impacts from key sectors. Examples include anthropogenic works or activities, pollution (including noise), cumulative effects and climate change. Ecosystem approaches provide opportunities to consider the interrelated needs of species and their habitat in an ecosystem as a whole.	also be required for particular species within threat-based approaches. The development of true ecosystem-based approaches requires sufficient information to understand all species dynamics within an ecosystem. Acquiring this level of information may not be practical.
Species for which data is lacking	Successful planning, research and monitoring within multi-species approaches allows for understanding of multiple species, their interactions with each other and their habitat, and pressures on their survival and recovery. Where species at risk are concerned, data challenges are common, whether a single species or multi-species approach is being applied. For species with less data in a multi-species approach, identifying a surrogate species with similar biology or an umbrella species, can help provide information on expected responses (Gilby et al., 2017, Zarri et al., 2024). In addition, by meeting the habitat conservation and threat mitigation needs for species for which more information is available, other species, with similar biological requirements, can be positively impacted. Applying adaptive management and interim performance metrics to measure	Rather than being tailored to one species, multi-species approaches involve the expectation that particular actions will benefit a number of species. When data is lacking for the species involved in a multi-species approach, the level of uncertainty associated with the impact of particular actions increases. Deficiencies in data on species distribution, abundance, interactions and habitat needs make effective multi-species conservation planning challenging as the lack of data may lead to flawed conservation and restoration designs, recovery objectives, and monitoring strategies (Drake et al., 2021; Noss et al., 2021). If the level of uncertainty is such that the responses of all or most species within a multi-species approach cannot be predicted or measured in a timely manner, the approach may not be an

	the responses of species for whom data is lacking can help to verify that species responses are meeting expectations. Indigenous knowledge and community science can also be used to help guide decision making when data is lacking.	effective means of conserving and recovering the species involved. Including strong candidates for surrogate or umbrella species can help make a multi-species approach effective when other species are lacking information.
Availability of resources (financial, operational, capacity and expertise)	With limited financial and operational resources and an increased administrative burden as more species at risk are in need of protection, multi-species approaches provide unique opportunities to maximize the use of available resources to benefit multiple species at risk, their habitat, and the overall ecosystem. This can be done by thoughtfully applying actions that will address the needs of a group of species sharing biological requirements and threats (Noss et al., 2021). Coordinated collaboration in developing multi-species approaches can align and leverage operational and financial resources toward shared objectives. It can also bring together capacity and expertise for SARA delivery. Adaptive management can further contribute to efficiencies by helping to ensure that resources are being used to implement actions that are improving conservation and recovery outcomes for the species in a multi-species approach.	Although multi-species approaches can improve efficiency of resource use, the resource requirements for multi-species approaches will vary, depending on the complexity and scope of the approach under consideration. Therefore practicality needs to be explicitly considered in the design of multi-species approaches, to ensure that efficient use is being made of resources. For example, a place-based multi-species approach for migratory and marine aquatic species may be challenging due to the extent of the geographical area involved and the costs associated with monitoring. In this example, it may be more appropriate to use a different type of approach, such as a threat-based approach. While coordinated collaboration can have wide-reaching benefits for achieving conservation and recovery objectives in multi-species approaches, increased collaboration does not always increase their effectiveness

		(Clement et al., 2020). Factors such as lack of accountability, lack of sustained funding for implementation, and conflict across jurisdictions can play a role in decreasing the effectiveness of a collaboration. Building clear governance models and tackling more manageable conservation and recovery issues through the exploration of pilot projects can facilitate transition to collaborative multi-species approaches. It is important to remember that multi-species approaches are not a one size fits all approach and can take many different forms. The effectiveness of multi-species approaches can vary because the degree of thoughtful planning, performance monitoring and implementation varies.
Species with competing needs	Multi-species approaches provide potential solutions for considering competing needs and for designing conservation actions that account for them, based on expected multi-species outcomes. For example, a multi-species approach can consider the seasonality of predator-prey interactions for at risk species such as whales and salmon (Hanson et al., 2021).	Sufficient information must be available to establish conservation and recovery actions that account for the competitive relationship between the species involved.
Monitoring needs of species	Multi-species monitoring may be designed to help assess the effectiveness of a multi-species approach, or to assess the status of at risk species individually within a	Where monitoring data must be purpose-generated for a particular species or population, such as that required to inform COSEWIC assessment reports, a

	multi-species monitoring strategy. For example, acoustic monitoring efforts for a single species can be expanded to include other species, while leveraging the expertise, equipment and other resources previously allocated for a single species. Umbrella species may also be used in multi-species approaches to help fulfill monitoring needs for other at risk species (Gilby et al., 2017).	multi-species approach may only be used where data collection involving multiple species will also meet the requirements for the particular species requiring purpose-generated data.
Complex issues such as climate change and cumulative effects	Multi-species approaches can provide opportunities to consider the impacts of large-scale threats like climate change and cumulative effects that are likely to impact multiple species in an ecosystem. Accounting for the effects of these threats on inter-species dynamics and their habitats can help maintain ecosystem function and resiliency, which can help mitigate impact (United Nations, 2022).	Understanding and accounting for the impacts of climate change and cumulative effects will not always be practical, based on currently available information and guidance. Going forward it will be important to incorporate guidance from programs and initiatives that focus on research, monitoring, and adaptation where these large-scale challenges are concerned, and to continue to foster linkages between these programs and SARA delivery.