Memorandum of Understanding between the North Pacific Marine Science Organization and the Pacific Salmon Commission

Recognizing that the North Pacific Marine Science Organization (PICES), exists to: (a) promote and coordinate marine scientific research in order to advance scientific knowledge of the area concerned and of its living resources, including but not necessarily limited to research with respect to the ocean environment and its interactions with land and atmosphere, its role in and response to global weather and climate change, its flora, fauna, and ecosystems, its uses and resources, and impacts upon it from human activities; and (b) to promote the collection and exchange of information and data related to marine scientific research in the area concerned;

Recognizing that the Pacific Salmon Commission (PSC) exists to: a) prevent over-fishing and provide for optimum production, and b) ensure that both countries receive benefits equal to the production of salmon originating in their waters, and further that the Parties shall conduct research to investigate the migratory and exploitation patterns, the productivity, and the status of stocks of common concern and the extent of interceptions while noting the Commission may make recommendations to the Parties regarding the conduct and coordination of research;

Recognizing the mandatory powers, constraints and obligations under which PICES and PSC respectively operate;

Desiring to provide a framework for mutual cooperation;

PICES and PSC, hereinafter called "the Parties", have agreed to the following:

1. To maintain reciprocal consultations and appropriate contacts on matters of common interest in the field of marine scientific research;

2. To regularly exchange data, information, documents, and publications relating to program and project plans and the results of activities agreed by the Parties to be of mutual interest, joint or otherwise;

3. To invite each other to be represented, in an observer capacity, at meetings of common interest, to the extent that this is possible within their respective working procedures;

4. When appropriate, to provide access to workshops, seminars, training opportunities organized by the Parties;

5. To undertake joint activities, as appropriate, including when agreed, the establishment of joint subsidiary bodies or other suitable arrangements, to study and report on matters of common interest;

6. To consult, as appropriate, on ways in which cooperation between them can be further improved and extended. Specific joint programs and activities may be defined through addenda to this agreement;

7. This Memorandum of Understanding (Memorandum) shall enter into force upon signature of the person duly authorized by each Party and shall remain in force unless either Party withdraws pursuant to paragraph 9 below;

8. The terms of the Memorandum may be revised by the Parties if they both agree. The Memorandum shall continue on the basis of the existing terms until new terms have been agreed;

9. Either Party may withdraw from the Memorandum at any time subject to giving one year's written notice to the other Party.

Scott Rumsey Date: October 20, 2022

Dr. Scott Rumsey, Chair

Pacific Salmon Commission

Enrique N. Curchitser Date: Nov. 11th, 2022

Enrique N. Curchitser Chair

North Pacific Marine Science Organization

Framework for Enhanced Cooperation in the North Pacific Ocean between

the Pacific Salmon Commission (PSC) and the North Pacific Marine Science Organization (PICES)

2 August2022

Executive Summary

The joint PSC-PICES Study Group on *Scientific Cooperation in the North Pacific Ocean* (SG-SCPSC) agrees on the need for a formal framework to guide, develop, implement, and monitor activities between PICES and PSC in the area of science cooperation.

The framework identifies three major scientific topics of joint interest to PSC and PICES, but does not prioritize these topics, nor provides a timetable for their investigation:

- enhancing the current understanding of Pacific Salmon status and trends, and climate change impacts and associated management implications;
- promoting the collection of, and access to, data, models and other information while respecting confidentiality and domestic statutes; and
- identifying information and research needs and priorities.

The framework describes various collaborative mechanisms that can be followed, including sharing of data, information and methodologies, access to training and education opportunities, joint working group, study group or expert group, joint workshops, seminars and symposia, theme sessions at PICES annual meetings, and joint strategic initiatives. The framework will be discussed by PICES at the annual meeting of the Science Board in October 2022 and at the October 2022 Fall Meeting of the PSC.

The SG-SCPSC recommends that the framework for enhanced collaboration be implemented immediately after approval of the MOU in Appendix 1 by both Organizations, and that two persons from each Organization provide annual updates to the PICES Science Board and the PSC Committee on Scientific Cooperation concerning the implementation of this framework. Any initiative pursued under the MOU and this framework must be approved by the respective governing bodies in each organization prior to initiation and/or expenditure of funds.

1.0 Background

The PSC and PICES are inter-governmental organizations with overlapping geographical areas and common interests in the North Pacific Ocean. Both organizations promote and coordinate marine scientific research and the collection and exchange of information and data on Pacific salmon and their ecosystems. It is also anticipated that experiences and lessons learned in Pacific salmon research from the western North Pacific will be relevant to the eastern North Pacific governments, and vice versa. Cooperation and consultation are just as significant as data/information sharing for North Pacific Rim countries striving to conserve and manage Pacific salmon.

In recognition of shared interests and a desire by both organizations to facilitate and enhance cooperation between them, they will sign a Memorandum of Understanding (MOU) in 2022 that provides a mechanism for implementing this framework on scientific cooperation (*Appendix 1*).

To prepare the MOU and framework, the joint PICES/PSC Study Group on *Scientific Cooperation in the North Pacific Ocean* (SG-SCPSC) was established in 2021 to review each organization's information and research needs and identify where similar key questions or research issues might be explored jointly by both organizations.

The following are the terms of the reference (TOR) of the joint PSC-PICES Study Group (hereafter, SG):

1. Review information on each organization's governance structure, mandates and research interests;
2. Develop a list of potential areas of cooperation;
3. Convene one or more meetings to:
    a. improve understanding of the data and research activities of each organization
    b. review data and research topics from TOR (1) to identify areas of common interest
    c. develop a framework for cooperation between PSC and PICES that lists categories of joint activities and the rationale for each, including the benefits to each organization from the joint activity, and identify priorities for joint activities within categories;
    d. recommend processes for implementing TOR (3c)
    e. recommend approaches to develop a strategic plan for cooperation and mechanisms to periodically update that plan.
4. The Co-Chairpersons will prepare a final Study Group report for distribution by September 2022.

The SG consists of:

Dr. Sonia Batten (PICES Executive Secretary)

Ms. Diana Dobson (DFO)

Dr. Edward Farley (NOAA/NMFS)

Mr. John Field (SG Co-Chair, PSC Executive Secretary)

Dr. Satoshi Honda (Japan FRA)

Dr. Jackie King (SG Co-Chair, DFO)

Dr. Catherine Michielsens (PSC Secretariat)

Mr. Anjum Mutakabbir (DFO)

Ms. Cara Fogliato (DFO)

Dr. Scott Rumsey (NOAA/NMFS)

Mr. Bill Templin (Alaska Dept. of Fish and Game)

Dr. Sang Seon Yun (Korea; Nereus Laboratories)

At the initial SG meeting, members provided brief overviews of PICES and PSC organizational structures and scientific missions. They also discussed scientific needs and overlapping issues that might be explored jointly by both organizations.

Members also reviewed a draft of this framework at their initial meeting and continued discussion, consideration, and drafting by email.

1.1 PSC organizational structure and procedures

The PSC is a regional fishery management organization created under the 1985 Treaty between the Government of Canada and the Government of the United States Concerning Pacific Salmon (the Pacific Salmon Treaty). As a treaty organization, the PSC facilitates implementation of the Treaty through research and regular meetings between national, provincial/state, First Nation, and U.S. tribal delegates to manage commercial, sport, and subsistence fisheries in both countries.

It has responsibility for all Pacific salmon originating in the waters of one country that are subject to interception by the other, affect management of the other country's salmon or biologically affect the stocks of the other country. In addition, the PSC takes into account the conservation of steelhead trout while fulfilling its other functions. This biological description of Treaty coverage translates geographically to coastal waters and spawning rivers of the Yukon, Southeast Alaska, British Columbia, and the Northwest United States.

A group of sixteen commissioners represent environmental interests, commercial and recreational fisheries, as well as federal, state and Indigenous governments. There are five regional Panels, four of which report to the PSC Commissioners. The PSC and Panels carry out their responsibilities aided by data, modelling and scientific advice provided by a number of bilateral Technical Committees. The Committee on Scientific Cooperation includes members from each Party, the Executive Secretary, and the PSC's Chief of Fisheries Management Science. It is charged with addressing broad scientific issues affecting salmon management in the two countries, and engages with a steering committee of four Commissioners throughout the year. However, the PSC does not have an organizational science or research plan. See Figure 1 for the PSC's organizational chart.

The PSC is administered through a Secretariat in Vancouver, Canada. The 31 Secretariat staff members include administrative and scientific professionals who facilitate meetings, run field programs, collect and analyze data, provide scientific assessments and maintain extensive archives dating back to the early 20th century.

1.2 PICES organizational structure and procedures

The North Pacific Marine Science Organization (PICES) is the international, inter-governmental organization that is responsible for coordinating and promoting marine scientific research and scientific information exchange among its Contracting Parties (Canada, Japan, People's Republic of China, Republic of Korea, the Russian Federation, and the United States of America). The primary area of interest to the Organization is the northern North Pacific Ocean, bounded at the south by 30°N latitude and in the north by Bering Strait. PICES was established by international convention in 1992, with a Secretariat hosted by Fisheries and Oceans Canada at the Institute of Ocean Sciences, Patricia Bay, Canada.

Two delegates from each Contracting Party plus a Chair elected by the delegates form a Governing Council that is responsible for policy, general direction, decision-making, and priority setting (Figure 2). The scientific activities of PICES are established by a network of 300 scientists, appointed by the members to serve on standing committees and various thematic expert groups. Governing Council is advised by its Science Board on scientific priorities. The Science Board is formed by the Chairs of the permanent Scientific Committees and Technical Committees. Should any Contracting Party not be

represented on Science Board by virtue of not having a chair, it can appoint a representative to serve its scientific interests.

The scientific work of PICES is conducted primarily by ephemeral working groups and study groups with 1- to 3-year lifespans to achieve the results described in their terms of reference (Figure 2). Advisory Panels and Sections provide longer-lived expert groups to maintain specific expertise within PICES. Chairship for expert groups is often shared by Asian and North American scientists.

The Scientific and Technical Committees are responsible for the planning and direction of major disciplinary themes. They provide general supervision to the expert groups and report their activities to Science Board.

From time to time, Science Board has provided formal scientific advice to a Contracting Party, but it is not a major activity. Scientists in PICES have focused on reporting status and trends in the North Pacific and understanding the nature and consequences of global climate change. New initiatives will seek to communicate this understanding to society.

The work of PICES is determined primarily by the scientists of the Contracting Parties. They are supported by a Secretariat that is responsible for organizing their international meetings and workshops, publishing their work, fundraising, maintaining and developing the PICES website, maintaining and enhancing relations with other international organizations, and for the day-to-day running of the Organization. When called upon, the Secretariat leads the development of major scientific products.

The PICES Strategic Plan describes how the organization will implement its mission to promote and coordinate marine scientific research (PICES-Strategic-Plan-Oct-2016.pdf). The plan lists several goals, the first five of which are especially relevant to this framework:

> (1) Foster collaboration among scientists within PICES and with other multinational organizations;
>
> (2) Understand the status and trends, vulnerability and resilience, of marine ecosystems;
>
> (3) Understand and quantify how marine ecosystems respond to natural forcing and human activities;
>
> (4) Advance methods and tools;
>
> (5) Provide relevant scientific information pertinent to North Pacific ecosystems that is timely and broadly accessible.

PICES activities are further guided by its current integrated research program FUTURE: *Forecasting and Understanding Trends Uncertainty and Responses of North Pacific Marine Ecosystems*. FUTURE is an integrative science program undertaken by the Contracting Parties and affiliates of PICES to understand how marine ecosystems in the North Pacific respond to climate change and human activities, to forecast ecosystem status based on a contemporary understanding of how nature functions, and to communicate new insights to its members, governments, stakeholders and the public. (www.pices.int/members/scientific_programs/FUTURE/FUTURE-main.aspx).

2.0 Major research topics of joint interest to PSC and PICES

PICES has a much broader scientific mandate than PSC. As described above, PICES is tasked with understanding how marine ecosystems respond to climate change and human activities. Climate change is a focus of PSC scientific dialog, but solely in the context of sustainable salmon management in coastal waters and spawning rivers in the Yukon, Southeast Alaska, British Columbia, and the Northwest United States.

Improved collaboration should allow PSC and PICES researchers to add value to their scientific programs, provide synergies on regional and global issues, and enhance the visibility of both organizations. This strategy should be adaptive to allow the organizations to respond to changing priorities of each organization's Contracting Parties and of the scientific community.

The SG identified three broad research areas of mutual interest, each with various subtopics. The following list is not prioritized, and there is some overlap among items listed:

- enhancing the current understanding of Pacific Salmon status and trends, and climate change impacts and associated management implications;
- promoting the collection of, and access to, data, models and other information; and
- identifying information and research needs and priorities.

2.1 Enhancing the current understanding of Pacific Salmon status and trends, climate change impacts and associated management implications

Climate change will likely result in increases in ocean temperature that could impact the survival of many marine organisms, including salmon. Furthermore, climate change could result in changes to many characteristics of an ecosystem, such as species biomass, community species composition, and seasonal dynamics of prey and predators. These changes could result from increasing ocean temperature, increasing stratification, increased mixed layer depth, and/or decreases in nutrient concentration.

There are many areas of possible collaboration between PSC and PICES, particularly with the PICES/ICES Section on *Climate Change Effects on Marine Ecosystems* (S-CCME). Some focused research topics include the following:

(1) Key climatic and oceanographic factors affecting long-term changes in food production and salmon growth rates, for example:

- Linkages between salmon marine survival and climate and ocean change;

(2) Environmental factors that affect salmon ocean distribution (*e.g.*, temperature, salinity, prey biomass, *etc*.) and how distribution (including winter in the open ocean) may be affected by climate change, for example:

- Impacts of climate change on available salmon habitat and salmon production;

(3) The human dimension of ecosystem change (a key element of its FUTURE research initiative).

Although PSC's mission is the management of salmon, the Secretariat and domestic agency scientists may be able to collaborate on specific research questions.

2.2 Promoting the collection of, and access to, data, models and other information;

In general, sharing data, information, models, and methodologies is essential to promote scientific collaboration. The PSC has access to large data sets on Pacific salmon and regional fisheries, and PICES has access to expansive information on North Pacific ecosystems and high seas research relevant to Pacific salmon. Canada and the United States send scientific experts to both organizations. . Nonetheless, there is limited domestic and international communication about each organization's initiatives, priorities, archives, and public data availability. While data and information sharing would facilitate collaboration and advance research, it can add a considerable burden to researchers, and needs to be planned carefully and facilitated.

Given the need to share data among PICES member countries, the PICES Technical Committee on Data Exchange (TCODE) is responsible for PICES data inventory and identifies data to be included in the PICES data inventory. For any data provided to PICES, PICES respects the ownership rights and any restrictions placed on these data by the provider. The data include data products and model outputs as well as meta data.

Moving forward, the PSC could be both a data provider as well as an end user of the PICES data in view of the protections in place for ownership and confidentiality. The PSC has numerous publications, research priorities, and data that it makes publicly available via its website, but this information is not always in the most accessible format for other users (e.g., data spread over a series of annual reports in PDF format). The PSC's grant programs have provided substantial funding for high seas and coastal marine research over the last several years that could be relevant to PICES interests. It is also undertaking an organization-wide inventory of how environmental factors are (or could be) incorporated into its salmon assessments. Such an effort could a) be informed by marine ecosystem information held by PICES; and b) inform PICES deliberations on other fisheries issues in the North Pacific.

Once initiated under the MOU in Appendix 1, this framework could help improve connectivity and communication between scientists engaged in PICES and PSC to a) match expertise with specific problems or issues; b) reduce redundancy in funded research initiatives; c) expand awareness of each organization's information/data holdings; and d) initiate mutually beneficial workshops/symposia/theme sessions endorsed by the respective governance systems. Such efforts, elaborated in Section 3 below, would also benefit from cost-sharing between the two organizations where appropriate and approved.

2.3 Identifying gaps in knowledge and needs that should be addressed.

Climate change is changing the abundance, productivity and distribution of North Pacific salmon species. Given the complex nature of environmental impacts on Pacific salmon stocks, PSC Technical Committees have increasing difficulty inappropriately accounting for climate change in assessments and the selection of management goals. Increased interaction and collaboration between PSC and PICES may better inform the PSC family to the availability of data and methods to appropriately incorporate climate change in assessments and would inform the PICES community better on the high-quality salmon data available and research priorities based on fisheries management considerations.

3.0 Implementation procedures

Potential mechanism`s for enhancing cooperation between the PSC and PICES include:

1. Sharing of data, information and methodologies

2. Access to training and education opportunities

3. Theme sessions at PICES annual meetings

4. Joint working group, study group or other expert group

5. Seminars and symposia

6. Workshops at PICES annual meetings or other events

7. Strategic initiatives

8. Other

3.1 Sharing of data, information, and methodology

Both PICES and the PSC share the belief that the sharing of data, information and methods are essential to advance the knowledge and understanding of ecosystem changes in the North Pacific Ocean and how this may impact different species such as Pacific salmon. The websites of both organizations are important means for sharing information and publications.

The sharing of data among PICES countries is currently organized by TCODE (Technical Committee on Data Exchange) which is the committee responsible for the development of communication networks for exchange of data and information. For any of the data provided, PICES respects the ownership rights and any restrictions placed on these data by the provider. TCODE is among others responsible for managing the PICES data inventory and assisting Expert Groups to identify data that are to be included in the data inventory. They also assist the Expert Groups in the development of data management options and strategies.

Inclusion of Pacific salmon fisheries and assessment data from the PSC in the PICES data inventory could be discussed with TCODE and a relevant Expert Group established that would include relevant PSC representatives to ensure appropriate confidentiality and other protections are in place, inter alia.

3.2. Access to training and education opportunities

Given the overlapping interests of the PSC and PICES in the North Pacific Ocean, the increased need to account for ecosystem changes in assessment methodologies and the continuous need of both organizations to improve the knowledge and skills of both experienced as well as early career researchers and biologists, it would be beneficial for both organizations to provide the PICES/PSC community access to PSC or PICES-wide training opportunities. Past PSC-wide training included training workshops on leading technical meetings, the use of SharePoint, and Bayesian assessment methods.

Currently training and education opportunities are an area that is underexplored for both organizations. This framework and MOU could help to build mutual awareness of training needs among delegates and means to address them via cost-sharing.

3.3 Theme sessions at PICES annual meetings

Joint topic sessions at PICES annual meetings held normally in October are an excellent potential mechanism for cooperation between PICES and PSC. There are numerous past examples of sessions that PICES has co-convened with other organizations, such as the International Year of the Salmon/NPAFC, ICES (International Council for the Exploration of the Sea), IMBER (Integrated Marine Biogeochemistry and Ecosystem Research), NOWPAP (Northwest Pacific Action Plan), Ocean Network Canada, SOLAS (Surface Ocean Low Atmosphere Study), and many others.

The benefits of sharing research findings and expertise have been demonstrated by these examples. Cross-cutting or interspecific discussion of PSC science is typically achieved through workshops, seminars, and symposia often held in the margins of the organization's two large winter meetings (January and February).

PICES – Topic session proposals by scientists working under the PICES umbrella should be submitted to the PICES website by the deadline, typically September 1 of the calendar year before the Annual Meeting of interest. Proposals should include: a title, duration (full or half day), session description, list of conveners, sponsoring PICES Scientific Committee(s), co-sponsoring organizations (if any), and whether (and where) a publication is intended. The proposals are then ranked by all Committee members online. At the Committee meetings at the Annual Meeting in the fall (the year before the meeting of interest), recommendations for which session proposals to support are finalized. The Committee Chairs then present the recommendations to the Science Board (SB) for final decision. The PICES SB will evaluate and agree on co-sponsoring of sessions. The agreement will consider not just the scientific excellence and appropriateness of the proposals, but also the financial constraints of funding such sessions.

PSC – The PSC has hosted numerous scientific/technical sessions in the margins of its winter meetings in January and February. These have addressed updates on oceanographic conditions in the North Pacific, stock assessment modelling, variation in environmental indicators, and other topics of interest to salmon managers. Participation has typically been limited to national delegates, but the pending PICES/PSC MOU could broaden invitations to PICES scientists with the respective approval and planning from each organization. Proceedings for such sessions can be video recorded and posted to the PSC's YouTube channel for public use, and written reports or abstracts can be published via the PSC's Technical Report series. Seeking PSC approval of such sessions is straightforward and could be accomplished via the Committee on Scientific Cooperation or the new PSC-PICES Study Group on *Scientific Cooperation in the North Pacific Ocean* (SG-SCPSC) submitting short written proposals under the auspices of the PICES/PSC MOU at least one year in advance. Venues for such events would be limited to Vancouver, B.C. or Portland, Oregon for in-person attendees, but online participation is broadly available.

3.4 Joint working group, study group or Expert Group

Both PICES and the PSC have the ability, following the necessary approvals, to create a working group, study group or other expert group depending on the perceived need. Similar to the current joint PSC-PICES Study Group on Scientific Cooperation in the North Pacific Ocean (SG-SCPSC) to develop this framework for enhanced scientific cooperation, there may be a need to form other joint groups to operationalize other collaborative mechanisms described in this framework. For example, a joint PSC-PICES Expert Group may be needed to identify data that may be included in the PICES data inventory.

It may be of interest for both organizations to initiate new cross-cutting activities that require the engagement and participation of several organizations. The initiatives would be aimed at multi-disciplinary topics that could benefit from additional coordination.

PICES – Cross-cutting initiatives can be addressed by forming a new Section in PICES. A "Section" represents a sub-committee under a scientific committee that has a longer lifespan than a working group. Its purpose is to provide input to the parent scientific committee on specific issues for which expertise may be lacking on the parent committee. Sections should be reviewed periodically to ensure they continue to meet their objectives. An example is the joint ICES-PICES Section (Strategic Initiative) on *Climate Change Effects on Marine Ecosystems* (S-CCME), which aims to ensure that "*ICES and PICES will become the leading international organizations providing science and advice related to the effects of climate change and variability on marine resources and ecosystems*".

PSC – Launching cooperative initiatives with other organizations is a new possibility for the PSC, and warrants further discussion via the PSC-PICES Study Group on *Scientific Cooperation in the North Pacific Ocean* (SG-SCPSC), the Executive Secretaries, and the relevant scientific bodies within the two organizations.

3.5 Symposia

PICES – Proposals generated internally within PICES for jointly sponsored symposia are generally brought to the attention of Science Board by Committee Chairs at one of its two meetings during the year. The nature of the discussion often depends on whether PICES is asked to be the organizer. Normally, PICES organizes one major symposium per year. Typically, this symposium is jointly sponsored because of the financial commitments required to organize a major symposium. Organizations seeking co-sponsorship of a symposium by PICES should direct a letter of invitation to the Executive Secretary of PICES. In addition to the scientific imperative, the letter should include the names of other co-sponsoring organizations and a summary of role and financial/in-kind contributions expected of PICES. The Executive Secretary will circulate the invitation to the relevant Committees. Significant commitments of resources typically require 2–3 years advance planning. Potential jointly organized and co-sponsored symposia may require more lead time.

3.6 Seminars

The PSC is hosting a monthly seminar series for its national delegates, begun in early 2022. The goal is to develop an actionable strategy to help prepare and support the ability of the PSC family to contend with environmental challenges. The series steering committee is comprised of volunteers from the PSC family so as not to interfere with other responsibilities and obligations. It would be desirable to include membership from PICES given the expertise and connections to speakers focusing their research on environmental challenges. PSC seminar topics thus far included: heat waves and ocean blobs, new salmon habitat: from glacial retreat to spawning in the Arctic.

3.7 Workshops

New emerging issues often demand innovative and multidisciplinary approaches. The ability to deal with and resolve new concepts is likely to be enhanced by bringing together PSC and PICES expertise in co-sponsored workshops.

PICES – Proposals for jointly sponsored workshops are generally brought to the attention of Science Board by Committee Chairs. For the most part, a proposal for a workshop should resemble a proposal for a scientific session, with some additional information depending on whether it is associated with a PICES or PSC annual meeting, local host/organizer, institute/location, dates, financial expectations of PICES (commonly for invited speakers from PICES and/or PICES conveners). Proposals for workshops to be held at the PICES annual meeting are submitted the same way as for theme sessions (see 3.1 above).

PSC – The PSC has hosted various workshops on topics ranging from orca survival and salmon predation, and use of environmental indicators in stock assessment. These are supported either through national financial contributions, in-kind donations, or grants from the PSC's Northern and Southern Restoration and Enhancement Funds. The formality for seeking such support varies by mechanism, but typically involves 1-2 years planning ahead of the event.

3.8 Other

Other mechanisms for cooperation between PSC and PICES include regular representation at each other's annual meetings and mutual contributions to selected reports.

3.8.1 Representation at annual meetings

Invitations to respective annual meetings can be organized via the two secretariats, with scope of the invitation (i.e., Secretariats, national delegates, etc.) designed as appropriate.

3.8.2 Contribute to reports

PICES produces a number of scientific reports, special issues in peer review journals, the newsletter PICES Press, etc. Many reports are the products of Expert Groups but PICES also produces periodic North Pacific Ecosystem Status reports and there may be opportunities for salmon-related contributions in future editions.

In general, scientific publications from the PSC take the form of

a. Technical Reports: results of completed or ongoing investigations carried out by the PSC that are deemed of sufficient interest to be made available to the scientific community and the public. Reports in this series are published on an irregular basis, and are not peer-reviewed.
b. Technical Committee Reports: reports issued by its nine joint Technical Committees. These typically address annual tasks and model output required under the Pacific Salmon Treaty or accepted practice, and are not peer-reviewed.
c. Endowment Fund Reports: provide results from projects financed by the PSC's Northern and Southern Endowment Fund programs, with each project typically spanning 1-2 years.
d. Special Reports: relay results from PSC-hosted workshops/seminars, consultants' findings on specific topics prioritized by the PSC, and work of the Committee on Scientific Cooperation. These are not usually peer-reviewed.

Further collaboration, as appropriate, on reports led by either organization would advance the cause of increased cooperation. Such collaboration will be defined and decided on a case-by-case basis by the governing bodies in each organization.

4.0 Monitoring/steering cooperation

The SG concludes that this framework should provide sufficient guidance to the PSC and PICES communities to develop bottom-up joint activities, with clear procedures for approval and implementation (see section 3.0). The implementation of these activities needs to be agreed upon by the organizations' respective bodies: the Science Board in the case of PICES and the Commissioners in the case of PSC.

When considering cooperative proposals, these bodies also need to take into account their own scientific priorities as determined by their respective processes. Additional considerations are the financial and structural constraints under which the organizations operate, and the balance of cooperative activities in their own profiles.

A mechanism is needed to monitor and steer PSC – PICES collaborations, and to act as an interface between the two organizations and the proponents of joint activities. It is proposed that this role be filled for PSC by a representative of the Secretariat and a member of the Committee on Scientific Cooperation and for PICES by a representative of the Science Board and FIS Committee.

This group of four would ensure a responsive structure with a light footprint and minimal additional costs, and with the mandate to implement specific cooperative activities, such as joint meetings, working groups, and strategic initiatives, identified in this framework and when approved by each organization's governing bodies. In addition, it is suggested that a strategic analysis be conducted every 3–5 years, and that this includes an additional 2–5 members of each organization.

5.0 Conclusions and next steps

In conclusion, the SG recommends this framework be adopted by both organizations. The framework identifies three broad areas of joint scientific interest to PSC and PICES, but does not prioritize them:

- enhancing the current understanding of Pacific Salmon status and trends, climate change impacts and associated management implications;
- promoting the collection of, and access to, data, models and other information; and
- identifying information and research needs and priorities.

The SG recognizes that topics of interest will change over time and does not provide a timetable for their investigation.

The framework identifies various mechanisms for implementing enhanced cooperation between PSC and PICES, including theme sessions at PICES annual meetings, joint working groups, symposia, workshops, strategic initiatives, and representation at each other's meetings. Procedures for other collaborations (*e.g.*, publications, training) may require further development.

Both organizations require lead time to identify, evaluate, and formulate ongoing commitments as next steps toward enhancing cooperation. When given opportunities for co-involvement by scientists of both organizations through the implementation mechanisms identified in this framework, enhanced cooperation in areas of mutual scientific interest should expand.

The framework will be considered by the inter-sessional meeting of the PICES Science Board in September at PICES-2022 and at the October 2022 Meeting of the PSC. Final approval by PICES will be required by Governing Council at their October 2022 Annual Meeting. Assuming the framework is

approved by both Organizations, the Study Group recommends that the framework be implemented immediately and that two persons from each Organization provide annual updates to the PICES Science Board and the PSC Commissioners concerning the framework's implementation.

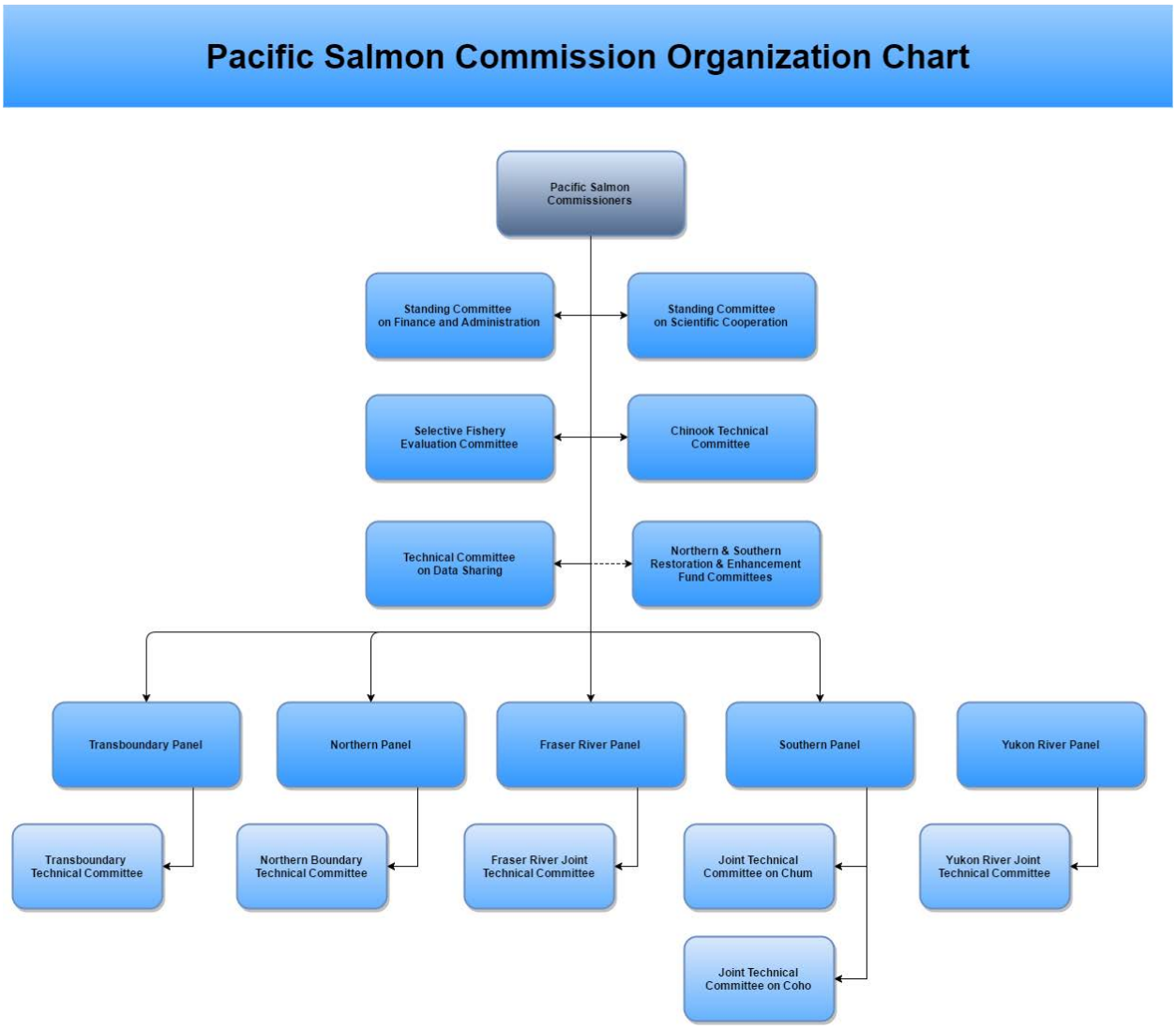


Figure 1. Organizational structure of the PSC in 2022

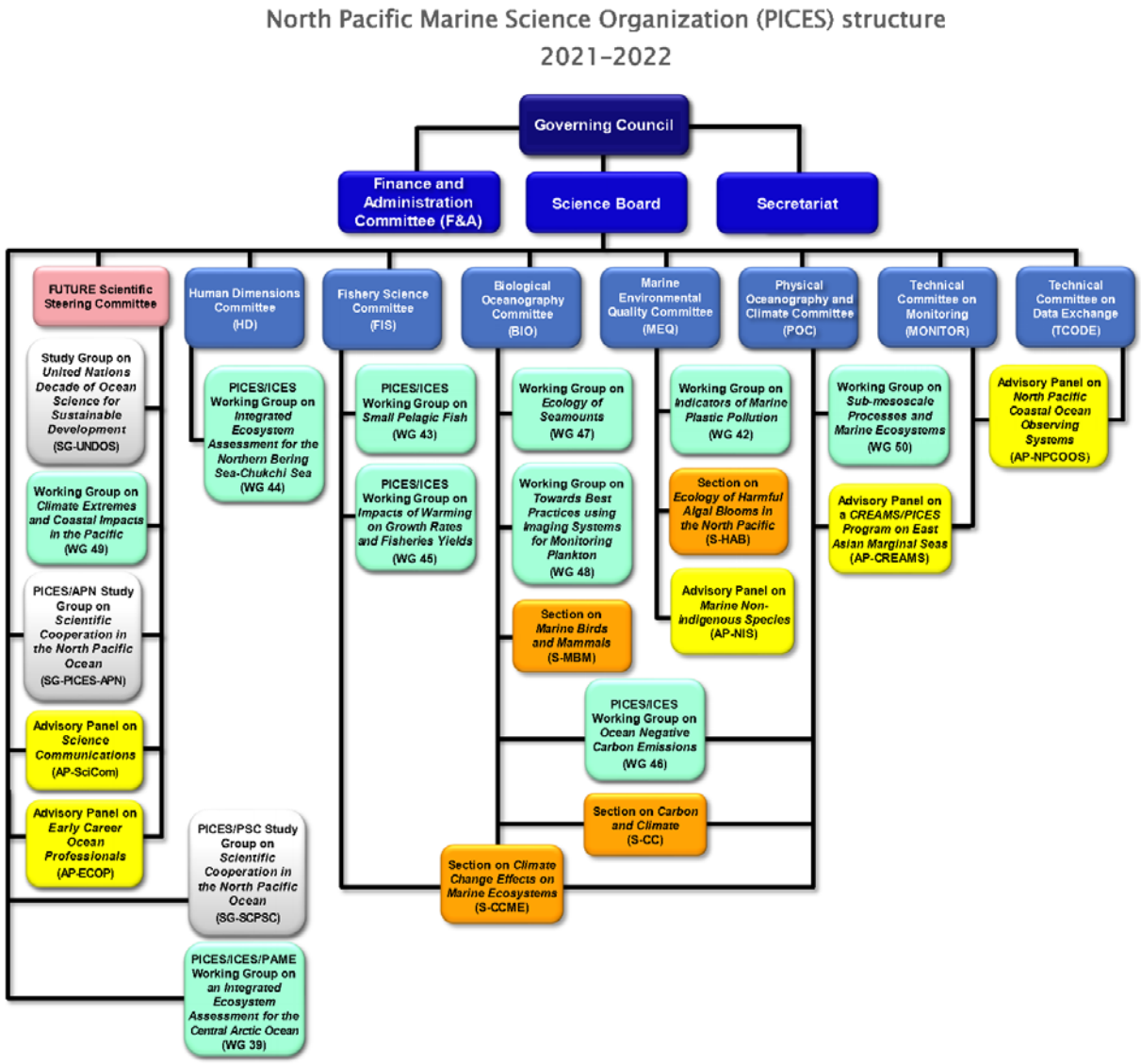


Figure 2. Organizational structure of PICES in 2022. The uppermost rows are the executive and standing committees. Expert groups under them are generally ephemeral, with their lifespan determined by the nature of their duties.

***Appendix 1*: Memorandum of Understanding between the North Pacific Marine Science Organization and the Pacific Salmon Commission**

Recognizing that the North Pacific Marine Science Organization (PICES), exists to: (a) promote and coordinate marine scientific research in order to advance scientific knowledge of the area concerned and of its living resources, including but not necessarily limited to research with respect to the ocean environment and its interactions with land and atmosphere, its role in and response to global weather and climate change, its flora, fauna, and ecosystems, its uses and resources, and impacts upon it from human activities; and (b) to promote the collection and exchange of information and data related to marine scientific research in the area concerned;

Recognizing that the Pacific Salmon Commission (PSC) exists to: a) prevent over-fishing and provide for optimum production, and b) ensure that both countries receive benefits equal to the production of salmon originating in their waters, and further that the Parties shall conduct research to investigate the migratory and exploitation patterns, the productivity, and the status of stocks of common concern and the extent of interceptions while noting the Commission may make recommendations to the Parties regarding the conduct and coordination of research;

Recognizing the mandatory powers, constraints and obligations under which PICES and PSC respectively operate;

Desiring to provide a framework for mutual cooperation;

PICES and PSC, hereinafter called "the Parties", have agreed to the following:

1. To maintain reciprocal consultations and appropriate contacts on matters of common interest in the field of marine scientific research;

2. To regularly exchange data, information, documents, and publications relating to program and project plans and the results of activities agreed by the Parties to be of mutual interest, joint or otherwise;

3. To invite each other to be represented, in an observer capacity, at meetings of common interest, to the extent that this is possible within their respective working procedures;

4. When appropriate, to provide access to workshops, seminars, training opportunities organized by the Parties;

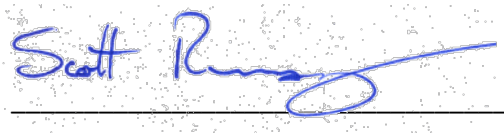
5. To undertake joint activities, as appropriate, including when agreed, the establishment of joint subsidiary bodies or other suitable arrangements, to study and report on matters of common interest;

6. To consult, as appropriate, on ways in which cooperation between them can be further improved and extended. Specific joint programs and activities may be defined through addenda to this agreement;

7. This Memorandum of Understanding (Memorandum) shall enter into force upon signature of the person duly authorized by each Party and shall remain in force unless either Party withdraws pursuant to paragraph 9 below;

8. The terms of the Memorandum may be revised by the Parties if they both agree. The Memorandum shall continue on the basis of the existing terms until new terms have been agreed;

9. Either Party may withdraw from the Memorandum at any time subject to giving one year's written notice to the other Party.


_____ Date: October 20, 2022

Dr. Scott Rumsey, Chair

Pacific Salmon Commission

_____Date:

Enrique N. Curchitser Chair

North Pacific Marine Science Organization