

2022 Report of WG 44 on the *Integrated Ecosystem Assessment for the Northern Bering Sea - Chukchi Sea*

The Joint PICES/ICES Working Group on the *Integrated Ecosystem Assessment for the Northern Bering Sea - Chukchi Sea* (WG 44) held its third meeting on August 31, 2022, virtually. Eighteen members were present, representing all member countries (*WG 44 Endnote 1*). The meeting was chaired by Dr. Elizabeth (Libby) Logerwell (USA). After self introductions, the meeting agenda was reviewed by members and adopted (*WG 44 Endnote 2*)

AGENDA ITEM 3

Approach and methodology, status and upcoming milestones

We developed three conceptual models with a team of interdisciplinary and multi-national scientists and with input from a few indigenous representatives. The models were created using Mental Modeler software. The model results will be released in a PICES Report. Our next steps are to finish our IEA scoping document and finalize IEA goals by spring 2023. We are also planning to identify indigenous partners this coming fall and winter.

AGENDA ITEM 4

Indigenous knowledge sharing, status and upcoming milestones

“Multiple Ways of Knowing the Bering Sea-Chukchi Sea Ecosystem” workshop was held August 24–25, 2022 in Anchorage, and convened by Sarah Wise *et al.* Workshop organizers are in the process of transcribing the workshop notes and summarizing the ideas for bringing in Indigenous knowledge into our IEA process. The workshop included discussions about the challenges of terminology and language (*e.g.*, understanding what the term “Indicators” means) and the concept of time. Milestones: Share report from first workshop. Distribute information that is not digital. Organize a larger, more inclusive meeting in 2023 in Seattle, WA.

AGENDA ITEM 5

2023 Work Plan

WG members discussed a draft Work Plan and agreed on milestones and deliverables (*WG Endnote 3*). An extension of WG44’s term to fall 2024 was requested to FIS and HD parent committees.

AGENDA ITEM 6

Proposal for new Advisory Panel on Arctic issues

Dr. Logerwell presented a proposal for an Advisory Panel on the Arctic Ocean and the Pacific Gateways, and Terms of Reference (*WG 44 Endnote 4*). WG members discussed its merits. It was generally agreed that this AP may be a natural evolution following WG 44 and so would be timelier after completion of WG 44 activities in 2024. Dr. Alison Deary (NOAA AFSC) was nominated to be an East Pacific co-chair if the proposal is accepted.

AGENDA ITEM 7

Proposals for meetings / co-sponsored events

See *WG 44 Endnote 5*.

WG 44 Endnote 1

WG 44 meeting participation list

Members

Libby Logerwell (Co-chair, USA)
Yury Zuenko (Co-chair, Russia)
Andrea Niemi (Canada)
Zhongyong Gao (China)
Qi Shu (China)
Changan Xu (China)
Taka Hirata (Japan)
Kohei Matsuno (Japan)
Shigeto Nishino (Japan)
Yutaka Watanuki (Japan)
Hyoung Sul La (Korea)
Kirill Kivva (Russia)
Matt Baker (USA)
Megan Ferguson (USA)
Katrin Iken (USA)
Jamal Moss (USA)
Diana Stram (USA)
Sarah Wise (USA)

Members unable to attend

Canada: Nadja Steiner
Russia: Alexei Somov
USA: Lee Cooper, Raychelle Danielle, Lisa Eisner, Kirstin Holsman, Henry Huntington, Mellisa Johnson, Kathy Kuletz

Observers

Julie Kellner (ICES)
Ali Deary (USA)
Becky Ingram (USA)

PICES

Sonia Batten (Executive Secretary)

WG 44 Endnote 2

WG 44 meeting agenda

1. Welcome, adoption of agenda, appointment of rapporteur
2. Introduce ourselves and guests
3. Approach and methodology, status and upcoming milestones (Moss or Logerwell)
4. Indigenous knowledge sharing, status and upcoming milestones (Sarah Wise)
5. 2023 Work Plan; Request extension?
6. Proposal for new Advisory Panel on Arctic issues (AP-ARC)
7. Proposals for inter-sessional meetings / co-sponsored events

WG 44 Endnote 3

**2022–2023
WORK PLAN**

1. Determine approach and methodology for conducting an IEA in the Northern Bering – Chukchi Sea LME.
 - a. Activities
 - i. Identify participants in and beneficiaries of IEA activities and products
 - ii. Identify goals for the regional IEA
 - iii. Intersessional Conceptual Model in person workshop (if funding can be secured from NOAA IEA Program).
 - iv. PICES 2023 workshop (title TBD)
 - b. Deliverable(s):
 - i. Scoping document
 - c. WG member leads: Holsman, Daniel, Stram, Moss, Logerwell
 - d. Target date: Spring 2023 WG44 virtual meeting
2. Including multiple ways of knowing the ecosystem
 - a. Activities
 - i. Indigenous Conceptual Model workshop (September 2022)
 - ii. PICES 2023 workshop (title TBD)
 - b. Deliverable(s) and target dates:
 - i. Drafted Elements of Indigenous Conceptual Model (October 2022)
 - ii. Final Elements of Indigenous Conceptual Model (Fall 2023)
 - iii. PICES 2023 workshop plans (Spring 2023)
 - c. WG member leads: Wise, Daniel, Huntington, Heflin
3. Describe the key physical, biological and human elements of the ecosystem
 - a. Activities
 - i. Develop shared, integrated conceptual models including both Indigenous Knowledge and science (see 1. and 2. above) (start integration discussions at PICES 2023 workshop; continue work through 2024)
 - 1) Review of hypotheses for ecosystem dynamics
 - 2) Identify potential indicators of the above key elements
 - b. Deliverables: Ecosystem description from both Indigenous world views and science, indicators and hypotheses (Fall 2023)
 - c. WG member leads: Holsman, Daniel, Stram, Wise, Daniel, Huntington, Heflin

Note: This work plan accomplishes Years 1 and 2 Activities and Deliverables as detailed in our ToR. A one-year extension will be requested to complete Year 3 Activities and Deliverables in our ToR.

WG 44 Endnote 4

Proposal for an Advisory Panel on the Arctic Ocean and the Pacific Gateways

Acronym: AP-ARC

Potential Parent Committee: Science Board (SB), FIS, MONITOR

Term: Nov. 2022-TBD

Background

The Central Arctic Ocean (CAO), that is in between the North Pacific and North Atlantic, is in rapid transition, in interaction with and impacting these waters. It has become more accessible to a range of activities. For example, rapid loss of sea ice cover has opened up the CAO for potential fishing opportunities. In this context, the agreement to Prevent Unregulated High Seas Fisheries in the CAO has been signed and entered into force which will necessitate joint research and monitoring. The Pacific gateway to the CAO, *i.e.*, the Northern Bering Sea-Chukchi Sea (NBS-CS) is also experiencing unprecedented warming and loss of sea ice as a result of climate change. Declines of seasonal sea ice and warming temperatures have been more prominent in the northern Bering and Chukchi seas than in the European Arctic. Chronic and sudden changes in climate conditions in this Arctic gateway are clearly reshaping the system and its food-webs, and enlarging opportunities for commercial activities (shipping, oil and gas development and fishing), with uncertain and potentially widespread cumulative impacts.

PICES took upon responsibilities in the CAO issues when it joined the WGICA (Joint PICES/ICES/PAME Working Group on an *Integrated Ecosystem Assessment (IEA) for the Central Arctic Ocean (CAO)*) by establishing WG39 in 2017. In 2019, PICES also established WG44 (Joint PICES/ICES Working Group on *Integrated Ecosystem Assessment for the Northern Bering Sea - Chukchi Sea*) in efforts to understand the Arctic system and its impacts to the sub-Arctic and mid-latitude North Pacific. An integrated ecosystem assessment (IEA) is a useful approach that is shared by these two Working Groups, particularly relevant with substantial science and policy needs emerging for the sustainable Arctic. This renders a coordinated IEA of the CAO and NBS-CS as a priority task. In addition, it is of particular significance to developing future approaches for the United Nations Decade of Ocean Science for Sustainable Development in the Arctic Ocean (UNDOS-Arctic), where science for resilience and sustainability is more important than anywhere else in the world oceans. Despite this continuing significance and unfinished commitment to WGICA and also WGIEANBS-CS, WG 39 and 44 will end the term with the closure of PICES 2022 Annual Meeting. In this context, we propose PICES establish AP-ARC to coordinate and integrate PICES scientific activities on the Arctic issues and to further advance the understanding of the Arctic system and linkages and impacts to the North Pacific.

Proposed Terms of Reference (ToRs)

1. Coordinate and promote the joint scientific activities of PICES to further advance the understanding the Central Arctic Ocean and its interaction and linkage with its Pacific Gateways;
2. Convene workshops/sessions to engage those involved in IEA and monitoring of the Arctic Ocean and its Gateways;
3. Represent and coordinate responses of PICES concerning the Arctic Ocean and the connected waters in cooperation with partners and other international organizations, including WGICA (Joint PICES/ICES/PAME Working Group on an *Integrated Ecosystem Assessment (IEA) for the Central Arctic Ocean (CAO)*), and WGIEANBS-CS (Joint PICES/ICES Working Group on *Integrated Ecosystem Assessment for the Northern Bering Sea - Chukchi Sea*);

4. Develop recommendations for PICES to better collaborate within PICES and with larger international initiatives relevant to the Arctic Ocean including the UN Decade of Ocean Science;

Proposed Co-Chairs (Two west and two east)

Sei-Ichi Saitoh (WG 39) (Japan) - ssaitoh@arc.hokudai.ac.jp

Hyoung Chul Shin (WG 39) (Korea) - hcshin@kopri.re.kr

Alison Deary (USA) - Alison.Deary@noaa.gov

Sarah Wise (WG 44) (USA) - Sarah.Wise@noaa.gov

Proposed Membership*

Andrea Niemi (WG 44) (Canada)

Nadja Stefanie Steiner (WG 44) (Canada)

Zhongyong Gao (CC-S, WG 39, WG 44) (China)

Guangshui Na (FUTURE-SSC, MEQ, SB, WG 35, WG 39) (China)

Fang Zhang (WG 39) (China)

Hyoung Chul Shin (WG 39) (Korea)

Hyoung Sul La (WG 44) (Korea)

Sei-Ichi Saitoh (WG 39) (Japan)

Fujio Ohnishi (WG 39) (Japan)

Takafumi Hirata (WG 44) (Japan)

Yury I. Zuenko (CREAMS-AP, POC, S-CCME, SG-UNDOS, WG-35, WG-40, WG-44) (Russia)

Kirill Kivva (WG 44) (Russia)

Alison Deary (USA)

Sarah Wise (WG 44) (USA)

Elizabeth A. Logerwell (FIS, WG 44) (USA)

Lisa B. Eisner (MONITOR, WG 44) (USA)

David L. Fluharty (WG-39) (USA)

*This is a tentative membership, in future, almost WG 44 member will join to this AP.

Reference

Skjoldal, H. R. (Ed.). 2022. Ecosystem assessment of the Central Arctic Ocean: Description of the ecosystem. ICES Cooperative Research Reports Vol. 355. 341 pp. <https://doi.org/10.17895/ices.pub.20191787>

WG 44 Endnote 5

Proposal for a Workshop on
“Collaborative and knowledge sharing approaches to support climate change adaptation and social-ecological system resilience”
at PICES-2023 [later merged with
“Indigenous and community-led approaches to coastal ecosystem resilience in the Pacific”
and renamed as
“Indigenous and community-led approaches to support climate change adaptation and ecosystem resilience in the North Pacific and Arctic”]

Convenors: Sarah Wise (USA), Kirstin Holsman (USA), Kathy Mills (USA), Steven Alexander (Canada)

Suggested Invited Speakers: Maktuayaq Johnson (USA), Cyrus Harris (USA), Raychelle Daniel (USA), Richard Slats (USA), Vivian Korthuis (USA)

Duration: 1 day

Fishing communities are on the frontline of climate change. Supporting resilience and climate adaptation requires strong relationship building, trust, and collaborative knowledge creation that centers on multiple knowledge systems including Indigenous perspectives and Traditional Knowledge. While climate empirical change information and observations are abundant, challenges and opportunities remain to match the scale of information to community local needs and regional impacts, and to account for dynamics around community adaptation and response. This interactive workshop builds on Joint ICES/PICES WG 44’s work focusing on hearing from Indigenous communities to identify values and actionable guidance to create space for Indigenous Knowledge in marine management processes. Additionally, the workgroup complements a proposed S-CCME open meeting and both the S-CCME and Joint ICES/PICES WG 44 business meetings at the 2023 Annual Science meeting in Seattle. The workshop has two main objectives: 1) share and learn from multiple knowledge systems, processes, and perspectives around climate change and resilience within remote fishing communities; 2) provide examples of and lessons learned from transdisciplinary and collaborative science rooted in strong partnerships, through engagement from multiple stages in its development--from conceptualization, to implementation, toward products and outcomes. The one day workshop will include a panel of invited Indigenous speakers and transdisciplinary science practitioners, interactive discussion sessions, and time allocated for collaborative creation. We encourage participation from Indigenous Knowledge holders, community members, scientists, and resource managers involved in research projects based in collaborative frameworks. Outcomes of the workshop will include a collaborative report highlighting best practices and/or lessons learned, a peer-reviewed publication on diverse methodological approaches to transdisciplinary work. Other outcomes based on discussion among participants on ways to bring together multiple ways of knowing and multiple types of knowledge, expertise, and experience to inform decision-making to be decided by workshop participants.