

## 2025 Report of WG 51: Exploring Human Networks to Power Sustainability



WG 51 held three online meetings in 2025 including a pre-PICES business meeting, and two in-person PICES business meetings. We also hosted an HD sponsored Topic Session S15 at PICES-2025. All meetings and sessions were co-chaired by Dr. Shion Takemura (Japan) and Karen Hunter (Canada). Co-Chairs met monthly (approximately).

Online meetings centered around ToR 4 and 5 to finalize the methodology, run code to analyse the inputs, and prepare new visualizations and begin interpretation of results by country. We retrieved consistent datasets for each PICES country via Clarivate’s InCites and Web of Science products and developed new approaches to investigate research topic key words including new visualisations and adopting AI. Throughout our discussions, we were successful in developing R-code and Copilot prompts to visualize a new “Human-Ocean Sustainability Diagram” (adapted from Sankey diagrams; see meeting notes *Endnotes 1 and 2*).

WG 51 organized and delivered Topic Session S15 “The Rise of Bibliometric Analyses to Address Sustainability Solutions Through a Human Dimension Lens” on November 13 at PICES-2025. This Topic Session was co-sponsored and co-convened by ICES and Japan Fisheries Research and Education Agency (FRA) and was supported financially by FRA. The session hosted 11 oral presentations with three invited speakers (Canada, Malaysia, Poland). Over 30 researchers from around the world participated in the session. Presenters demonstrated a variety of tools and techniques to evaluate different sources of text-based inputs (e.g., policy documents, management plans, WOS/SCOPUS original research, surveys, interviews). There were clear overlaps in techniques and methods applied to many different questions (*Endnote 3*; summarized in separate Session 15 report). After the session, WG51 Co-Chairs and ICES partners wrapped up discussions during the session as the report and submitted a Theme Set Proposal to ICES-JMS based on Topic Session S15. The Theme Set Proposal was accepted by ICES-JMS Editorial Board and we will soon release a Call for Papers.

***WG51 Endnote 1***

**WG51 participation list**

**Online Meeting 1: May 15/16, 2025**

**Members**

Karen Hunter (Canada, Co-Chair)  
Raphael Kevin Rohman (Canada)  
Shion Takemura (Japan, Co-Chair)

**Members unable to attend**

China: Cao Ling  
Japan: Mitsutaku Makino  
Korea: Moo Joon Lee  
USA: Rachel Seary

**Online meeting 2: Pre-PICES 2025 Online Meeting October 8/9, 2025**

**Members**

Karen Hunter (Canada, Co-Chair)  
Shion Takemura (Japan, Co-Chair)  
Raphael Kevin Rohman (Canada)  
Jongseong Ryu (Korea)  
Moo Joon Lee (Korea)

**Members unable to attend**

Ekaterina Kurilova (Russia)  
China: Cao Ling  
Japan: Mitsutaku Makino  
USA: Rachel Seary

**In-person Business Meeting at PICES 2025 Yokohama**

**Members**

Karen Hunter (Canada, Co-Chair)  
Shion Takemura (Japan, Co-Chair)  
Jongseong Ryu (Korea)  
Ekaterina Kurilova (Russia)

**Members unable to attend**

China: Cao Ling  
Japan: Mitsutaku Makino  
USA: Rachel Seary

**Observers**

Dr. Jo Foden (ICES Secretariat)  
Dr. Szymon Smoliński (Poland, ICES)  
Dr. Yeajin Jung (HD, Korea)  
Dr. Giyoung Chae (Kore)

**WG51 Endnote 2**  
**WG51 meeting agenda**

**Online Meeting 1: May 15/16, 2025**

Agenda:

1. Assess data inputs and pull new inputs from Incites/WOS as needed – Korea, USA, China, Russia
2. Revisit 2024 actions and progress including an invitation to submit an article to PICES PRESS about our 2024 Workshop
3. Discuss planned Session for WG51 at PICES-2025

Meeting Notes:

Item 1:

- Ms. Hunter investigated and suggested a revised source of bibliographic data and a methodology to retrieve data from Clarivate products, InCites and WoS, after some data challenges became clear to the team at PICES-2024.
  - Japan, Canada, and USA data will be relatively simple to extract from Clarivate sources.
  - China's institution list needs to be checked → Mr. Roman will contact his Chinese colleagues
    - Russia needs a list → Dr. Takemura will send reminder
    - Korea has a list of research centres (KIOST, NIFS). Ms. Hunter will verify data with Dr. Lee ASAP.

Item 2:

- WG Chairs shared their multiple discussions about the data analysis and expected interpretations. We are using bibliometric methods to identify significant research areas/foci and to then characterize the human network over the last 30+ years in the North Pacific. The "outcome" of the work may help us understand where 'co-adaptation' (i.e., integration and collaboration of research) has been occurring or not at the international scale.
- Ms. Hunter strongly suggested that greater specificity in topics/keywords was needed to facilitate clearer understanding of patterns and trends in text analysis outputs. Co-chairs discussed the idea of Sankey diagrams as an alternative visualization approach and to aid in interpretation of results. Dr. Takemura investigated further and developed an approach using Copilot to reveal deeper patterns in research keywords. This process is ongoing and is providing novel methodological advancements in bibliometrics.

Item 3:

- Discussion for accepted WG51 Topic session at PICES-2025 identified planning steps required to populate the session. Ms. Hunter proceeded to contact authors of relevant papers to invite them to participate.

**Online meeting 2: Pre-PICES 2025 Online Meeting October 8/9, 2025**

Agenda:

1. Self-introduction
2. Review of Achievements (Nov 2024 – Sep 2025)
3. Discussion on Year Extension
4. Other Business
  - a. Meta-analysis
  - b. ICES-JMS Theme Set (similar to Special Issue)

## Meeting Notes:

Item 2

- Dr. Takemura explained the methodology for creating the “Human/Ocean Sustainability Diagram.”
- Ms. Hunter raised questions about the graphs presenting outputs by decade and suggested we needed to review methods to correctly assess the data trends to be able to set correct temporal breaks.
- Ms. Hunter raised a concern about data extraction, noting that cutting off the “tail” of the data might result in losing important information. Dr. Takemura explained that thresholds were set for data extraction to keep the diagram as simple as possible, and that these thresholds can be freely adjusted in the R code.

Item 3

- Dr. Takemura reported that WG51 requested a one-year extension during today’s HD meeting, and HD Committee Chair, Prof. Makino will seek SB approval.

Item 4-a

- Dr. Takemura asked WG members about the possibility of analyzing their national data using the R code under development.
- Canadian data is being analyzed by Mr. Roman.
- Korean data will be analyzed by Prof. Lee.
- Data from other member countries will be handled by Ms. Hunter.
- After the meeting, Dr. Takemura will share the analysis data and R code with WG members and assign analysis tasks to each country representative.
- Finally, Ms. Hunter proposed holding multiple meetings in 2026 to deepen integrated knowledge of the North Pacific, and it was agreed to hold regular meetings (next meeting on Oct 28).

Item 4-b

- Dr. Takemura stated that communication with ICES members will continue toward submitting the proposal.

**In-person Business Meeting at PICES 2025 Yokohama (Day1)**

November 9, 2025, 13:30–15:00 (Tokyo)

Venue: Workpia Yokohama (Yokohama, Japan)

## Agenda:

1. Self-introductions (WG51 members and ICES colleagues)
2. Special Issue Publication in ICES-JMS
3. Other Business
  - a. Topic Session S15
  - b. Meta-analysis

Item 2

- Dr. Takemura reported on the background of WG51’s establishment, project goals and ToR, and the process leading to the joint proposal of a Theme Set (Special Issue) to ICES-JMS, along with an overview of the proposal.
- Ms. Hunter, Dr. Foden, and Dr. Smoliński agreed that the content was fine and suggested submitting the proposal directly to ICES-JMS Editor-in-Chief Dr. Browman.

Item 3-a

- Dr. Takemura proposed an operational plan for Topic Session S15, and Ms. Hunter, Dr. Foden, and Dr. Smoliński agreed to collaborate on recording meeting notes.

Item 3-b

- Dr. Takemura reported updates on meta-analysis (preliminary results from Russia, Korea, China, USA).
- Ms. Kurilova noted that terminology may vary by decade in non-native English countries, especially when analyzing 1990s contexts.
- Ms. Hunter pointed out that the comparison of decades needs careful consideration.
- In response, Dr. Szymon suggested using CA scores for statistical analysis to identify breaking points (threshold year).
- Prof. Ryu explained that Korean Fisheries Institute data before 2015 is unavailable due to a name change.
- Ms. Kurilova added that Russia also changed institute names around 2019.
- Ms. Hunter proposed follow-up via email after PICES-2025.
- Ms. Hunter further suggested sharing preliminary analysis results, Copilot analysis data, and Copilot prompts among WG members, and holding short online meetings between co-chairs and national representatives to confirm institute names and interpret context analysis. This was approved by participants.

### In-person Business Meeting at PICES 2025 Yokohama (Day2)



Date: November 13, 2025, 13:30–15:00 (Tokyo)

Venue: Workpia Yokohama (Yokohama, Japan)

#### Participants:

Shion Takemura (Co-Chair, Japan), Karen Hunter (Co-Chair, Canada)

#### Observers:

Dr. Jo Foden (ICES Secretariat), Dr. Szymon Smoliński (Poland, ICES)

#### Agenda:

1. Wrap-up of Topic Session S15
2. Outline of the Topic Session Report

#### Item 1

- Discussed common themes across all presentations, identifying “Accountability in the Practice of Science” as a shared research theme using text analysis methods.
- Agreed on next steps:

- (1) Compile references, tools, techniques, and text-based inputs used by participants.
- (2) Organize theme sets related to Session 15 contributions for publication.
- (3) Identify potential new research groups or sessions for future PICES Annual Meetings.

Item 2

- Ms. Karen, Dr. Jo, Dr. Smoliński, and Dr. Takemura drafted the outline of the Topic Session Report via Google Doc.

Item 3

- After the meeting, Dr. Takemura sent the Theme Set proposal to ICES-JMS Editor-in-Chief Dr. Browman.

**WG51 Endnote 3**

PICES 2025 Annual Meeting HD Topic Session S15 “The Rise of Bibliometric Analyses to Address Sustainability Solutions Through a Human Dimension Lens”



Date: November 13, 2025, 09:00–12:30 (Tokyo)

Venue: Workpia Yokohama (Yokohama, Japan)

Co-sponsors:

- International Council for the Exploration of the Sea (ICES)
- Japan Fisheries Research and Education Agency (FRA)

Convenors:

- Shion Takemura (PICES, Japan), corresponding
- Jo Foden (ICES, Denmark)
- Raphael Roman (PICES, Canada)

Invited Speakers:

- Karen Hunter (PICES, Fisheries and Oceans Canada, Canada, PICES-WG51)
- Mohamad Nor Azra Md Adib (Institute of Climate Adaptation and Marine Biotechnology, Universiti Malaysia Terengganu, Malaysia)
- Szymon Smoliński (National Marine Fisheries Research Institute, Poland, ICES)

Objectives:

This session will build off research conducted by the Human Dimensions Committee (<https://meetings.pices.int/members/committees/hd>) which explored research conducted in PICES from 1992-present to understand program and expert group networks and connections to ocean science and management for the UN Ocean Decade (Takemura et al. 2025 <https://doi.org/10.1093/icesjms/fsaf145> ). This earlier work explored bibliometric and text analyses to innovate and integrate the human dimensions in ocean science in novel ways. This session expands on this work by seeking to identify growth and challenges of bibliometric methodologies (including text, content, network analysis) and highlight examples of interdisciplinarity and the co-production of knowledge in support of ocean sustainability using these methods. We will engage researchers from various disciplines to share developments and mobilize knowledge across disciplines, particularly related to the ocean sciences and resource management. Invited speakers and participants from a wide range of fields of study will share novel research that converges on vexing problems in ocean science and management. A structured discussion will be incorporated in the session to allow time for the community of practice to exchange ideas. The session will be conducted in collaboration with ICES’ Science Impact and Publications Group (<https://www.ices.dk/community/groups/Pages/SIPG.aspx>) to explore opportunities to expand

research activities with ICES via PICES' Working Group 51  
(<https://meetings.pices.int/members/working-groups/wg51>).

Oral presentations:

- Hunter, K. - Conserving ecosystem integrity: Ecological theory as a guide for marine protected area monitoring [Invited]
- Dr. Azura, M.N. - Scientific mapping of marine species under the changing climate: past perspectives, current conundrums, and future potential [Invited] [ECOP]
- Dr. Wakamatsu, H. - A systematic review and bibliometric assessment of extreme climate events in the North Pacific to document key drivers, impacts, and indicators for coastal communities
- Dr. Smoliński, S. - Quantifying the scientific landscape of marine research: Insights from bibliometric and content analyses [Invited]
- Dr. Tanaka, K. - Social network analysis of partnership structure under the UN Ocean Decade Actions [ECOP]
- Roman, R. - Evolving interdisciplinary and international social networks: Insights from Canada's Department of Fisheries and Oceans in the Pacific Region (1990–2025) [ECOP]
- Dr. Zhu, M. - Visualizing the annual transition of ocean policy in Japan using text mining [ECOP]
- Dr. Yen, K. - Bridging academic gaps and emerging technologies in Taiwan's sustainable fisheries: Insights from bibliometric and qualitative analyses
- Hirokawa, T. - Opportunities and challenges of Japan's new anti-IUU policy: Insights from national stakeholder groups [ECOP]
- Dr. McQuatters-Gollop, A. - In your impact era: Tracking your science-policy influence
- Dr. Sugino, H. - Toward multi-modal metrics: Bridging bibliometrics, AI, and public narrative

Poster presentation:

- Dr. Smoliński, S. - The rise of bibliometric analyses to address sustainability solutions through a human dimension lens POSTER

Participants

- 33+ (source: group photo)