

Report of Working Group on *Marine Ecosystem Services*

The PICES Working Group on *Marine Ecosystem Services* (WG 41/WG-MES) conducted its first business meeting on October 27 and 28, 2018, at PICES-2018 in Yokohama, Japan. Dr. Dan Lew presided over the meeting as interim Co-Chair. Dr. Shang Chen is the other interim Co-Chair but was unable to attend in person but attended portions of the meeting through Skype. Five working group members were in attendance (*WG 41 Endnote 1*). In addition to WG 41 members in attendance, members of other working groups with which WG-MES anticipates working with participated. Specifically, Dr. Jongseong Ryu (South Korea) of WG 36 and Dr. Caihong Fu (Canada) of WG 40 were in attendance and both indicated an enthusiasm for the Working Group's activities and willingness to contribute actively to the group's projects.



Participants of the first meeting of WG 41 at PICES-2018 in Yokohama, Japan. Back row, from left: Alan Haynie, Shang-Yuan Teng, Jingmei Li, Meng Su, Caihong Fu, Yosuke Fujii; front row, from left: Kristy Wallmo, Sarah Dudas, Dan Lew, Aoi Sugimoto. Missing from photo: Shang Chen who participated by Skype.

AGENDA ITEMS 1 AND 2

Welcome/introductions and adoption of agenda

The meeting began with a welcome from Dr. Lew. This was followed by introductions from those in attendance, a review of the proposed agenda, and a vote to adopt the meeting agenda (*WG 41 Endnote 2*).

AGENDA ITEM 3

Background

Dr. Lew presented some background information on the origins of the Working Group, its purpose and terms of reference, and other background information about marine ecosystem services (MES) intended to help frame subsequent discussion.

AGENDA ITEM 4

WG nominations of co-chairs

Dr. Lew and Dr. Chen outlined the process for appointment of PICES Working Group co-chairs and how the Working Group would need to vote for individuals who would be put forward from the Working Group

as suggested co-chairs. Dr. Lew and Dr. Chen had previously been identified as potential co-chairs. Additional nominations were requested via e-mail prior to the meeting and requested again during the meeting, but there were no additional nominations. The working group member countries in attendance voted unanimously for Dr. Dan Lew and Dr. Sunny Chen to be co-chairs.

AGENDA ITEM 5

Review of Terms of Reference and identification of key tasks

Dr. Lew walked through each of the WG 41 terms of reference (TOR) – see <https://meetings.pices.int/members/working-groups/wg41>. The TOR had been sent to Working Group members prior to the meeting as well.

The specific tasks outlined in the Terms of Reference were the following:

- (1) **Review MES studies of North Pacific marine ecosystems**, identifying the scientific tools and methodologies employed, and the role these studies have played in policy analyses, management, or natural resource damage assessment.
- (2) **Develop a typology of marine ecosystem services, tools and methodologies** (*e.g.*, environmental accounting/natural capital, non-market values, replacement cost/Natural Resource Damage Assessment, productivity change methods, *etc.*) that can be used to analyze marine ecosystem services, and the strengths and weaknesses of those tools and methodologies.
- (3) **Illustrate (2) by applying two or more methods to the assessment of marine ecosystem services in identical case studies** in multiple regions of the North Pacific.
- (4) **Collaborate with [WG 36 \(Common Ecosystem Reference Points\)](#) and [WG 40 \(Climate and Ecosystem Predictability\)](#)** to explore development of an indicator-based framework to study the resilience of social ecological systems and to advance integration envisioned in the FUTURE science program.
- (5) **Complete a detailed technical report** on the results of the analyses detailed in TORs (1), (2), and (3) and scoping requested in (4). The report should include practical recommendations for characterizing the status and trends of marine ecosystem services in the North Pacific. In addition, the WG will contribute articles on ecosystem services to PICES Press.

AGENDA ITEM 6

Development of proposed projects

The group engaged in a lengthy discussion about how to complete the tasks outlined in the TOR. Ultimately, two projects arose in the discussion that were deemed feasible and that the group reached consensus on. The two projects the working group developed in the meeting are briefly described below:

1. Review of MES studies in member countries

The first project is a review of MES studies in PICES member countries, which is anticipated to result in a review paper. This project is intended to address Terms of Reference #1, #2, and #3 by assessing the scope of MES available in the North Pacific, reviewing the methods for assessing MES along the ecological, economic, and sociocultural dimensions, and presenting a select set of case studies of applications of methods for assessing MES in the North Pacific member countries. The review paper will provide insights into the range of quantitative and quality methods used to measure and value MES in the North Pacific (review of MES types and methods) as well as illustrate how different countries apply them (case studies). Thus, the paper will address the following questions:

- What are the range of MES in the North Pacific?
- What methods are currently available to assess MES, both in terms of measuring their levels and valuing them individually and collectively?

- What are the similarities and differences between North Pacific member countries in terms of the range of MES and methods used to measure and value them (as illustrated through case studies)?

2. *Country-specific surveys of agencies and decision makers*

The second project is an expansion of existing projects currently in development in both China and USA. Dr. Jingmei Li (China) and Dr. Kristy Wallmo (USA) indicated they are each working on a project to develop and implement a survey intended to understand how people in their respective countries view MES and its application in policy. The draft survey instruments for these projects will be used as starting points for identifying a set of common (core) questions about MES that would form the basis of a survey that would be customized to each country and administered to decision makers, analysts, and scientists involved in ocean and coastal management and research. The goal of the study would be to collect information necessary to understand how they view and use MES information, as well as the prospects and challenges currently facing each country for advancing its usage in policy and management and its integration into more integrative management frameworks (like ecosystem-based management).

Additionally, there was discussion about moving away from the typology of MES used by SG-MES and adopt a conceptual framework more similar to the NRC (2005) view of the relationship between the ecosystem, ecosystem services, values, and human behavior.

AGENDA ITEM 7

Proposals of Topic Sessions or workshops at PICES-2019

The working group agreed that a workshop at PICES-2019 in which progress updates about the two projects could be presented for each member country would be most beneficial for advancing the goals of the working group. An outline of the goals and structure of the workshop were developed (see **WG 41 Endnote 3**).

AGENDA ITEM 8

Membership

The group discussed the need for additional members to fill in gaps in expertise, specifically for Canada, U.S., and China. Several people were suggested as possible additions to the Working Group, either as official members or as externals:

Giselle Magnusson (DFO, Vancouver, Canada) – Economist
 Kirsten Leong (NOAA Fisheries/PIFSC, USA) – Social scientist
 Nathan Bennett (UBC, Canada) – Social scientist
 Kai Chang (UBC, Canada) – Social scientist
 Nathalie Ban (University of Victoria, Canada)* – Social ecologist
 Siri Hakala (NOAA Fisheries/PIFSC) – Social ecologist
 Keliang Chen (Third Marine Research Institute SOA, China) – Economist

* Member of the Human Dimensions Committee.

AGENDA ITEM 9

Other business

Dr. Keith Criddle (HD Committee Chair) answered several questions about PICES and its structure and organization and the role that the HD sees for WG 41. He was encouraging of the projects that had been outlined for the group.

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AGENDA ITEM 10

Concluding remarks

Dr. Lew thanked the members and attendees for their valuable contributions and indicated he was looking forward to fruitful collaborations on the projects. The meeting then adjourned as per the agenda.

WG 41 Endnote 1

WG 41 participation list

Members

Shang Chen (China/interim Co-Chair)*
Sarah Dudas (Canada)
Dan Lew (USA, interim Co-Chair)
Jingmei Li (China)
Aoi Sugimoto (Japan)
Kristy Wallmo (USA)

*Participated remotely

Members unable to attend

China: Wei Liu, Benrong Peng
Korea: Hye Seon Kim, Changsu Lee, Seung-Hoon Yoo

Observers

Alan Haynie (USA)
Caihong Fu (Canada)
Keith Criddle (USA/HD Chair)
Yosuke Fujii (Japan)
Steve Kasperski (USA)
Olga Lukyanova (Russia)
Jongseong Ryu (Korea)
Meng Su (China)
Shang-Yuan Teng (Chinese-Taipei)

WG 41 Endnote 2

WG 41 meeting agenda

1. Welcome/introductions
2. Adoption of the agenda
3. Background
4. WG nominations of co-chairs
5. Review of Terms of Reference and identification of key tasks
6. Discussion and development of proposed projects
7. Proposals of Topic Sessions or workshops at PICES-2019
8. Membership discussion
9. Other business
10. Concluding remarks

WG 41 Endnote 3**Proposal for a workshop on
“Assessing Marine Ecosystem Services: A comparative view across the North Pacific” at PICES-2019**

Duration: 1 day

Convenors: Daniel K. Lew (USA), Shang Chen (China)

The PICES Working Group on *Marine Ecosystem Services* (WG-MES/WG 41) was established to facilitate exchange of information and share the experiences and approaches used to identify, measure, value, and use marine ecosystem services (MES) information in North Pacific waters in order to promote ecosystem service science and improve the consideration of MES in decision making related to marine integrated management. To accomplish this, the working group is conducting two projects. One reviews the range and types of MES found in the North Pacific region and compares the methods used to measure and value them using case studies for a subset of MES across countries. The second is a survey project that will collect information on the opinions and experiences with MES of resource managers, researchers, policy analysts, and decision makers from multiple North Pacific countries that will provide country-specific insights into how MES information is currently viewed and utilized, prospects and potential for future use and integration in policy analyses and decision processes, and identification of challenges and opportunities for improving the utility of MES information. This workshop has two primary goals: (1) to share and synthesize results of country-specific reviews of the MES literature in the North Pacific region and (2) to update progress on development of the survey to collect information on the knowledge, current and future utilization, challenges, and opportunities related to MES ecological, economic, and sociocultural information. To this end, the workshop presentations will focus on the progress and results for the working group's projects. Although the focus of the workshop presentations and discussion are on the working group's activities, other interested scientists interested in MES are highly encouraged to attend and participate.