

Final Report of the Study Group on the *North Pacific Ecosystem Status Report*

The Study Group on the *North Pacific Ecosystem Status Report* (SG-NPESR3) was established in January 2015 under the direction of Science Board. The purpose of the Study Group was to implement the next generation NPESR using a new mechanism for delivery of information.

SG-NPESR3 (see Appendix 1) met for the final time on November 6, 2016 during PICES-2016 in San Diego, USA. The main agenda items for discussion included:

1. Review of the Study Group's terms of reference (Appendix 2);
2. Review of the [inter-sessional meeting](#) held June 28–30, 2016 in Sidney, British Columbia;
3. Review of ETSOs and submission process;
4. Review of [NPESR3 Implementation Plan](#) and budget;
5. Discussion of a transition from a study group to a working group (Appendix 3), and drafting of a report to Science Board including recommendations for editors and lead authors for the NPESR3.

The primary goals identified in the Study Group terms of reference were to:

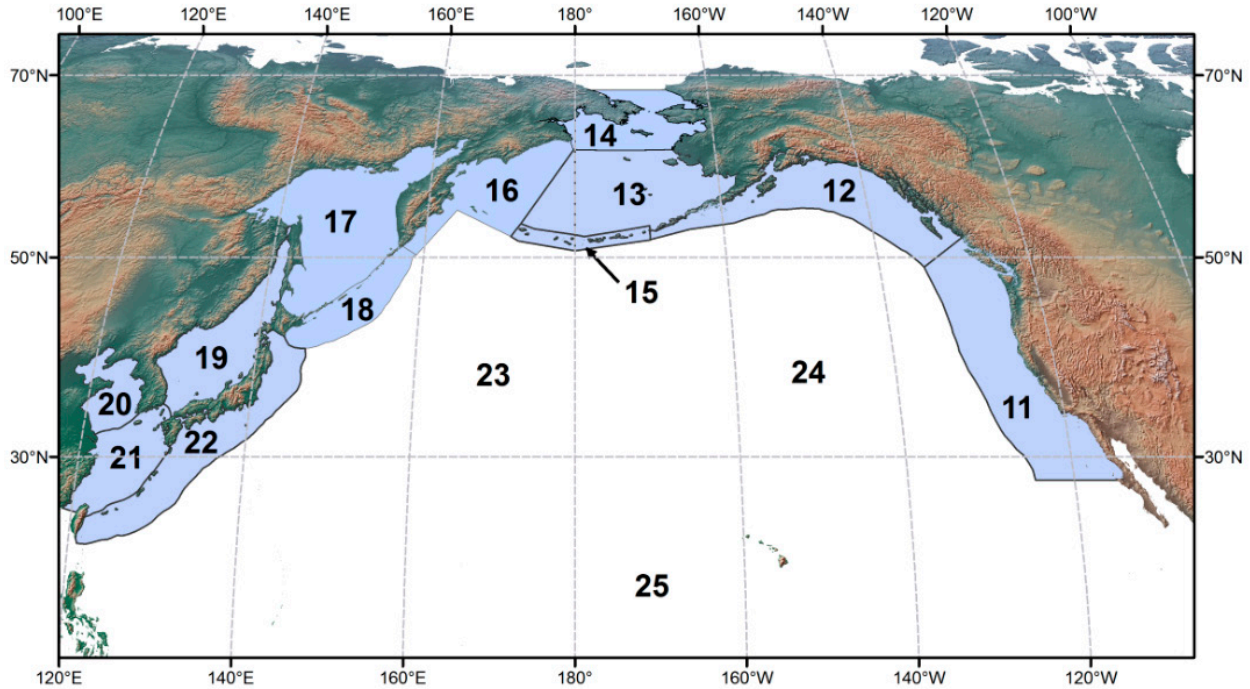
1. Develop an implementation plan for the NPESR including a biogeographical classification system and a system to submit Ecosystem Time Series Observations (ETSOs);
2. Establish an organizational structure that incorporates an editorial board, lead authors and contributing authors;
3. Provide recommendations for a Working Group on the North Pacific Ecosystem Status Report.

The foundation upon which the NPESR3 is to be based is the compilation of Ecosystem Time Series Observations (ETSOs), which is a fundamental core observation in biology, chemistry, physics, or environmental quality (including human dimensions). The original implementation plan proposed by the Study Group was to embed a post-doctoral fellow with the Resource Ecology and Ecosystem Modeling (REEM) program at the Alaska Fisheries Science Center in Seattle, Washington, USA, as that approach is currently used by REEM to produce the annual Ecosystem Considerations report to the North Pacific Fishery Management Council. However, after much discussion, the revised NPESR3 implementation plan is based on an online ETSO Submission System managed by Resource Data, Inc. (RDI).

At an inter-sessional workshop held June 28–30, 2016, in Sidney, British Columbia, Canada, the SG reviewed and evaluated more than 280 potential ETSOs. The workshop participants summarized the ETSOs by scientific discipline and by the North Pacific locations represented. Participants also considered and recommended how best to geographically organize ETSOs for reporting and syntheses. A consensus recommended a combination of Large Marine Ecosystems and oceanic areas.

At PICES-2016, Science Board recognized that no single existing classification system met the needs of PICES, and upon review of the Study Group's recommendation on a preferred approach for biogeographical classification of data, recommended a classification system that could be submitted to without identifying any names, *i.e.*, PICES biogeographic Region *x*. SG-NPESR3 was instructed to revise the biogeographical map and resubmit its final report to Science Board.

A modified biogeographical classification system of 15 regions around the North Pacific has now been adopted. As the biogeographical system represents an amalgamation of several other conventions, these regions are identified as PICES regions 11 to 25 (see figure below).



The biogeographical regions and numbering convention recommended by SG-NPESR3 and approved by Science Board at PICES-2016 for the Third North Pacific Ecosystem Status Report.

Supporting information that is submitted online includes:

1. **Description of environmental time series observation (ETSO):** A description of the ETSO including reference to methods, locating coordinates or polygon (decimal latitudes/longitudes), and how the ETSO is useful for understanding climate change or its impacts in the North Pacific;
2. **Status and trends:** The historical trends and current status of the ETSO in relation to a base period (Suggested base period is the average conditions over the years 2009–2016, if available, or another appropriate base period to illustrate trend);
3. **Factors influencing observed trends:** Potential causes for observed trends and current status;
4. **Implications:** Brief answers to these questions: What are the implications or impacts of the observed trends on the ecosystem or ecosystem components? What do the trends mean? Why are they important? How can this information be used to inform policymaker’s decisions?

The rate of ETSO submissions and additions to the database being administered by RDI at <https://pices.submittable.com/submit/65185/north-pacific-ecosystem-status-report-ecosystem-time-series-observations> continues to be less than expected. The functionality of the website appears to be less of an issue than the reluctance of researchers to engage in the process. At PICES-2016 less than 30 of the 250 proposed ETSOs had been submitted.

The primary goals of SG-NPESR3 were to establish an online ETSO submission system, a biogeographical classification and naming scheme for regions in the North Pacific, and an organisational structure comprised of an editorial board and lead authors to produce regional assessments, and ultimately an overarching synthesis of North Pacific Ecosystems; these goals have been met.

Recommendations

SG-NPESR3 made a recommendation to Science Board that a Working Group be established (Appendix 3) to coordinate, edit, and publish the synthesis of the ETSOs into 15 regional assessments, and that these regional assessments/synthesis will form the basis of the North Pacific Ecosystem Status report. An inter-sessional meeting in 2017 is recommended to:

1. Review the initial Implementation Plan and update as required;
2. Identify the lead authors for each region;
3. Develop mechanisms to promote the online submission of ETSOs;
4. Clarify the PICES data policy in regard to management of the ETSOs (work with TCODE).

Appendix 1

Study Group on the *Third North Pacific Ecosystem Status Report* Terms of Reference

Parent: Science Board

Term: January 2015–October 2016

Terms of Reference

1. Develop an implementation plan for the NPESR (IP-NPESR) by PICES-2015 that
 - resolves outstanding concerns of Standing Committees in consultation with Committee Chairmen,
 - address comments of independent peer reviewers;
2. Report on progress at the 2015 inter-sessional Science Board meeting;
3. Convene an inter-sessional NPESR workshop in 2016 to review candidate time series and methods of production;
4. Present report on the status of NPESR in a plenary session at PICES-2016;
5. Report to ISB-2016 on options for biogeographical classification of data submitted to NPESR3, including a recommendation on a preferred approach.

Appendix 2

Study Group on *Third North Pacific Ecosystem Status Report* membership

Canada

Peter Chandler
Fisheries and Oceans Canada
Institute of Ocean Sciences
P.O. Box 6000
Sidney, BC, V8L 4B2
Canada
E-mail: Peter.Chandler@dfo-mpo.gc.ca

Japan

Hiroya Sugisaki
Research Center for Fisheries Oceanography and
Marine Ecosystem
National Research Institute of Fisheries Science, FRA
2-12-4 Fukuura, Kanazawa-ku
Yokohama, Kanagawa, 236-8648
Japan
E-mail: sugisaki@affrc.go.jp

People's Republic of China

Hongjun Li
National Marine Environmental Monitoring Center
(NMEMC), SOA
42 Linghe St., Shahekou District
Dalian, Liaoning, 116023
People's Republic of China
E-mail: hjli@nmemc.org.cn

Lin Liu
Center for Ocean and Climate Research
First Institute of Oceanography, SOA
6 Xianxialing Rd., Hi-Tech Park, LaoShan District
Qingdao, Shandong, 266061
People's Republic of China
E-mail: liul@fio.org.cn

Republic of Korea

Se-Jong Ju
Korea Institute of Ocean Science and Technology
(KIOST)
787 Hae-an-ro, Sangnok-gu
Ansan, Gyeonggi-do 15627
Republic of Korea
E-mail: sjj@kiost.ac.kr

Dong-Jin Kang
Korea Institute of Ocean Science and Technology
(KIOST)
787 Hae-an-ro, Sangnok-gu
Ansan, Gyeonggi-do 426-744
Republic of Korea
E-mail: djocean@kiost.ac

Jaebong Lee
National Institute of Fisheries Science (NIFS), MOF
152-1 Hae-an-ro, Gijang-eup, Gijang-gun
Busan, 619-705
Republic of Korea
E-mail: leejb@korea.kr

Russia

Vladimir V. Kulik
Pacific Scientific Research Fisheries Center
(TINRO-Center)
4 Shevchenko Alley
Vladivostok, Primorsky Krai 690091
Russia
E-mail: vladimir.kulik@tinro-center.ru

United States of America

Tony Koslow
Scripps Institution of Oceanography, UCSD
9500 Gilman Dr.
La Jolla, CA 92093-0218
USA
E-mail: jkoslow@ucsd.edu

Phillip R. Mundy (Chair)
Auke Bay Laboratories
Alaska Fisheries Science Center, NMFS, NOAA
Ted Stevens Marine Research Institute
17109 Pt. Lena Loop Rd.
Juneau, AK 99801
USA
E-mail: Phil.mundy@noaa.gov

Appendix 3

Proposal for a Working Group on North Pacific Ecosystem Status Report Synthesis (submitted to Science Board at ISB-2016)

Parents: MONITOR and FUTURE SSC

Term: May 2016–October 2019

Motivation

This Working Group will conduct the synthesis of the foundational Environmental Time Series Observations (ETSOs). According to the schedule and duties described in the NPESR Implementation Plan (Qingdao, October 2015), the WG will coordinate and communicate with the SG-NPESR3, the NPESR Editorial Board, and other concerned parties to effect an orderly transition of duties as the work of the Study Group is concluded after PICES-2016.

Following PICES-2016, the Working Group will work with the Editorial Board and the authors of the individual ETSOs to develop regional syntheses, culminating in a North Pacific synthesis. Following production of the North Pacific synthesis, the WG will serve as editors for the Alaska Fisheries Science Center's Resource Ecology and Ecosystem Modeling project as it produces the regional syntheses and these are combined into a web-published NPESR3. At the pleasure of the Editorial Board, the Science Board and Governing Council, the Working Group may participate in developing and producing NPESR publications in other formats. For definition of items listed in the terms of reference and more precise scheduling information please refer to the Third Ecosystem Status Report Implementation Plan

Terms of Reference

1. Consult with the Editorial Board and SG-NPESR3 on the selection of authors to be included in the NPESR3 syntheses;
2. Lead the authors of the NPESR3 in regional synthetic analyses of trends in ETSOs of the individual North Pacific ecosystems as determined by the WG in consultation with the Editorial Board and the Science Board;
3. Convene the North Pacific Synthesis Workshop (2017) to include the working group members and the authors of the ETSOs to develop an overarching synthesis of North Pacific Ecosystems in formats to be determined by WG, the Editorial Board, and the Science Board;
4. Work with the Editorial Board (or its designees) to edit sections of the NPESR3 as they are produced;
5. Lead the production of the Third North Pacific Ecosystem Status Report in cooperation with the Alaska Fisheries Science Center's Resource Ecology and Ecosystem Modeling.

Proposed Membership

Co-Chairs: Peter Chandler (Canada), Sinjae Yoo (Korea)

Canada: Juan José Alava, Jennifer Boldt, Sonia Batten, Ian Perry

China: TBD

Japan: Kazuaki Tadokoro, Sanae Chiba, Shin-ichi Ito, Masahito Hirota, Joji Ishizaka, Osamu Katoh, Masahito Hirota

Korea: Se-Jong Ju, Dong-Jin Kang, Sung-Hyun Nam, Sukyung Kang, Un Hyuk Yim

Russia: Vladimir Kulik, Yury Zuenko, Vyacheslav Lobanov,

USA: Tony Koslow, Keith Criddle, Steven Bograd, Nicholas Bond, Stephani Zador, Julie Keister, Stephen Kasperski

PICES: Harold (Hal) Batchelder