

## 2024 Report of AP-NIS

**Purpose of Annual Reports:** Since PICES-2022, Committees/FUTURE are requested to hold **at least one virtual business meeting before the Annual Meeting**. Committees/FUTURE (mandatory) and Expert Group (optionally upon request) will have **an in-person business meeting during the Annual Meeting**. This Annual Report is to record the discussion items and outcomes of these business meetings.

### Context:

In 2024, AP-NIS held two business meetings in addition to conducting some activities by correspondence. A virtual business meeting was held Thursday, September 26, 2024 and chaired by AP-NIS co-chair Dr. Therriault (Canada). An additional in-person business meeting was held on Sunday, October 27, 2024 at PICES-2024 in Honolulu, HI, USA and was co-chaired by Drs. Carolyn Tepolt and Joe Krieger (USA) as neither named AP-NIS co-chair were able to attend. For both meetings, the respective co-chairs welcomed participants and adopted the draft agenda that was circulated to AP-NIS members in August 2024 for review and comment.

### VIRTUAL MEETING

#### AGENDA ITEM 1

##### **Welcome, Introductions, Opening Remarks**

Dr. Therriault welcomed meeting participants and asked if there were any changes or modifications required of the agenda. No changes were needed and the agenda was adopted.

#### AGENDA ITEM 2

##### **Discuss logistics for meetings/session without co-chairs/convenors on-site**

AP-NIS members were surprised that neither Dr. Therriault nor Dr. Zhan were approved by their respective countries to attend PICES-2024 in person. Drs. Tepolt and Krieger agreed to facilitate the in-person business meeting in Honolulu. AP-NIS had a brief discussion about the challenges of in-person meetings and discussed if it would be possible to host the business meeting at member labs outside of the Annual Meeting. It was noted that this is technically possible but there would need to be agreement that most AP-NIS members would be supported by their home institutions to travel to such meetings. It was decided that this would be discussed further at a future meeting given some countries were not able to attend the virtual meeting.

#### AGENDA ITEM 3

##### **Discuss and Rank Requests for Science Board**

This agenda item covered several important topics including funding requests, membership, collaborations and capacity building. AP-NIS discussed the outstanding request to GC for approval of two new members to AP-NIS recommended at PICES-2023, including Dr. Iwasaki from Japan (expert on several benthic groups) and Dr. Darling from the USA (molecular expert). AP-NIS requested SB to re-request appointment of these individuals at their next meeting. AP-NIS discussed specific funding requests and requested SB consider a request to support partial travel expenses for PICES SSC member, convenor, and/or ECOP. AP-NIS discussed possible collaborations with the US National Invasive Species Council given overlapping interests in international capacity building, especially those in the North Pacific. Dr. Stanley (Stas) Burgiel, NISC Executive Director, was invited to attend and present at PICES-2024 by Dr. Therriault and he agreed to attend the in-person business meeting in Honolulu.

#### AGENDA ITEM 4

### **Discuss Topic Session and Workshop Proposals for PICES-2025**

AP-NIS discussed the success of the workshop on European Green Crab at PICES-2023 in Seattle whereby a species of interest to the host country was the focus. Building on this success, AP-NIS decided that focusing a session or workshop proposal on a topic of interest to Japan would be the priority. Thus, recognizing past efforts to better understand the utility of eDNA for detection of non-native species at past PICES meetings, Dr. Satoshi Nagai (Japan) agreed to develop a proposal for PICES-2025 in Yokohama based on discussions with AP-NIS members, the eDNA Society of Japan, and seeking possible co-sponsorship from NOWPAP and ICES, two organizations that have overlapping interests in this topic. A draft was expected for discussion at the in-person business meeting.

#### AGENDA ITEM 5

### **Update on Korean proposal supported by AP-NIS at PICES-2023**

This agenda item was deferred given Dr. Choi, the primary proponent, was unable to attend the virtual business meeting.

#### AGENDA ITEM 6

### **Other Business**

AP-NIS discussed several potential areas of interest among members to move forward over the next few years including possible products to inform management needs in member countries and standardized monitoring efforts for areas/species of interest (e.g., settlement plates, eDNA, biodiversity assessments, marine debris, risk assessments). Further discussion is required to scope specific projects and seek funding.

## IN-PERSON MEETING

#### AGENDA ITEM 7

### **Welcome, Introductions, Opening Remarks**

As agreed at the virtual business meeting, Drs. Tepolt and Krieger welcomed participants and facilitated this business meeting.

#### AGENDA ITEM 8

### **Discuss potential for collaboration with the US National Invasive Species Council**

Dr. Stas Burgiel, Executive Director of NISC, gave a presentation that outlined the goals and objectives of NISC and spent some time highlighting areas of potential future collaborations given NISC has an expanding mandate related to international cooperation and capacity building. Collaborations with PICES, and AP-NIS specifically, could be mutually beneficial and it was agreed that further discussions about specific areas of collaboration would take place intersessionally when AP-NIS co-chairs were available.

#### AGENDA ITEM 9

### **Continue to share information on marine NIS in the North Pacific via country reports using the reporting template (supports ToR 1-3)**

This agenda item typically covers country reports but was limited at PICES-2024 because some countries were unable to fully participate. Thus, Dr. Nagai presented a summary of Dr. Iwasaki's work on NIS in Japan. Dr. Nagai also shared his own recent research using eDNA and microsatellite markers to better understand HAB bloom dynamics in Japan. Dr. Tepolt gave an overview of new mainland US NIS records and sadly reported that a long-time US NIS researcher, Dr. Paul Fofonoff, had passed away. Dr. Tepolt also presented data on the population genomics of a high-profile tunicate invader in North America, *Botryllus schlosseri*, using low-coverage whole-genome sequencing, in the context of improving biofouling management using emerging genome-wide molecular approaches.

#### AGENDA ITEM 10

### **Discuss draft Topic Session Proposal from Virtual Business Meeting (supports ToR 4) and plan to submit online**

This agenda item is a continuation of a discussion that started during the virtual business meeting in September. Dr. Nagai noted that a workshop on eDNA could be timely given much interest in this topic in Japan with implications well beyond NIS. AP-NIS discussed the possibility of also organizing an eDNA-focused session at PICES-2025 for synergy, similar to the green crab session at PICES-2023, which was generally supported by members. Members also supported the idea of having Dr. Iwasaki be an invited speaker given his connections to the eDNA Society of Japan and research on areas of interest to members (as well as his pending membership in the group, see Agenda Item 3 above). AP-NIS then discussed who might be targeted for submissions recognizing that eDNA studies are becoming common among PICES member countries and that several federal labs had programs or projects of interest. The session proposal was circulated among members for comment before online submission following PICES-2024 via the online portal.

#### AGENDA ITEM 11

##### **Discussion of a Special Project to be undertaken by AP-NIS based on proposal submitted last year (Choi)**

This agenda item was deferred as Prof Choi was unable to attend the AP-NIS business meeting. However, he indicated that it still may be possible to receive funding from Korea for this proposal.

#### AGENDA ITEM 12

##### **Discuss DNA/eDNA as an area of interest for AP-NIS**

This agenda item was largely deferred as several members working in this space were unable to attend in-person. It was noted that molecular approaches in general have rapidly increased in popularity and that many member states now have active programs, some of which intersect with NIS early detection networks. Further, other international/intergovernmental organizations have ongoing efforts in this space including NOWPAP and two ICES working groups (WGITMO and WGBOSV), with overlapping membership that should facilitate information sharing and reduce possible redundant efforts. This agenda item also links to the ongoing interest in PICES and AP-NIS specifically to host period workshops and topic sessions to keep pace with this rapidly evolving field.

#### AGENDA ITEM 13

##### **Update on PICES FUTURE Program, including UN Decade for Ocean Science**

This agenda item was deferred as the liaison, Dr. Therriault, was unable to participate.

#### AGENDA ITEM 14

##### **Finalize info/funding requests for MEQ**

This agenda item was deferred for Dr. Therriault with requests identified during the virtual business meeting being supported as Dr. Therriault was unable to participate in-person.

#### AGENDA ITEM 15

##### **Other Business**

None.

***AP-NIS Endnote 1***

**AP-NIS participation list (both online and in-person meetings)**

Members

Dr. Therriault (Canada, Co-Chair, Virtual ONLY)  
Dr. Nagai (Japan)  
Dr. Kawai (Japan, Virtual ONLY)  
Dr. Shin (Korea, In-person ONLY)  
Dr. Tepolt (USA)  
Dr. Krieger (USA)

Members unable to attend

Canada: Dr. Therriault (Co-chair)\*  
China: Dr. Zhan (Co-chair), Dr. Wang, Dr. Zheng  
Korea : Prof Choi, Dr. Park  
\* In-person only

Observers

Dr. Stanley (Stas) Burgiel (US NISC)

***AP-NIS Endnote 2***

**AP-NIS meeting agenda**

**AP-NIS Virtual/In-person Meetings for PICES-2024**

(S10 NIS Topic Session, Tues Oct 29, 2024)

**Virtual Meeting Agenda**

**Thurs Sept 26, 2024**

- 1) Welcome, Introductions, Opening Remarks
- 2) Discuss logistics for meetings/session without co-chairs/convenors on-site
  - a. What can be done?
  - b. Who can move it along?
- 3) Discuss and Rank Requests for Science Board
  - a. Travel support for AP-NIS participation in meetings, workshops, conferences, etc.
  - b. Changes in TOR, membership, etc.
  - c. Possible capacity development opportunities
- 4) Discuss Topic Session and Workshop Proposals for PICES-2025 (Nov/Yokohama, Japan) – Due Nov 15, 2024 (online)
- 5) Update on Korean proposal supported by AP-NIS at PICES-2023
- 6) Other Business

## **In-Person Meeting Agenda, Honolulu, USA**

**Sun Oct 27, 2024**

- 7) Welcome, Introductions, Opening Remarks (Joe/Carolyn)
- 8) Discuss potential for collaboration with the US National Invasive Species Council
  - a. Presentation (Stas)
  - b. Discuss potential topics for collaboration and mechanisms to achieve these
- 9) Continue to share information on marine NIS in the North Pacific via country reports using the reporting template (supports ToR 1-3)
- 10) Discuss draft Topic Session Proposal from Virtual Business Meeting (from Therriault) (supports ToR 4) and plan to submit online
- 11) Discussion of a Special Project to be undertaken by AP-NIS based on proposal submitted last year (Choi)
  - a. Discuss other potential joint projects for AP-NIS
- 12) Discuss DNA/eDNA as an area of interest for AP-NIS (links to past and potential future AP-NIS sessions/workshops)
  - a. Collaboration with ICES on Viewpoint (Darling/Therriault)
  - b. Joint workshops with NOWPAP (on pause)
  - c. eDNA manual/best practices
- 13) Update on PICES FUTURE Program, including UN Decade for Ocean Science
- 14) Finalize info/funding requests for MEQ
- 15) Other Business
- 16) Adjourn

### ***AP-NIS Endnote 3***

#### **Proposal for a Workshop on eDNA at PICES-2025**

1. Convenor:

Satoshi Nagai (Japan)

2. Title:

Harnessing Environmental DNA (eDNA) for Early Detection and Monitoring of Marine Invasions in the Face of Climate Change

3. Duration:

1.5 days

4. Convenors:

(1) Satoshi Nagai, Japan Fisheries Research and Education Agency, Fisheries Technology Institute, Chief Scientist, nagai\_satoshi44@fra.go.jp

(2) Keun-Hyung Choi, Chungnam National University, Department of Marine Environmental Sciences, Associate Professor, keunhchoi@cnu.ac.kr

(3) Seongjun Bae\*, National Marine Biodiversity Institute of Korea, PhD candidate, sjbae@mabik.re.kr

(4) Joseph R. Krieger, Ph.D. NOAA Oceanic and Atmospheric Research, Great Lakes Environmental Research Laboratory, joseph.krieger@noaa.gov

\* ECOP

5. Corresponding convenor:

Satoshi Nagai

6. Session/Workshop Description:

Non-indigenous species (NIS) pose significant ecological and economic risks to marine ecosystems, further intensified by globalization and climate change. Global climate change has reshaped species distributions, increasing the likelihood of new introductions and invasions, with a noticeable rise over the last decade. Despite prevention efforts, species continue to be introduced requiring effective and cost-efficient early detection strategies. This workshop will explore the application of environmental DNA (eDNA) and environmental omics techniques for detecting and monitoring NIS in the North Pacific and beyond, aligning with PICES' mission to enhance marine science and promote sustainable resource management. The workshop will review the global landscape of eDNA and environmental omics monitoring, examining their strengths and limitations for detecting NIS, while emphasizing the need for standardized approaches. Additionally, it will investigate the impact of climate change on NIS patterns and how these advanced detection techniques can improve monitoring accuracy, supporting PICES' focus on understanding climate-related shifts in marine ecosystems. The workshop aims to foster collaboration by creating a platform for sharing best practices, methodologies, and lessons learned, reinforcing PICES' commitment to capacity building and scientific exchange among member nations. Lastly, it will discuss how data from eDNA and environmental omics can be effectively integrated into management strategies, bridging the gap between science and policy to enhance ecosystem resilience and biodiversity protection. Although the focus will be on NIS, we recognize molecular techniques are of interest to the PICES community broadly and so invite participation where eDNA and omics approaches have been used for other applications (e.g., conservation monitoring, stock assessment, etc.).

7. Location, date:

Venue of PICES 2025 and workshop period

8. Sponsoring PICES Expert Groups:

AP-NIS, BIO

9. Budget request:

USD 2500 (travel cost for invited speakers from Japan and outside at the workshop)

10. Name of Invited Speakers:

Prof. Keiji Iwasaki from Nara University

One more TBD