

## Report of the Study Group on *Science Communications*

### Membership

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### **1. Background and Objectives**

The Study Group on *Science Communications* (hereafter, SG-SciCom) was established in 2020 to develop the communication capacity of PICES ocean scientists through the following Terms of Reference:

1. Empower PICES Scientists and the broader PICES community, by helping to provide the tools and skills required to more effectively communicate the importance of PICES scientific findings, with the aim of collectively improving ocean sustainability.
2. Enhance broader communication of PICES sciences, especially within the context of the UN Ocean Decade, by broadening the scope of its scientific community to include communication specialists (*e.g.*, designers, journalists, videographers, artists, educators, *etc.*) and policy makers.

Through collaboration with communication specialists, and by developing a suite of tools to assist scientists to more effectively communicate their scientific results, SG-SciCom’s aim was to develop a strategic plan to help raise greater awareness of PICES science as well as to increase and improve communication with the general public, thus helping to ensure greater support and broader understanding of PICES science.

### **2. Activities**

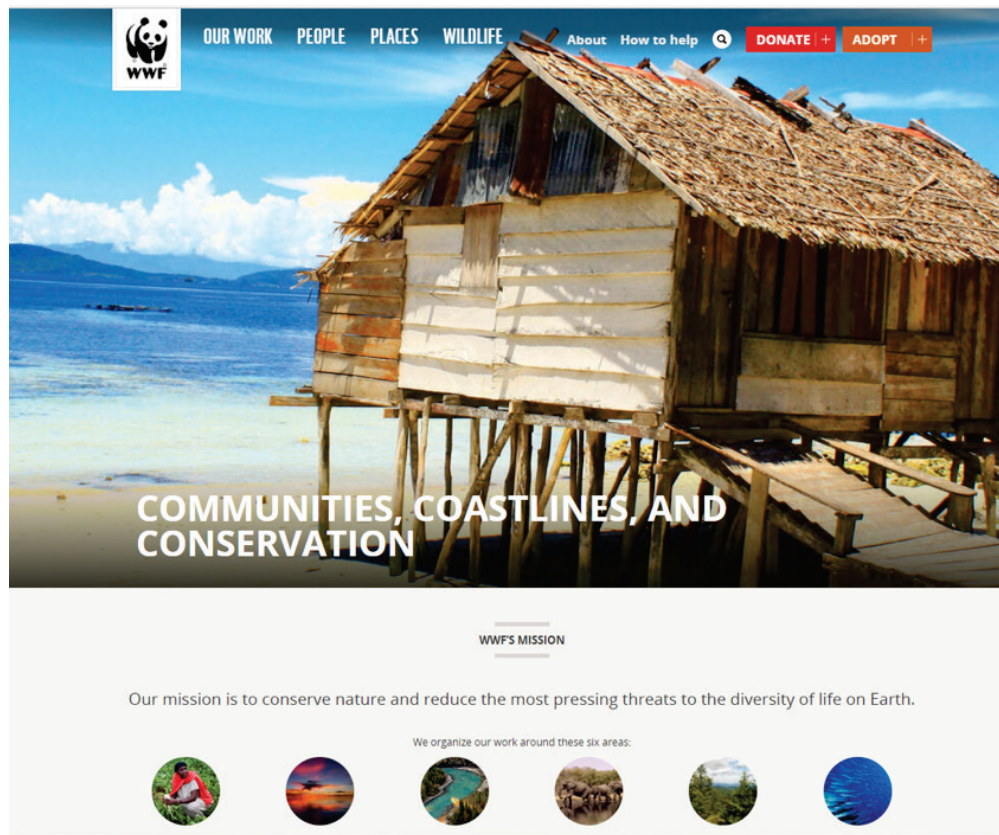
SG-SciCom held monthly meetings starting in February 2021. First, SG-SciCom reviewed some best practices of science communication conducted by respected organizations such as NOAA, UN Ocean Decade, and World Wildlife Fund (WWF). The SG also considered the Public Relations (hereinafter “PR”) practices of private companies such as Nike, Apple, and sports clubs (J-LEAGUE, the official football league in Japan) to understand how successful communication activities can look like.

#### **2-1. Review of good communication practices, including an effective slogan**

The review of science communication practices showed us that good communication requires a clear and relatable vision (or “slogan”) for the Organization. Currently, the PICES convention defines the purpose of the Organization to “promote and coordinate marine scientific research in

order to advance scientific knowledge of the area concerned and of its living resources” and “promote the collection and exchange of information and data related to marine scientific research in the area concerned.” The definition of PICES on the website is “The North Pacific Marine Science Organization ([PICES](#)), an intergovernmental science organization, was established in 1992 to promote and coordinate marine research in the North Pacific and its adjacent seas. Its present members are Canada, Japan, People’s Republic of China, Republic of Korea, the Russian Federation, and the United States of America.”

The purpose and definition of PICES are clear enough for marine scientists and PICES members. However, there is future opportunity for sharing a simple slogan to describe PICES work in order to connect with more diverse audiences. Hence, SG-SciCom agreed that a slogan (like a “brand slogan”) could clearly illustrate its purpose to a non-scientific audience. SG-SciCom felt that a very strong, simple message such as “Communities, coastlines, and conservation” could be effective (Fig. 1). This recommendation was extracted from SG-SciCom’s review of communication (and PR) good practices.



**Fig 1** Review of science communication good practices, which shows the importance of a clear and relatable vision (or “slogan”) for organizations. (A key example includes this one from a non-profit organization, World Wildlife Fund [WWF]).

Next, SG-SciCom conducted a brief survey of PICES members to solicit their opinions on what they considered the key audiences of PICES science.

## 2-2. Exploring the key audiences of PICES science from member countries' perspectives

The SG asked members from each country to submit their thoughts, as these audiences may reflect the economic, social and cultural contexts of their respective countries and regions. The survey was carried out in April 2021 through emails. Survey participants (n = 8) were selected by the Japan representatives of the Study Group. Three questions were asked:

- Q1.** Please raise up to 10 CURRENT audiences of PICES science, with the rating of the importance of them by %.
- Q2.** Please raise up to 10 FUTURE/DESIRABLE audiences of PICES science, with the rating of the importance of them by %.
- Q3.** Please raise suitable media/tools to reach the FUTURE/DESIRABLE audiences which you answered above.

Some of the results from the Japanese case study are shown below, as an example.

Results from Japan (n = 8) indicated that the current audience is dominated by PICES member scientists (72%), but that the wish was for future audiences to be more diversified towards other audiences including: non-PICES scientists (21%), citizens, local governments, artists, mass media, others (13%), governments of PICES member countries (7%), non-governmental/non-public organizations (NGO/NPOs) (7%), students and education sectors (6%), other international organizations (4%), and related industries (4%). PICES scientists would still remain an important part of communications in the future, at 38% of the audience. In addition, specific suggestions for new audiences for PICES communications included:

1. Academics, research organizations (including those outside of PICES),
2. Industry (fisheries, aquarium, sponsors, *etc.*),
3. Environmental NGO/NPOs and
4. Citizens: Local and indigenous communities, young students and general public.

Responses from the other five member countries were unique, illustrating the diverse opinions from each country on the primary audiences of PICES science. However, consensus was reached by all the member countries in that the four general audience groups, mentioned above, were important for PICES communications.

## 2-3. Selecting key words that represent PICES science

SG-SciCom identified the need for refreshing PICES science communication, given the critical importance of its science but its present limited visibility among the public. The group found that current communication does not reach all target audiences because of: 1) an unclear mission and vision, 2) confusing structure of the website (*e.g.*, lack of imagery illustrating PICES work, unindexed content which hinders public access and understanding). Based on this discussion, SG-SciCom selected keywords that would clearly illustrate the PICES mission. As stated in section 2-1, a slogan could improve the non-scientific community's understanding of what PICES does. Therefore, the SG conducted a "vision setting exercise" to extract key words to become the ingredients of the group's communication strategy. Figure 2 shows the visual image of SG-SciCom's work. The exercise contained two questions:

1. What do you think is the contribution of marine/ocean sciences to the future of society (as a collective) and individuals?
2. Why do you think that marine/ocean scientists need communication skills?



Fig 2 Image of a “vision setting exercise” aimed at extracting key phrases to establish a slogan for PICES.

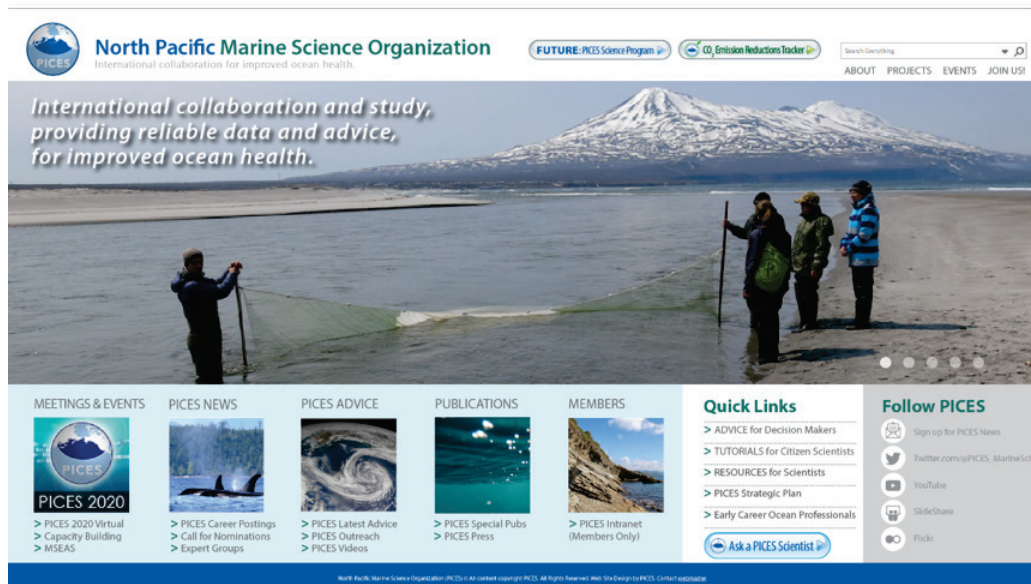
For question 1, SG-SciCom’s ideas were summarized into the following concepts: “Sustaining resources”, “Solving environmental crisis”, “Stewardship”, “Interconnection between people and ocean”, “Human well-being”, and “Knowledge creation”. For question 2, the concepts were: “Survival”, “Stewardship”, “Collaborative innovation”, “Funding”, “Wonder”, and “Better science”. “Survival” included such phrases as “survival of human beings” and “urgent need for climate action”. These key words will help to clarify the strategic goals of PICES to a wider range of audiences.

In addition to understanding that one of the most critical and urgent needs for marine/ocean science communication is to accelerate social change for the survival of humankind during this time of climate and ecosystem crisis, the SG-SciCom, and other PICES Expert Groups (EG) members, are aware how science becomes more powerful when we share it with society. Science communication is a tool to trigger collaboration with various stakeholders, which will empower PICES science through inclusivity and innovation.

**2-4. Developing a concrete and realistic communication strategy and implementation plan**

Based on the above discussions over existing good communication practices, slogan, vision and key audiences of PICES science, SG-SciCom discussed the concrete and specific activities to be implemented. Thus, four key areas for communications focus were identified:

1. Development and launch of a PICES public-friendly website, through collaboration with the communications liaison in the PICES Secretariat (Ms. Lori Waters) and members of the Advisory Panel on *Science Communications*. A draft landing page of the website is shown in Figure 3.
2. Improvement of Social Networking Services (SNS) activities,
3. Communication of PICES science conducted by EGs through video creations and other means of outreach,
4. Organizing communication training workshops at PICES Annual Meetings (see Appendix 2).



**Fig. 3** Image of a public-friendly PICES website developed for Science Board by Lori Waters (PICES Communications Officer).

The four elements are detailed in a draft Communication Plan (Appendix 1). This Plan is meant to be implemented as an activity of the Advisory Panel on *Science Communications* (AP-SciCom<sup>1</sup>; see Appendix 3).

### 3. Concluding remarks and recommendations

The SG-SciCom had rich discussions, building upon past PICES experience and Science Communication events, with a goal of developing a strategy for improving the communication of PICES science. A draft Communications Plan and strategic goals are outlined in Appendix 1. However, the SG encountered several barriers and challenges to implement what was discussed. The biggest challenge is limited financial and human resources within PICES. It would be unrealistic to try to increase the level of communication efforts at the current level of human resources available within PICES. Therefore, SG-SciCom had frequent discussions during its term on how PICES could overcome this challenge. Similarly, financial resource limitations are a serious barrier. These facts demonstrate that we need more fundamental system changes in order to transform PICES marine/ocean science communications. However, efforts to overcome one of these challenges are underway with the establishment of a communications liaison officer position within the PICES Secretariat and the creation of an Advisory Panel on *Science Communications*. Transformation of institutions can have a much greater impact on society than transformation at the level of an individual, which is why an intergovernmental marine science organization like PICES can play a critical role in realizing addressing today's ocean science issues.

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<sup>1</sup> Establishment of an Advisory Panel on *Science Communications* was approved at PICES-2021 (Governing Council decision 2021/S/11).



Group photos taken at the first meeting (top) on February 18, 2021, and the final meeting (bottom) on September 22, 2021 of the SG-SciCom during PICES-2021.

## Appendix 1

### Draft Communications Plan developed by the SG on *Science Communications*

#### Strategic Goals

##### Overall goals:

- To promote and coordinate marine scientific research in order to advance scientific knowledge of the area concerned and of its living resources, including but not necessarily limited to research with respect to the ocean environment and its interactions with land and atmosphere, its role in and response to global weather and climate change, its flora, fauna and ecosystems, its uses and resources, and impacts upon it from human activities;
- To promote the collection and exchange of information and data related to marine scientific research in the area concerned.

#### Science Communication Goals

##### General goals:

- Ensure that search engines can find PICES material;
- Improve **Website** to be public/user friendly;
- Ensure that information is provided at sites (*e.g.*, website, social media posts, *etc.*) where audiences gather and get their questions answered, thereby providing a “boat ramp” for PICES;
- Increase traffic to the PICES website;
- Reach audiences beyond PICES members (marine science professionals, including PICES members, early career ocean professionals (ECOP), academics, industry, environmental advocacy organizations, Indigenous Nations, citizen scientists and young audiences (5th grade and up));
- Increase PICES public media presence that would help reach all audiences outlined, including communication within PICES to improve interdisciplinary work and intergovernmental dialogue;
- Establish a slogan for PICES that will communicate its purpose. (*e.g.*, “International collaboration for improved ocean health”).

##### Specific goals:

- Make 1 to 2 (less than 2-minutes) **videos** each year, depending on available funding (Secretariat and AP-SciCom to develop the content with the help of EGs as needed, depending on available funding and approval by Science Board and Governing Council);
- Create engaging **1–2 pagers** for each EG (AP-SciCom to generate a template approved by Science Board; provide training on how to create engaging 1–2 pagers during approved workshops at Annual Meetings; AP-SciCom/Secretariat to post on website/circulate via social media, *etc.*);
- Provide Science Communication **training** to PICES members (AP-SciCom to organize and implement/host training; AP-SciCom to organize and implement/host training approved by Science Board and Governing Council);



- **Social media** (identify PICES partners who can help share/retweet media posts, *e.g.*, ICES, any Pacific organizations);
- Highlight PICES Expert Groups (EGs), including what each EG does, types of products produced, and how they are used by PICES stakeholders or member countries. (monthly/every other month twitter takeovers EGs to lead, AP-SciCom support);
- Highlight specific products/success stories/people, *etc.* (every other month or more often).

**Communicating to Top 3 Audiences**

Audience 1	Audience 2	Audience 3
Member country stakeholders, especially decision makers	North Pacific Scientists	To Be Determined
Messages	Messages	Messages
“Here’s the best science to inform key issues in the north pacific. AND here’s how it informs policy/management”	<ul style="list-style-type: none"> <li>- “Coordinate with us!”</li> <li>- “Here’s what we are working on/did”</li> </ul>	
Channels	Channels	Channels
<ul style="list-style-type: none"> <li>- 1 pagers (sent directly to relevant audience members)</li> <li>- Website with easy to find 1-pagers, <i>etc.</i></li> </ul>	<ul style="list-style-type: none"> <li>- Social media</li> <li>- Conferences (beyond PICES)</li> <li>- Website</li> </ul>	

**Key overall message:**

Promote an increased awareness of what PICES does, highlighting its unique role in the North Pacific, and success stories of how PICES science is used.

**Implementation**

**Summary:**

The Implementation Plan can be adjusted each year to suit the specific communications needs and areas of focus. During the first year of AP-SciCom, input will be provided towards a public-friendly website design, discussions will be initiated about drafting a PICES slogan (purpose strategy and evaluation metrics), and increased social media activity. AP-SciCom will discuss the content and cost of 1 or 2 videos and provide to HD for submission to Science Board and Governing Council for approval. A Sci-Com workshop, focused on developing 1 pagers for the PICES website will be held during PICES-2022. The second year could shift to a greater focus on social media communication, continued development and distribution of EG 1–2 pagers, development of short videos, and refinement and continued revision of the PICES website. Below is an example of what a fairly even mix could look like but this plan can be scaled, based on staff time, budget, *etc.*

**Suggested Annual Science Communication Plan:**

AP-SciCom proposes to hold 1-hour virtual meetings every 2 months. These meetings will include:

- Highlights of PICES EG activities. Guest speakers from PICES EGs may be invited to inform AP-SciCom of their accomplishments that have potential global appeal for the PICES community and general public.
- Website update suggestions,
- Video content development,
- Social media drafts for posting,
- 1–2 pagers development highlighting EG activities for posting,
- Review of communications strategy.

**SciCom Training Framework**

**Proposed ongoing Science Communication training:**

- Workshops during PICES Annual Meetings for PICES members (provide expert training on communication techniques; 1–2 pagers, videos, social media, *etc.*), such as the workshop proposal submitted for PICES-2022 (Appendix 2).
- Other ideas: People learn a lot just from seeing what others are communicating. SG-SciCom suggests PICES could have specific virtual meeting(s) where we spotlight some of the great communicators in PICES and/or some great PICES communications products (and what makes them great).

## Appendix 2

### **Proposal for a Workshop on “Learn how to share our PICES science with the world in an engaging way” at PICES-2022**

Co-Convenors: Aoi Sugimoto (Japan), Vera L. Trainer (USA), Jack Barth (USA), Tammy Norgard (Canada)

Duration: 1 day

Suggested invited speakers: Randy Olson (USA), Cherisse Du Preez (Canada)

Ocean scientists, including PICES members, usually do amazing science, and often feel that their results speak for themselves. But, they are not always very good at communicating about their work in a way that is compelling and interesting for all audiences. This workshop is the first in a series organized by the Science Communications Expert Group. Participants will become familiar with the proven ABT (And, But, Therefore) method of communicating science, and skills needed to broaden our scientific, and social impact through social networking services (SNS) as one of the most popular methods for science communication all over the world. This first session of a series of workshops will provide participants with 1) general introduction highlighting important communication skills for ocean scientists, 2) tools for communicating the written word through the ABT method, and 3) online communication skills using SNS. During the first part of the workshop, participants will learn theories and concrete techniques related to the above three elements, and during the second part, will be given an opportunity of “on the job” practice: actually to create, share the communication outputs and receive a critique of their work. Stories will be shared with the broader community through various online channels such as PICES Twitter and Website, as real outputs of this workshop.

### Appendix 3

#### Proposal for the establishment of an Advisory Panel on *Science Communications*

(approved by Governing Council at PICES-2021)

**Parent Committee:** Human Dimensions

#### **Terms of Reference**

1. Empower PICES Scientists and the broader PICES community, by helping to provide the tools and skills required to more effectively communicate the importance of PICES scientific findings, with the aim of collectively improving ocean sustainability.
2. Enhance broader communication of PICES sciences, especially within the context of the UN Ocean Decade, by broadening the scope of its scientific community to include communication specialists (*e.g.*, designers, journalists, videographers, artists, educators, *etc.*) and policy makers.

#### **Deliverables**

1. Establish international transdisciplinary opportunities to enhance communication capacity of PICES scientists. Opportunities will include workshops on science communication, similar to the W1: FUTURE Workshop “*Learn to effectively communicate your science*”, held at the 2019 PICES Annual Meeting. However, future workshops will result in finalizing products that will be highlighted on the PICES website.
2. Collaborate with PICES office with reviewing current PICES Science Plans and priority areas, to determine a long term PICES Communication Strategy and an Implementation Plan for PICES Science priorities, within the context of the UN Decade for Ocean Science.
3. Collaborate with PICES office to develop a “public-friendly” PICES website (including any other online means). This will include a visually appealing landing page and other content, such as video, short articles, and consensus pieces on PICES science.
4. Promote “green” science and highlight PICES contributions to carbon reduction on the PICES website by working with the Sections on HD, Carbon and Climate and other expert groups to develop a green strategy for PICES. Develop a strategy for PICES meetings to be carbon neutral within the next decade.

#### **Proposed membership**

Canada: Tammy Norgard

China: Jie Chen, Pengbin Wang

Japan: Aoi Sugimoto (Chair) Mitsutaku Makino, Eisuke Tachikawa

Korea: Bum Soo Park, Jongwoo Park

Russia: Ekaterina Kurilova, Anna Skvortsova, Ekaterina Verevkina

USA: Hannah Lachance, Vera L. Trainer, Phoebe Woodworth-Jefcoats

PICES Secretariat liaison: Lori Waters