

REPORT OF STUDY GROUP ON *COMMUNICATIONS*

Introduction

PICES formed a Study Group on *Communications* (SG-COM) in 2007, with a 2-year lifespan ending in November 2009 (see Appendix 1). A Study Group was constituted with membership from all Contracting Parties (see Appendix 2). The terms of reference for SG-COM were as follows.

Terms of reference

1. To identify PICES objectives for communications consistent with the PICES Strategic Plan, Action Plans of Standing Committees, and the FUTURE Science Plan;
2. To evaluate the principal audiences for scientific and other products in PICES;
3. To evaluate the role that PICES should play in educating diverse audiences about the marine ecosystems of the North Pacific;
4. To review options for PICES products and partnerships (including national member resources) that can accomplish the communication objectives for these audiences;
5. To deliver a report on the overall goals of communications that PICES should undertake, with recommendations for how PICES should develop internal structure to accomplish them.

Approach

SG-COM had its first meeting at PICES-2008 in Dalian, China, on October 31, 2008. A contingent of its members also met in conjunction with the inter-sessional Science Board meeting in Qingdao, China, in April 2009. A final SG-COM meeting was held at PICES-2009 in Jeju, Korea, on October 25, 2009 (see Appendix 3 for meeting agendas). In addition, SG-COM, through its Chairman and a few other members, was involved with the development of the communications aspects of PICES' new integrative science program, **F**orecasting and **U**nderstanding **T**rends, **U**ncertainty and **R**esponses of North Pacific Marine Ecosystems (FUTURE). In fact, SG-COM had a rapidly moving target to advise when it came to this program where communication is integral (see Appendix 4 for details). In part, the SG-COM recommendations provide advice on how to implement this important initiative for PICES.

SG-COM benefited from the work of Mr. Brian Voss (NOAA Seattle Library and IAMSLIC) and Ms. Janet Webster (Oregon State University Libraries and IAMSLIC) in their preparation of the 2007 Review of PICES Publication Program (see

https://meetings.pices.int/publications/annual-reports/2007/2007%20PICES%20Publication%20Report_f.pdf). At PICES-2008 Brian Voss, Janet Webster, and PICES intern, Mr. Keyseok Choe, provided an update on the implementation of an Action Plan for PICES Publications Program (see Appendix 5). While it was not a requirement, some member countries provided short reports on communications at the SG-COM meeting (see Appendix 6).

SG-COM endorses the progress being made to implement the valuable advice from the 2007 PICES Publication Program Review. We encourage the PICES Secretariat to continue to implement the advice as time and resources permit. In the long term, we encourage PICES to find the means to increase professional communications staff. We believe a dedicated position is essential for PICES to live up to its potential as a provider of high quality scientific research to multiple audiences.

The SG-COM has determined that the PICES communication priority audiences are:

- PICES members,
- The scientific community at large,

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- Targeted new scientific disciplines which can contribute to the main interests of PICES and new users of scientific results,

The promotion of broad scientific literacy in PICES member countries is essential.

The Study Group was gratified to learn of voluntary efforts by at least four member countries to have an informal electronic communications network for PICES members. We believe this strengthens the communication capabilities of PICES in each member country, and that this mechanism might be used to broaden the PICES communication at the country level.

The deliberations of SG-COM at the PICES-2009 produced a series of recommendations for PICES to consider as it increases its roles in scientific communication. These recommendations are not necessarily direct responses to all of the terms of reference. The key reasons for this lack of direct response relate to limits on the resources SG-COM could devote to the task. More importantly, SG-COM did not envision ways to address some aspects of the terms of reference given the lack of identifiable financial resources to cover the costs of advancing in certain directions.

SG-COM developed its recommendations with the caveat that they should be practical, *i.e.* (1) directly tied to PICES Standing Committees (MONITOR, TCODE, *etc.*) and FUTURE; (2) implementable without significant new resources; (3) utilize electronic media rather than print media to reduce costs and maximize distribution; and (4) produce measurable results (ability to track web traffic, downloads of PDFs). To this end SG-COM recommended, with respect to communication of scientific reports, that PICES implement an experimental pilot communications program.

Recommendation 1

- Use the completion of the second PICES North Pacific Ecosystem Status Report (NPESR, PICES Special Publication No. 4, 2010) to develop a pilot news media strategy to publicize reports and to highlight significant publications by:
 1. Developing an electronic brochure with “highlights” of the status and trends for the North Pacific;
 2. Preparing a press release with key messages from NPESR;
 3. Having the PICES Secretariat ensure widespread electronic dissemination of the report and press releases which could include video clips of scientists discussing the report, fact sheets, *etc.*

The idea proposed by SG-COM is that of a pilot news media strategy would be for the PICES Secretariat to target one or a few PICES meetings/products/activities to test the techniques and to stay within limited resources. Ideally, specific messages should be crafted for different audiences: scientists, managers, policy/decision makers, the general public, and stakeholders, translated into either electronic or print media in PICES member country languages to ensure broad distribution. But this stresses the capacity of the PICES Secretariat. We do not conceive of a mechanism for how to do this without additional funding unless each member country agrees to take responsibility to disseminate scientific key findings to relevant audiences in an accessible language.

Recommendation 2

- Use the PICES/ICES/FAO Symposium on “*Climate change effects on fish and fisheries*” scheduled for April 2010, in Sendai, Japan, as a pilot for involving news media, and seek volunteers from the Local Organizing Committee to perform the following functions: develop a press release with key issues; organize a press conference with PICES scientists, and invite science writers and journalism/science writing students.

If this pilot works well, use it as a prototype for the 2010 PICES Annual Meeting in Portland, U.S.A.

Recommendation 3

- Instruct each expert group to (1) commit to increasing internal PICES communication for better information and integration, (2) include a task of preparing a short “electronic brochure” for communicating highlights of meetings or final reports as part of its terms of reference and (3) identify a point person(s) to interact with the PICES Secretariat to annually communicate the developments of the group.

The Secretariat will develop a pilot electronic reporting format for a brief final report of an expert group in non-technical language – what was done, what was learned and what are the implications for society, management and further research.

Recommendation 4

- Use PICES’ ability to appoint an intern in the near term to assist Secretariat website staff in increasing electronic communications capacity (see next recommendation).

Recommendation 5

- Enhance the PICES website by developing a part of the website for the general public (highlight PICES science results – content to be derived from brief reports mentioned in Recommendation 3);
- Develop a web link for involving new scientists as PICES members or as participants in PICES activities: “How to get involved in PICES”;
- Develop the ability to search PICES publications for metadata/geo-referenced information (using the TCODE method);
- Increase the web links to PICES with key websites of ocean interests (member nominations);
- Monitor PICES website visitation data from current baseline to assess how these recommendations work;
- Experiment with Wikipedia and other networking sites (will need volunteers to translate and maintain in all PICES member languages).

Recommendation 6

- Consider creating an on-going Communications *ad hoc* committee consisting of professionals with experience in science communications (including forecasts and risk/uncertainty) within member countries. This committee would plan and implement specific PICES communications under a designated PICES structure.

SG-COM notes that FUTURE, through its Advisory Panels on *Anthropogenic Influences on Coastal Ecosystems* (AICE), *Climate, Oceanographic Variability and Ecosystems* (COVE) and *Status, Outlooks, Forecasts and Engagement* (SOFE), has a strong commitment to communication consistent with other components of PICES, *e.g.*, Status and Trends reports. However, PICES faces new challenges with communicating Outlooks and Forecasts. These represent an order of magnitude greater degree of communication sophistication than even the complex ecosystem status reports. These tasks should not be underestimated. **SG-COM believes that technical advice and capacity building in PICES is necessary.**

Conclusion

The members of SG-COM thank PICES for the opportunity to be of service and to provide ideas for using communications to advance the broader understanding of PICES science, the implementation of FUTURE, and the ongoing success of PICES and its members. If we can provide further advice, please do not hesitate to contact us.

Appendix 1 **PICES deliberations on setting up a Study Group on *Communications***

2006 Annual Report

PICES Fifteenth Annual Meeting
Yokohama, Japan
October 13–22, 2006

PICES communications (SB-IM Agenda Item 17)

Dr. Batchelder suggested that the PICES website should be designed as a dynamic site rather than an archive, as it now stood, but that he did not have time to devote attention to this issue. Dr. Gordon H. Kruse, FIS Committee Chairman, recommended that Ms. Julia Yavzenko, PICES Web and Database Administrator, contact all the Committee/Program Chairmen to encourage feedback and suggestions. Dr. Sei-Ichi Saitoh, MONITOR Vice-Chairman, volunteered to be on the Web Committee.

2007 Annual Report

PICES Sixteenth Annual Meeting
Victoria, Canada
October 26–November 5, 2007

Other business (GC Agenda Item 16)

Study Group on *PICES Communications* (SG-COM)

Dr. Boehlert introduced a proposal to establish a Study Group on *PICES Communications* (SG-COM) under the direction of Council, and this proposal was approved (Decision 07/S/7(i)). Reasons for forming SG-COM are summarized in the Background section of the document appended as *GC Endnote 7*. The overall goal of the Study Group is to identify the target audiences for output from PICES activities and to propose mechanisms to communicate with them. The terms of reference for SG-COM are described in *GC Appendix B* and *GC Endnote 7*. A tentative schedule for the Study Group is also included in *GC Endnote 7*. Originally, two alternative schedules were suggested: an accelerated schedule with the final SG-COM report presented for approval at PICES XVII (Dalian, China) in October 2008, and a slower schedule with the final report submitted at PICES XVIII (Jeju, Korea) in October 2009. At the recommendation of Canada, the slower schedule was adopted.

GC Endnote 7

Study Group on *PICES Communications*

Background

All scientific organizations have a responsibility to communicate their results widely. In the PICES Strategic Plan, the mission calls for: i) synthesizing scientific information regarding the regions, and making the results widely available, and ii) informing interested parties and the public about marine ecosystem issues. The strategies to achieve this mission include Goal 8 (“Make the scientific products of PICES accessible”), which

focuses on communicating the results of PICES scientific activities broadly, explicitly mentioning high quality publications, the PICES website, and production and dissemination of educational materials. The plan does not explicitly identify the audiences that should receive this information. Scientific communication has many dimensions, and the approaches to be taken are dependent upon the audiences one hopes to reach. Audiences may include the scientific community, management agencies, governments, and the general public. Scientists traditionally involved in PICES lack the expertise and, often, the will, to communicate beyond the scientific community. The FUTURE Science Plan has identified the need to improve communications, particularly to science to policy makers and managers. A discussion of the FUTURE Science Plan concluded that the issues and communication challenges apply across the entire PICES community. In addition, a recent review of PICES Publication Program by representatives of the International Association of Marine Science Libraries and Information Centers (IAMSLIC) made recommendations in certain areas of communication. Thus, it is timely to convene a Study Group, which will address communication in PICES and make recommendations for actions. PICES is extremely strong in its core capacities, *i.e.*, exchange of ideas and collaboration among scientists in the North Pacific. The evidence for this is seen in the sustained high levels of participation in PICES meetings and expert groups. Publications by North Pacific scientists are reaching major international peer review journals, books and other media. Many of these publications show multiple authors from more than one country, demonstrating evidence of increasing collaboration and communication. The communication of scientific information to policy makers, managers and society is an increasing priority for PICES because member countries are being asked to explain more about what is happening in the sea? Little is known, systematically, about how scientific information from PICES is delivered on a national and sub national basis to policy makers and managers. Preliminary information indicates that the delivery pathways differ among PICES member countries. Relatively little attention is given to distributing PICES results to the general public. An important area that PICES needs to understand is the different cultural views about marine ecosystems across the Pacific Basin. Different attitudes about the importance of marine ecosystems exist on opposite sides of the Pacific and perhaps within countries based on the specification of the objectives.

We are at an early stage in the development of ecosystem based management and can benefit from the pursuit of alternative approaches toward defining ecosystem-based management and national objectives. PICES communications should work to improve the understanding of those attitudes, furthering our ability to collaborate as scientists and as societies. The overall goal of the Study Group is to identify the target audiences for outputs from PICES activities and to propose mechanisms to communicate with them.

Terms of reference

1. To identify PICES objectives for communications consistent with the PICES Strategic Plan, Action Plans of Standing Committees, and the FUTURE Science Plan;
2. To evaluate the principal audiences for scientific and other products in PICES;
3. To evaluate the role that PICES should play in educating diverse audiences about the marine ecosystems of the North Pacific;
4. To review options for PICES products and partnerships (including national member resources) that can accomplish the communication objectives for these audiences;
5. To deliver a report on the overall goals of communications that PICES should undertake, with recommendations for how PICES should develop internal structure to accomplish them.

Membership

The Study Group should consist of members appointed by all member countries. Expertise in different aspects of communication (including outreach and public education) should be included.

Term and schedule

- December 2007: Appoint members from all member countries by e-mail request from the Executive Secretary (action by Council);
- January 2008: Decide upon chairmanship (action by Council), and initiate e-mail communication to refine tasks and develop report outline (action by appointed Study Group Chairman);
- April 2008: Meeting (in person if possible, remotely if required) to develop a rough draft of the report for review and discussion; agree on writing and revision responsibilities among members;
- July 2008: Develop a full draft of the report;
- October 2008: Hold an Open Forum on PICES communications and a meeting of the Study Group at PICES XVII (Dalian, China);
- April 2009: Submit the final report to Governing Council for approval (by correspondence) to allow decisions on recommendations by the Study Group at PICES XVIII (Jeju, Korea).

Appendix 2 Membership of Study Group on *Communications* (SG-COM)

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Appendix 3 SG-COM participation lists and meeting agendas at PICES Annual Meetings

PICES XVII, Dalian, China, October 31, 2008

SG-COM participation list

Members

David L. Fluharty (U.S.A., Chairman)
 Marsha Gear (U.S.A.)
 Sik Huh (Korea)
 Kyu-Kui Jung (Korea)
 Igor Schevchenko (Russia)
 Darlene Smith (representing Canada)
 Gongke Tan (China)
 Harumi Yamada (Japan)
 Julia Yazvenko (PICES, *ex-officio*)

Observers

Brian Voss (IAMSLIC)
 George Boehlert (U.S.A.)
 Jake Rice (Canada)
 Glen Jamieson (Canada)

SG-COM meeting agenda

1. Opening remarks by Chair
2. Introduction of Study Group on Communications members
3. Discussion of Terms of Reference for Study Group
4. Presentation of PICES Survey results Brian Voss and Keyseok Choe
5. Discussion of PICES Survey results
6. Presentation of country experience with PICES Communications (approx. 5 min. each)
 - Canada
 - China
 - Japan
 - Korea
 - Russia
 - United States
 - Other examples
7. Preliminary response to terms of reference questions
 - Principal audiences and products
 - PICES role in educating diverse audiences
 - Options for PICES products-partnerships
 - Relationship between communications and PICES Strategic Plan, Action Plans of Standing Committees, and FUTURE
 - Draft recommendations
 - Development of SG-COM Final Report

PICES-2009, Jeju, Korea, October 25, 2009

SG-COM participation list

Members

David L. Fluharty (U.S.A., Chairman)
Marsha Gear (U.S.A.)
Sik Huh (Korea)
Igor Schevchenko (Russia)
Darlene Smith (representing Canada)
Yukimasa Ishida (representing Japan)
Julia Yazvenko (PICES, *ex-officio*)
Gongke Tan (China)

Observer

Tatyana Semenova (Russia)

SG-COM meeting agenda

1. Introductions
2. Review and approval of agenda
3. Review of progress from Dalian PICES Annual Meeting and Qingdao PICES inter-sessional Meeting
 Key Element – Communication in FUTURE
4. Updates and comments by PICES SG-COM members
5. Discussion of draft report
6. Preliminary recommendations
7. Planning for completion of Final Report

Appendix 4 **FUTURE and implementation of FUTURE re: Communication**

The following paragraphs are excerpts [direct quotes] from the FUTURE Science and FUTURE Implementation Plan that embrace the general oversight SG-COM has to participate in planning. This emphasis should not be confused with the need for communications through standing Committees and expert groups of PICES. [The role of communication is bolded.]

FUTURE vision

To *understand* and *forecast* responses of North Pacific marine ecosystems to climate change and human activities at basin and regional scales, and to broadly **communicate** this scientific information to members, governments, resource managers, stakeholders and the public.

FUTURE (Forecasting and Understanding Trends, Uncertainty and Responses of North Pacific Marine Ecosystems) is an integrative Science Program undertaken by member countries and affiliates of PICES to understand how marine ecosystems in the North Pacific respond to climate change and human activities, to forecast ecosystem status based on a contemporary understanding of how nature functions, and to **communicate** new insights to its members, governments, stakeholders and the public.

FUTURE research

Related to all three research themes is the goal of improving our capability to convey in a clear and effective way how societies will be affected by a changing North Pacific marine environment. The following question captures the goal of improved **communication** of the science from FUTURE. *“How can forecasts, uncertainty and consequences of ecosystem change be **communicated** effectively to society?”*

Science priorities are risk-based ecological assessments within a policy/management framework to **communicate** future states of nature, their implications, and uncertainties to decision makers and the public.

FUTURE benefits

The scientific research, **communication** and outreach that occur during the 10-year life of FUTURE will increase understanding of the processes and mechanisms regulating ecosystems of the North Pacific and provide a sound scientific basis for developing scenarios of ecosystem response to climate change and other human-use influences.

FUTURE will improve these estimates and communicate them effectively so that science can better support policy. This view has led to the identification of an overarching question for FUTURE.

“What is the future of the North Pacific given current and expected pressures?”

All is done with the FUTURE perspectives of understanding, forecasting and **Communicating**.

Implementation strategy

The ultimate goal of FUTURE is *to understand and **communicate** the future of North Pacific ecosystems and the potential impacts from human use*. Implementation of FUTURE has two objectives:

- To increase understanding of climatic and anthropogenic impacts and consequences on marine ecosystems, with continued leadership at the frontiers of marine science;
- To develop activities that include the interpretation, clarity of presentation, peer review, dissemination, and evaluation of ecosystem products (*e.g.*, status reports, outlooks, forecasts) and establish a process for engaging interested institutions and other recipients.

Implementation of Objective 2 requires the establishment of a third FUTURE Advisory Panel on *Status, Outlooks, Forecasts, and Engagement* (SOFE). SOFE will recommend expert groups to identify major sources of uncertainty and impediments to improving the skill of assessments and forecasts, suggest research areas for priority development, and provide coordination of potential PICES products. SOFE will provide for a PICES final peer review on information and interpretations, and work with the PICES Study Groups on *Communications* and on *Human Dimensions* on how to engage potential users of North Pacific ecosystem and climate information, including the quality of information and uncertainty.

Objective 2 of FUTURE comprises a new activity for PICES. The current Study Groups on *Communication* and on *Human Dimensions* will provide guidance and recommendations on engagement activities for FUTURE. It is too early in the FUTURE implementation process to fully interact with “stakeholders” that would benefit from and be targeted for FUTURE products. Instead, based on recommendations from the two Study Groups, long-term engagement and **communication** activities should be established in PICES. Initially user characteristics should be reviewed from existing sources. This review should be a basis for developing a matrix of potential applications for ecosystem status/forecasting, as well as an inventory of potential recipients and their **communication** requirements. These will be used to establish future contacts, assess status/forecast priorities of greatest interest to potential recipients, and the forms in which information and forecasts of marine ecosystems would be most useful. It should be noted that approaches and recipients often will be tailored differently for stakeholders in different North Pacific regions or Contracting Parties. This activity will collaborate with the PICES Secretariat to enhance web delivery of education and outreach. Besides the web, possible mechanisms of outreach could include research highlights, news briefs or press releases, and/or brochures.

This activity encourages individual scientists, and PICES as a whole, to be more involved in educating non-scientists. Initiating a dialog between the scientific community, the public, and the private sector can lead to new ideas and new directions for research. This can be carried out by maintaining a website and facilitating **communication** products beyond the PICES community.

First year of FUTURE (SOFE-AP only)

Coordinate with the editors of the next version of the North Pacific Ecosystem Status Report on how the Report should be updated in the future. Work with the **Communication** Study Group and the Study Group on Human Dimensions of Environmental Change to commence the review of user characteristics for FUTURE products.

Expert groups

The main activities of FUTURE are carried out by expert groups recommended by the Scientific and Technical Committees and initiated by the Science Board following existing procedures. Current relevant expert groups are Sections on *Harmful Algal Blooms* and on *Carbon and Climate*, Working Groups from WG-20 through WG-FCCIFS, and Study Groups on *Communications* and on *Human Dimensions*.

Communications among FUTURE and PICES scientists

Communications among FUTURE and PICES scientists will be facilitated by:

- Convening inter-sessional symposia to review progress and to stimulate the exchange of ideas among the multi-disciplinary teams working in different components of the program;
- Co-sponsoring activities with like-minded programs of other international organizations;
- Convening workshops to address important scientific questions;
- Convening topic and poster sessions at PICES Annual Meetings;
- Publishing workshop results in PICES Scientific Report Series;
- Publishing regularly articles in PICES Press on FUTURE scientific activities and progress;
- Publishing significant contributions in peer-reviewed scientific journals, and
- Maintaining a FUTURE website.

Appendix 5 Progress report on Action Plan for PICES Publications Program

PICES Seventeenth Annual Meeting
 Dalian, China
 October 29, 2008

Brian Voss, NOAA Libraries & IAMSLIC
 Keyseok Choe, PICES Secretariat
 Janet Webster, Oregon State University Libraries & IAMSLIC

Description of activities since October 2007

In the Finance and Administration Committee meeting at the 2007 PICES Annual Meeting, Janet Webster and Brian Voss presented the PICES Publication Program Review along with a concise Action Plan based on the recommendations in the Review. The Review was well received by the Committee and the Action Plan was approved with a request that the Secretariat prioritize the items as well as provide a cost estimate for each. In other sessions at that Annual Meeting, a Study Group on Communication (SG-COM) was initiated as well as the FUTURE (Forecasting and Understanding Trends, Uncertainty and Responses of North Pacific Ecosystems) Program, both of which have implications for the PICES Publications Program as well as the Review and Action Plan.

In early 2008, Mr. Keyseok Choe arrived from KORDI in Korea to begin his one-year assignment as an intern at the PICES Secretariat. A portion of his time over the year was to be dedicated to implementation of the Action Plan. The significant events in the year were:

- March: Keyseok, Janet and Brian met at the Cyamus (West Coast of North America and Hawaiian Regional Group of IAMSLIC) meeting in Friday Harbor, WA to formally initiate the collaboration on the Action Plan, provide an update to the group and ask for group input on various issues.
- April: Keyseok traveled to Seattle in conjunction with the Inter-sessional Science Board meeting and Workshop held there. At that meeting, Keyseok tested a survey exploring use of scientific literature and PICES publications on the members present. This was expanded to an online survey distributed to all individuals on the PICES publications distribution list.
- July: Keyseok again traveled to Seattle to work with Brian on the details of implementing the Action Plan. This culminated with a conference call with Janet to further discuss the way forward.

Between meetings, Janet, Brian and Keyseok worked individually and in conjunction with the Secretariat and other parties identified in the Review to accomplish individual goals within the Action Plan.

Progress on Action Plan items

Ideally, each of the goals in the Action Plan was to be completed or near completion by the 2008 PICES Annual Meeting. Several factors have slowed progress toward that ideal, including the amount of time needed to familiarize the PICES intern with the project combined with time available between the PICES Secretariat, Janet and Brian to simultaneously collaborate to achieve goals in the Action Plan. To a degree, this was foreseen in the review and reflected in the first recommendation to establish a position within the Secretariat dedicated solely to Publications, if only for this time of transition. Much progress has been made however, and continues to proceed. Notably,

- Janet has strengthened the relationship with PICES and ASFA (Aquatic Sciences and Fisheries Abstracts) to insure more timely and complete indexing of publications.
- Brian has enhanced OCLC WorldCat records to more comprehensively reflect PICES' online presence. OCLC (Online Computer Library Center) WorldCat (<http://www.worldcat.org/>) is a library catalog shared

by over 41,000 international member libraries which supports the development of local catalogs as well as interlibrary loan among member libraries.

- Keyseok has added a majority of the existing online publications to Aquatic Commons. Aquatic Commons is the OAI-PMH (Open Archives Initiative Protocol for Metadata Harvesting <http://www.openarchives.org/>) compliant digital repository managed by IAMSLIC (International Association of Aquatic and Marine Science Libraries and Information Centers).

New and recurring issues

Finances

One goal of the F&A Committee is to recover money through the transition to online-only distribution. Cost savings may not be realized, however, unless financial and administrative support can be transferred from the mailing and print based burdens to the new costs incurred under online-only distribution mechanisms. Among the new costs assumed in online-only distribution are ongoing tasks to be overseen if not completed by the Secretariat. These include maintaining currency in the digital repository, commercial indexes and library catalog records as new publications are released.

Access

Access to PICES publications through a robust web site, a digital archive and stable library partners continues to emerge as a workable strategy. As suggested by a colleague at the Cyamus meeting, Brian contacted the Pacific Rim Digital Library Alliance (<http://prdla.ucmercedlibrary.info/>), “a consortium of academic libraries joined together to facilitate improved access to scholarly research materials throughout the Pacific Rim” to gain more insight on what is already being done in this arena specifically across the Pacific region. Among their other efforts, the Alliance recently initiated pilot programs to explore international interlibrary loan (ILL) issues. In those programs, they learned that the need for ILL across national borders was nominal and that existing ILL procedures, especially those within the OCLC system, readily met operational needs. In fact, the special arrangements within the pilot created overhead that reduced the efficacy of the standard systems (correspondence with R Bruce Miller, Secretariat Chair, Pacific Rim Digital Library Alliance). Consequently, we do not recommend PICES engaging in any direct library activities, but rather to continue to partner with IAMSLIC. As is detailed further below, two surveys exploring issues of access and usage of scientific literature among PICES Publications recipients were recommended in the 2007 review. We hope to work closely with the Study Group on Communication to not only utilize the data that has been gathered, but also assist in gathering the remaining data.

Communication

“The Journey to PICES” indicates that many of the issues we are facing differ little from those that emerged during the formation of PICES and its first years of existence. With regard to communications, lack of technology access, language barriers, and limited funding to support consistent, sustained participation by scientists in PICES initiatives were noted in the book. Also, developments in the year since the Action Plan was adopted, including the PICES new integrative scientific program, FUTURE, and the Study Group on Communications, will surely affect the existing publication program. Both may require new types of publications directed at audiences beyond the North Pacific science community. For example, one of the goals may be to increase civil society’s exposure to PICES and ocean issues in the North Pacific. This will require having experts available for conversations with the media and writers that can translate science into plain language.

Recommendations

The Action Plan is a first step and completes the foundation from which to make more significant changes in the Publications Program, while neither disrupting or upsetting current users nor overwhelming the current Secretariat staff with new users. We have several recommendations to PICES. Two could be implemented immediately resulting in some minor cost savings. The others represent a sustained commitment to transitioning the Publications Program to be more online, more accessible and more connected with other PICES efforts.

- **Discontinue printing of annual report and distribute electronically:** We found in our survey of current users of PICES publications that few use the annual report with any regularity and even fewer used it in print.
- **Update the distribution list:** Through our survey work, we will identify email addresses for all current recipients of PICES Publications. If this data is added to their distribution database records, distribution could switch to electronic more seamlessly. Further surveys of individual recipients could capture distribution preferences for individual publication series. Those preferences could then be saved in the distribution database as well.
- **Continue to work on the items described in the Action Plan:** While we have made progress, there is still work to do. This includes completing changes to the web site, completing agreements with publishers and authors, and integrating new processes into the existing workflow.
- **Commit to depositing PICES Publications into the Aquatic Commons:** Key-Seok Choe has deposited many PICES publications into the Aquatic Commons, a stable, digital repository sponsored by IAMSLIC. This mechanism provides a backup to the PICES web site, a permanent URL for publications in case the PICES web site changes servers, a searchable venue, and a means for some indexers to more readily integrate PICES publications into their products. All lead to more usage and visibility of PICES publications.
- **Work with the Communications Study Group and other groups in PICES:** Others have an interest in publications as a means of promoting PICES science to a broader audience. Cooperation among these groups will be valuable.

We have appreciated working with Keyseok. He has provided valuable insight as well as hard work in implementing the Action Plan. As part of his work, he has learned how to deposit digital materials into the Aquatic Commons, making PICES one of the first international organizations to do so. He also has assisted in developing and conducting various surveys of PICES scientists as well as libraries and institutions receiving PICES publications. His presence made it possible to accomplish much of what we have to date. We anticipate continuing to work with the PICES Secretariat on this valuable project.

The following is a detailed description of progress on each item in the Action Plan.

Action Plan for the PICES Publications Program

A. Managing the publication workflow

1. Establish a new position (if only temporary) to assist with carrying out recommended actions and to consolidate and manage the whole publications workflow.
This is not feasible given the current budget and staffing of the Secretariat. The Secretariat will continue to balance the cost and utility of using outside contractors with hiring another staff person.
2. Post the PICES Style Manual (Instructions to Authors and Editors) to the PICES website. Add similar information to print publications as appropriate.
The PICES Style Manual of each publication will be posted on the PICES website by the end of 2008. These have been identified and simply need reformatting to pdf or html as appropriate and posting.

B. Increasing recognition of PICES as a publisher

1. Include recommended citation formats and summaries of publications on additional series as appropriate. The suggested citation format, the publication's website URL and series descriptions were first printed on each issue the scientific report series in 2004 and in the annual report series in 2007. The series descriptions were revised in 2008. This revision and additional information should continue to be included in these series and added to all PICES publications in a format that is fitting for the publication. The books should retain the "About PICES" section while including the above in an appropriate style.

The following are the recommended citation formats for each type of PICES publication:

Scientific Report

Brodeur, R. and Yamamura, O. (Eds.) 2005. Micronekton of the North Pacific. PICES Scientific Report. No. 30, 115 pp.

Haltuch, M. 2008. "Northern California Current (U.S.) groundfish production." pp.33-34 In: Forecasting Climate Impacts on Future Production of Commercially Exploited Fish and Shellfish. PICES Scientific Report. No.34.

Book

Hayes, D. 2001. Historical Atlas of the North Pacific Ocean: Maps of discovery and scientific exploration, 1500-2000. Seattle: Published under the auspices of North Pacific Marine Science Organization [by] Sasquatch Books.

Special Publication

Dickson, A.G., Sabine, C.L. and Christian, J.R. (Eds.) 2007. Guide to best practices for ocean CO₂ measurements. PICES Special Publication 3, 191 pp.

PICES. 2004. Marine ecosystems of the North Pacific. PICES Special Publication 1, 280 pp.

Special Issue of Journal

Ladd, C., Stabeno, P. & Cokelet, E.D. 2005. "A note on cross-shelf exchange in the northern Gulf of Alaska." In: Linkages between coastal and open ocean ecosystems, S.M. McKinnell & G.A. McFarlane (eds). Deep-Sea Research II 52 (5-6): 667-679.

PICES Press

Napp, J.M. 2008. "The Bering Sea: Current Status and Recent Events". PICES Press 16 (2): 30-31.

Annual Report

PICES. 2008. Annual report. North Pacific Marine Science Organization (Sixteenth Meeting, Victoria, Canada). 419 pp.

PICES. 2008. "Report of Governing Council." pp.15-64 In: Annual Report. North Pacific Marine Science Organization (Sixteenth Meeting, Victoria, Canada).

2. Investigate possibilities of branding PICES at the article level in the journal special issues. Beginning in 2005, PICES established issue level branding on the cover or inside cover page of PICES special issues, and in 2007 began establishing article level branding in the Acknowledgments Section at the end of each article in special issues. Though seemingly redundant, article level branding is necessitated by the frequency with which users directly access an article or only obtain a single article in an online environment and never see the cover or prologue. There are two main ways of improving the branding of PICES at the article level. One is a small logo at the top of the article and the other is moving

the credit line from the Acknowledgement section into the Abstract. We continue to work with editors and publishers on these and other possibilities.

3. Add information on the PICES publications introductory web page for ordering publications as well as more specific contact information for publications.

One of the core missions of PICES is to facilitate and deliver information to its member countries. Over the long-term, the least labor intensive system for ordering publications would be a fully-automated purchase and payment system like a shopping mall. This takes a lot of initial effort and cost to establish. The second-best choice would be a web-ordering form. Like the first choice, this also has complications: it is hard to set an international pattern for ordering PICES Publications because of the variables in shipping and transactions among countries. Thus far, given these variables, PICES has handled requests individually, determining charges on a cost recovery as well as ability to pay basis. PICES has decided to designate one contact person to be in charge of publication orders, and will post that name on the website. The contact information still needs to be added to the Publications page.

C. Enhancing access through library and indexer cooperation

1. Enhance existing OCLC catalog records with links to current digital versions of PICES publications. OCLC WorldCat library catalog records are all updated as of spring 2008. Periodic monitoring will be needed for new records. As mentioned above these records are the source from which thousands of libraries populate their local catalogs as well as provide interlibrary loan services. Though this catalog is recently free to search online via <http://www.worldcat.org/>, it is historically more of a librarian's tool. Therefore, presently the catalog is still heavily used by librarian's and less so by researchers.
2. Establish agreements with select libraries for ongoing print archiving, following surveys under Part D. Archiving agreements will be discussed after the completion of the PICES survey at the end of 2008. We hope to provide the Study Group on Communication with useful data from these surveys and engage them in a discussion on all aspects of implementing not only these agreements but also changes to the distribution of publications to individuals receiving PICES publications.
3. Establish agreements with commercial indexers that insure indexing of all PICES publications to the article level. Conversations were held with two Indexing Companies, ProQuest (ASFA) and NISC (Fish and Fisheries Worldwide). Both index PICES publications as received. ProQuest stopped receiving PICES publications, so indexing lapsed. NISC collects the indexing from library at the South African Institute for Aquatic Biodiversity (formerly the J.L. B. Smith Institute of Ichthyology. The name change in the 2003 may have hampered delivery of publications and their consequent indexing.

Aquatic Sciences and Fisheries Abstracts through ProQuest:

ProQuest editor, Vicki Soto, oversees the production of Aquatic Sciences and Fisheries Abstracts. Much of the content is entered by international centers coordinated by the ASFA Secretariat located at FAO in Rome. ProQuest contracts with the Secretariat to enhance the database with additional content. ProQuest provides the user interface and web accessible platform. Typically, Ms. Soto gathers publication information from mainstream publishers leaving small publishers such as PICES to be picked up by the ASFA input center in their respective countries. As PICES is an international organization, the Canadian input center does not track and input PICES publications. Consequently, we need to develop a better and more consistent process to ensure indexing of PICES publications in ASFA.

Fish and Fisheries Worldwide through NISC:

Input to this database is gathered from multiple sources including the collection of the South African Institute for Aquatic Biodiversity. SAISB scientists decide which publications and content are worthy of inclusion, and consequently index this. In general, PICES publications are well covered including the

PICES Press. Gaps in coverage are probably due to non-delivery of issues, selective indexing decisions, and changes in indexers.

Several mechanisms should be pursued:

- Add Ms. Soto to the distribution list so ProQuest has PICES publications available for indexing. There may still be a lag, but this would be a cost-effective, straight-forward approach. They would accept electronic copies.
 - Continue to enter PICES publications into the Aquatic Commons. Ms. Soto believes this will be an efficient way for ProQuest to capture the metadata to add to ASFA. If this process continues, ProQuest may no longer need to receive print or electronic copies.
 - Make sure the correct mailing address is in the Distribution List. SAIAB Library (Margaret Smith Library, SAIAB, Private Bag 1015, Grahamstown, 6140, SOUTH AFRICA).
4. Add all publications to a searchable digital repository following pilot project in Part E. IAMS LIC's Aquatic Commons (AC) digital repository can be an "article level" index without creating single records for each article in an issue, by using a contents field that is visible to web search engines. AC is also a tool to index new publications more quickly than Aquatic Sciences and Fisheries Abstracts (ASFA). ASFA will look to both AC and the PICES website to stay aware of new publications. AC is also important as a free resource and an OAI-PMH harvestable resource that is currently being harvested by the Avano repository at Ifremer. In essence, Avano, regularly and automatically copies and archives metadata (and in some cases the data files/pdfs as well) from Aquatic Commons and any other OAI-PMH compliant repository that is registered with them with no human intervention. ASFA, in contrast, is a fee resource usually purchased by libraries at an institutional rate and is not OAI-PMH compliant. Worldcat is more of a book title and journal title level database that is mainly useful to identify libraries with print copies of publications. While it (and ASFA) may link to online versions they do not maintain or control access to those versions. Therefore access is dependent on websites staying consistent and/or readers having paid subscription access to those pdfs. The digital repository aspect of AC also means that the pdf version of the publication is always immediately linked and freely accessible via the metadata record. At present, sixty-eight items from PICES Press, Annual Reports, Scientific Reports, Special Publications and Technical Reports have been added into the Aquatic Commons.

D. Improving distribution efficiencies

1. Review and enhance data on distribution lists.
They will be updated after the institution/library survey responses are received.
2. Create and conduct surveys of each of the three groups of PICES distribution recipients and Contracting Parties.
The PICES Secretariat maintains three distinct lists for distributing new publications to each group. One list contains names and addresses of individual researchers in the PICES community. The second contains library names and addresses and the third contains institution names and addresses. These libraries and institutions may be universities, government agencies, non-governmental agencies. One survey of individuals was completed in the spring of 2008. A report of those results will be presented to the Communications Study Group. The libraries and institutions survey is ready to implement and will also be discussed by the Communications Study Group before doing so.
3. Add RSS (Really Simple Syndication) functionality to website.
This was determined to not be worth the effort due to the low rate of change on the publications web page. Still, there may be opportunities to improve the website, including an RSS feed on the PICES main page so those interested can easily stay informed of new developments at PICES with little sustained effort on the part of the Secretariat.

E. Increasing visibility and ensuring perpetuity through a digital repository

1. Establish a pilot project to develop a collection of PICES Publications in the IAMSLIC digital repository 'Aquatic Commons'
Adding the Annual Reports, PICES Press and Scientific Reports to the Aquatic Commons has been accomplished as noted earlier.
2. Retrospectively scan items to complete the collection of digital publications.
Missing electronic copies of two Scientific Reports were located and uploaded to the PICES web page as well as deposited in the Aquatic Commons. PICES has posted earlier editions of some Annual Reports. Digitization of the older annual reports is under consideration.
3. Negotiate with publishers for the right to deposit appropriate versions of journal articles into the repository and/or on the PICES website.
Little progress has been made on direct negotiations. The two main publishers PICES special journal issues are Elsevier and Oxford. According to the SHERPA/RoMEO database (<http://www.sherpa.ac.uk/romeo.php>), both allow posting of post-prints or authors' proof copies to an institutional repository, though Oxford imposes a 12-month waiting period after which an author can archive a post-print. In either case, there are additional restrictions, that currently prevent PICES or special issue authors from posting articles "as is" from the publisher website. Consequently, it may be more expeditious to work with PICES authors to get their permission to post these articles or encourage them to do so.
4. Develop a copyright agreement between PICES and all authors that grants PICES rights to archive and provide access to digital content.
An agreement needs to cover all PICES publications. Of those individuals surveyed, 75% indicated a willingness to give PICES the right to post publications online. An example of such an agreement would include a non-exclusive right to archive and provide online access to the author's work. It would be predicated on the author having the right to do so, e.g. having retained this right at the time of publishing with a publisher other than PICES. We suggest that PICES encourage all authors, when submitting to a commercial publisher, include the SPARC Author's Addendum provided by the Science Commons (<http://scholars.sciencecommons.org/>). This is a straightforward way to retain certain rights in regards to the author's work. The authors could in turn grant these rights to PICES as the archive and point of open access.
5. Review all PICES-related efforts related to metadata creation and online publication. Propose workflows that capitalize on OAI-PMH compliance with Aquatic Commons and federated metadata searching through T-Code's North Pacific Ecosystems Metadata site.
Accomplishing this Action Item concerns direction and policy for PICES communications. So, it will require substantive discussion with the F&A Committee, the PICES Secretariat, TCODE, the FUTURE, the Communications Study Group and the Governing Council. The PICES website could be a primary portal to science information and data on the North Pacific. But given limitations of staffing, careful consideration must be given to priorities and possibilities. This will be discussed as part of the presentation to the Communications Study Group in Dalian.

In the near term, links should be made from the PICES publications page to all PICES information and data. This reflects an understanding of how various efforts within PICES complement each other.

Some examples include:

- The North Pacific ecosystem Metadatabase (<http://www.pmel.noaa.gov/np/mdb/>)
- The Aquatic Commons (<http://aquacomm.fcla.edu/>) Euphasid

Appendix 6 Member country written contributions at PICES XVII, Dalian, China, October 31, 2008

PICES communications – Canada

In Canada, a Science Outreach Strategy has been completed and a Knowledge Translation Strategy is being developed by the federal government. The four target audiences or pillars identified for both are: internal (our own employees), external audiences (including the general public), science partners (including universities and associated industries) and government (parliamentarians and other departments including granting agencies).

The implementation of these strategies provide an opportunity to ensure our audiences are made aware of the projects that we are taking on that move the FUTURE initiative ahead. For instance the Eco-system Research Initiative on the west coast is providing a wonderful opportunity to look at an eco-system aligned with the PICES geographic region. This Canadian initiative and others like it from other countries could be used to give some profile to PICES.

On this note, the audiences that PICES wants to reach is unclear....are we looking for people to become engaged in the organization in order to better partner on issues of importance to the PICES eco-system or are we looking to inform a broader public about the work that PICES is undertaken. I would suggest the first target might be more appropriate initially. Reaching those interested scientists is a segment that is, in a sense, easier to reach.

Currently, I believe that the community of members, an educated public, is paying a fair amount of attention to PICES and the work of PICES member countries. When we look at the attention paid through our federal government library system, we know that publications that are in hard copy are available in most of our facilities and are being used and that those available electronically are accessed regularly.

PICES annual publications are housed in most of the Fisheries and Oceans libraries across the country. The libraries are accessible to all DFO scientists and are open to the public in each region. In addition, the Departmental libraries subscribe to ELSEVIER and receive publications that are of interest to Departmental employees. Each year, the number of usages of electronic documents is reviewed to determine which publications should be retained and which should be deleted from our lists. It remains difficult to know the exact impact of the publications.

As we look toward the future, we should promote the PICES publications as they become available. It would also be appropriate to determine if our partner universities are receiving the PICES publications and encourage them to subscribe.

The study done through PICES provides information about the audiences and their usage but is incomplete. It is clear more work needs to be done on those issues and perhaps some of that can be done through member countries.

Increasing the membership by launching a membership drive, would mean that more individuals taking advantage of the PICES infrastructure, research, partnerships and publications. This could be done through the existing communications committee members working through PICES headquarters.

A general public website would assist member countries in identifying issues that could be expanded upon in their own countries, however. I would think a general public site might be useful.

A communications strategy and associated work plan definitely should be developed. These documents should clearly define actions....those to be done by PICES headquarters and those to be done by member countries. Without the work plan, actions to move FUTURE ahead may not be undertaken.

We in Canada would be pleased to assist in this activity.

PICES Communications – Japan¹

Harumi Yamada (Fisheries Agency of Japan)
and
Yukimasa Ishida (Fisheries Research Agency)

In this paper, the examples of PICES scientific products communicated and used in Japan are introduced. There is a liaison meeting among the ministries to make marine policies and to raise several funds for scientific studies. An E-Mailing List for Japanese PICES members is utilized to quickly share and strongly promote PICES activities, including scientific programs in Japan. The website and scientific journals in the Japanese language are useful tools to connect other Japanese scientists to PICES scientific products. PICES should make more social contributions. For the general public, the citizen learning is important. We should take account of the approaches to general public using the local language and the common words, because the general public is expected to produce public opinion, which is influential in making policies for the government.

Liaison meeting among the ministries

There are 12 ministries in Japan. We have a liaison meeting among four ministries of Foreign Affairs (MOFA), Education, Culture, Sports, Science and Technology (MEXT), Land, Infrastructure, Transport and Tourism (MILT), Japan Meteorological Agency of MILT, Japan Oceanographic Data Center of Japan Coast Guard, MILT (JODC), the Environment (MOEN) and Fisheries Agency of Japan. The meeting is frequently held before and after the Annual Meeting and also inter-sessional Meeting, and also by e-mail if necessary.

The meeting plays a role in giving and sharing scientific information from PICES for the making government policies, including promoting the scientific activities to the PICES. Scientific information from this meeting helps the government policy makers to appropriately evaluate the scientific study plans in the North Pacific proposed from scientists.

This small meeting consists with one or two persons in each ministry and agency, so that deeper understanding of the outputs from PICES are expected among the members. Then, in the Fisheries Agencies, the scientific information from the meeting is also shared among all four departments. The system is followed in raising the MAFF Fund as well as several funds for summer school and for the workshops in MEXT.

E-mail list for Japanese PICES members

We have an e-mail list that includes a total of 51 Japanese scientists involved in all the PICES Standing Committees and expert groups as well as Governing Council and Finance & Administration. We are utilizing this e-mail list to share scientific information in PICES quickly and simultaneously, and to promote the studies in each Standing Committee and expert group.

Website and scientific journals

A website has been established by the Fisheries Research Agency (FRA) (<http://pices.job.affrc.go.jp/picesindex.htm>), targeting an audience of scientists and NGOs outside of the current PICES members. The website introduces mainly the PICES events in Japan and the activities of Japanese scientists in the PICES using the Japanese language, with linking to the original PICES website. This website plays a role of promoting, contributing and motivating the scientific studies through the PICES for the Japanese scientists.

Japanese PICES members frequently make announces and/or reports of PICES events to the Japanese science communities using their journal and their e-mailing list, such as the Japanese Society of Fisheries Science, the

¹ This paper was submitted to the PICES SG-COM meeting in Oct. 31, 2008 in Dalian, China. Paper not to be cited without the authors' permissions.

Oceanographic Society of Japan and the Plankton Society of Japan. These communications are expected to make Japanese scientists and/or NGOs closely aware of PICES activities.

Citizen learning

FRA holds citizen learning for the general public. Citizen learning with the theme “To marine scientists in future” from PICES was held during the PICES XV Annual Meeting in Yokohama in 2006. Both Drs. Jacquelynn King (Canada) and Richard Brodeur (USA) made presentations with us to students of a junior high school and elementary school. We should have another plan for understanding the North Pacific ecosystem on the basis of PICES products because citizen learning is expected to make public opinion, which is influential in making policies for the government.

Discussion

It is successful for PICES to communicate with other similar organizations, NGOs and scientists interested in marine ecosystem. PICES produces significant results from scientific studies with collaboration among PICES member and/or other communities, and scientific information on the understanding of the North Pacific ecosystem. In fact, a new Working Group on *Forecasting Climate Change Impacts on Fish and Shellfish* will be established jointly with ICES.

PICES should have more communication with government and/or marine policy makers, with NGOs, and the general public, who are expected to shape public opinion. We believe that PICES has more social contributions through PICES products.

To increase inroads of PICES activities, including scientific advice to any audience, it is very important to make messages through the local language, especially for countries not using English as an official language. It might be proposed that one of the first steps could be the development of additional local language pages, such as Chinese, Korean, Russian and Japanese, into the current website.

Mass media is one of the most influential approaches to the general public, at least in Japan. They tend to be eager to know of environmental issues from any scientific communities by the local language. To deliver to the general public, we should pay more attention to the use of common words instead of scientific or technical terms.

However, we should consider both of the limited Secretariat resources and the different situations of PICES member countries, so we should not rely on the current Secretariat or newly internal structures to resolve any language barriers, as well education for the general public. Each country should keep paying for this effort on a voluntary basis.

Printed matter can also be useful for people, including government officials, because they may lack the expertise to access and collect on-line information in the same way as scientists.

1. Sylvain Paradis (Canada) noticed that the group did not identify all PICES objectives for communications.
2. He also proposed to take clips of interviews with leading marine scientists and make them available on the Internet. (So, as we discussed, to reach a broader audience, PICES needs to communicate not only texts but multimedia stuff as well.)
3. George Boehlert (USA) informed that people who train science writers will be invited to participate at the PICES Annual Meeting in Portland, USA, in 2010.
4. Tokio Wada recommended circulating the report to all Standing Committees.
5. After preparing the final report by the end of November, SG-COM will be disbanded. Governing Council will make a decision on how to treat PICES communication issues in the future, probably in Sendai.

Darlene Smith and Yukimasa Ishida participated in the GC meeting and can provide additional comments.