First Meeting of the Project Science Team for the PICES/MAFF Project on “Marine Ecosystem Health and Human Well-Being”

The first meeting of the Project Science Team for the PICES/MAFF project on “Marine ecosystem health and human well-being” was held on October 11, 2012, at the PICES 2012 Annual Meeting in Hiroshima, Japan. The meeting was co-chaired by Drs. Mitsutaku Makino (Japan) and Ian Perry (Canada).

The Project Scientific Team members and meeting participants are identified in Appendix 1, and the meeting agenda is presented in Appendix 2.

BACKGROUND OF THE PROJECT

- Progress is being made internationally on an ecosystem approach to the management of marine systems.
- Very recently, the concept of human well-being within marine social-ecological systems has become recognized as an important step forward.
- Well-being shifts the perspective from objective measures of sustainable livelihoods (comprised of the physical, social, human, natural, and financial resources available to a community or country) to include the subjective or perceived well-being of individuals and communities.
- This represents a shift from people as exploiters of the ocean to people as integral components of resource sustainability and ecosystem health (Coulthard et al. 2011; Charles 2012).
- Japanese concept “Sato-umi (village-sea)” is an example. So, this 5-year project is funded by the Ministry of Agriculture, Forestry and Fisheries (MAFF) of Japan, through the Fisheries Agency of Japan (JFA).

Ecosystem services and human well-being was recognized in the Millennium Ecosystem Assessment (2005), although it was noted in discussion that the connecting arrows should go both directions:

The project goal is to identify the relationships between sustainable human communities and productive marine ecosystems in the North Pacific, under the concept of fishery social-ecological systems. This means that, considering the global changes in climate and human social and economic conditions, the project is expected to determine: (a) how do marine ecosystems support human well-being; and (b) how do human communities support sustainable and productive marine ecosystems. The project is funded from the Official Development Assistance (ODA) Fund and therefore, involvement of developing Pacific Rim countries in activities is required under this project.

The project lifetime is 5 years: it began in April 2012, and is expected to be completed by March 31, 2017. The budget allocated for Year 1 (April 1, 2012 – March 31, 2013) was $149,880, and the proposed budget breakdown is shown in Table below.

<table>
<thead>
<tr>
<th>Travel &amp; meetings</th>
<th>Contracts</th>
<th>Equipment</th>
<th>Miscellaneous</th>
<th>Overhead</th>
<th>Total</th>
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</thead>
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<tr>
<td>60,000</td>
<td>49,000</td>
<td>19,600</td>
<td>1,796</td>
<td>19,484</td>
<td>149,880</td>
</tr>
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</table>
It was noted that the proposed goals of the project are very general and need to be made much more specific. Aspects of capacity building and the provision of analytical tools should be included and stated explicitly. Both of these (capacity building and tools) should continue to be useful after the project has been completed. When organizing capacity building workshops in developing countries, the objectives must include the needs and goals of the developing country and its partnering institutions.

The “must do” things under the project include to:
1. Select study sites: Southeast Asia, oceanic islands and Central America (3 sites);
2. Conduct research on ecosystem health and human well-being;
3. Organize 2-3 workshops at each site;
4. Construct a database;
5. Submit annual reports to MAFF/JFA within 120 days after the close of each project year ending March 31.

It was suggested that the ‘database’ could be a bibliography, for example, of human-natural systems interactions and related references that would be useful for research and capacity building activities. It would be desirable for this database to also support the work of the PICES FUTURE program, and to link with the work of PICES Working Group on Development of Ecosystem Indicators to Characterize Ecosystem Responses to Multiple Stressors (WG 28) on indicators of ecosystem responses to multiple stressors regarding human activities (and their related indicators) that affect the ocean.

It would also be desirable for the project activities to build on and learn from existing efforts, e.g., NOAA’s international activities to teach Integrated Ecosystem Analysis approaches in the South Pacific.

**Action:** Vera Trainer to provide contact information for these NOAA activities.

The work of this project should be integrated with other PICES activities, such as:
- FUTURE Research Theme 3 on “How do human activities affect coastal ecosystems and how are societies affected by changes in these ecosystems”;
- Section on Human Dimensions of Marine Systems (S-HD);
- WG 28 on Development of Ecosystem Indicators to Characterize Ecosystem Responses to Multiple Stressors;
- WG 21 on Non-indigenous Aquatic Species;
- Section on Harmful Algal Blooms in the North Pacific (S-HAB);
- If climate change is involved, e.g., as a process which might interfere with achieving productive marine ecosystems and sustainable human well-being, the Section on Climate Change Effects on Marine Ecosystems (SICCME) could also be involved, along with the Working Group 29 on Regional Climate Modeling.

**REVIEW OF WORK RELATED TO THE PROJECT**

Dr. Trainer described the previous MAFF-funded project (2007–2012) on teaching methods to monitor harmful algal blooms in developing countries (Philippines, Indonesia, and Guatemala). It had the following features:
- a survey sent through the Intergovernmental Oceanographic Committee of UNESCO (IOC) to appropriate national representatives regarding their perception of needs for harmful algal bloom monitoring in their country (see Appendix 3 for a sample survey form);
- a follow-up scoping meeting with appropriate representatives of agencies in each country selected for training courses, to refine their needs and goals for the training course;
- a workshop conducted with appropriate local participants in each country, organized with local representatives;
- a follow-up meeting with the national representatives, to assess the outcomes from the training sessions.

Dr. Trainer expressed her view that teaching the ‘philosophy’ of how to do the work/approach was better than teaching a specific issue, i.e. to that the participants can have the tools to apply to issues as they emerge rather than fixed on a set of specific problems. In addition, it is important that participants at the training workshop include those people actually doing the work being presented in the training course.

Dr. Therriault commented that the PICES Working Group on Non-indigenous Aquatic Species (WG 21) took a different approach to their MAFF-funded project. They decided that the issues they wished to address regarding invasive species were already well-defined. Instead, they focused their work on developing a database of where invasive species have been observed.
Dr. Criddle noted that the Food and Agriculture Organization (FAO) of the United Nations has developed a training course on ecosystem-based management for fisheries. He suggested it could be important to identify their spatial scale and scope of their project.

**Action: Dr. Criddle to follow-up and circulate details on this FAO program.**

For this present PICES/MAFF project, it was agreed that a process to get to the ‘shared objectives’ is necessary, i.e., human well-being is not necessarily understood the same way by all parties. The following was suggested as a possible approach:

1) The Project Science Team selects the countries, and then develops a process and questionnaire to circulate to selected contacts in each country in order to identify the specific issue to be addressed, within the context of marine ecosystem health and human well-being (i.e., to specific issues within this topic may differ among countries).

2) The project adopts a ‘responsible template’ approach, for example in which the national representatives define their issues, and the Project Science Team members help with those issues for which the team has expertise.

3) It was recommended to start with broad objectives within the context of marine ecosystem health and human well-being, then let the national participants define/identify their issues within these broad objectives, on which subsequent training sessions and workshop would focus.

This process requires a clear sense of who the target participants are for what type of training. For example, an important difference between the present project and the previous PICES/MAFF project on harmful algal bloom monitoring is that the previous project had a very specific training topic related to human and environmental health. The participants in the training sessions were identified as those people who conduct the marine monitoring activities, in particular the laboratory personnel. In contrast, the present project is concerned more with conceptual issues of marine ecosystem health and human well-being. The target participants in such a topic may include representatives of local, regional and/or national government agencies responsible for marine management and representatives of local community groups in marine-dependent communities.

Dr. Hori and Dr. Makino presented definitions for human well-being from psychological research: “Well-being is a state of being with others and the natural environment which arises where human needs are met, where individuals and groups can act meaningfully to pursue their goals, and where they are satisfied with their way of life” (Gough et al. 2007). They described the concept of the “well-being cube”, in which a person’s (or community, region, or country) can be located in one or more of 27 cells defined by three axes each with three categories, e.g.,

![Well-Being CUBE](image)

The survey discussed above could be used to complete this “cube analysis” for each country, thereby serving as a standard method to compare countries with respect to their needs for marine ecosystem health and human well-being. In addition, this method might be used to compare the responses of workshop participants to the responses of the broader population from which the participants are drawn, and also, how does the region or community compare with country as a whole.

In discussion, it was noted that multiple tools may then be needed to link human well-being analyzed by this method with the necessary ecosystem services.
**Action:** Dr. Hori and Dr. Makino are to prepare a model example to illustrate how this approach might work, and the types of questions that might be developed. This example could include illustrations of how the ‘cube analysis’ links with ecosystem services.

**SITE SELECTION**

Three countries were discussed for potential workshops:
- **Indonesia:** large population, aquaculture-intensive
- **Palau:** finfish capture fishery focus; existing networks of community-based fisheries
- **Guatemala:** upwelling system; finfish and aquaculture

Possible time schedule for these countries:
- **Year 1:** Indonesia
- **Year 2:** Indonesia and Guatemala
- **Year 3:** Guatemala and Palau
- **Year 4:** Indonesia and Palau
- **Year 5:** finish – final workshop

In addition, we also need to consider the selection of appropriate site(s) within each country, in consultation with the national representatives. Is more than one site per country needed?

Dr. Batchelder reported that he has a student working on Meso-American reef systems (modeling only), and so he keeps track of some issues on those systems. The website [http://www.healthyreefs.org/images/pdf/conceptual_framework.pdf](http://www.healthyreefs.org/images/pdf/conceptual_framework.pdf) shows a conceptual framework for those systems, which includes “social well-being”, which seems synonymous with “human well-being” as described here. The website [http://www.healthyreefs.org](http://www.healthyreefs.org) has several reports that summarize the condition of Meso-American reef systems; it might be worth exploring these and other similar sites. There is prior work on “Coastal systems and human well-being”, and we should learn from these efforts.

The reasons for selecting these tropical countries also need to be presented to PICES member countries. For example, ENSO processes connect the tropics with PICES member countries at higher latitudes, as does food supply (shrimp and tuna from tropical countries are major imports to PICES member nations).

**Action:** Dr. Suam Kim to provide Dr. Makino with information on Dr. Sung Yun Hong as a possible contact in Indonesia, and Dr. Trainer and Dr. Wells are to consider leading the program in Guatemala.

**WHAT TOOLS CAN PICES PROVIDE THESE COUNTRIES?**

Within the contexts of sustainable human communities and productive marine ecosystems:
- What are the general concepts leading to sustainable human communities and productive marine ecosystems?
- Where do countries ‘want’ to be within these concepts?
- Where are they now?
- What are the major stresses, for example climate change, and how might these affect the current state and the transitions to the desired state?
- How does human well-being relate to ecosystem services in these countries?

Consider if a reduction of all potential activities to one or a few activities, for example aquaculture, may help to focus the discussions and training sessions. The initial survey approach and first scoping meeting could be used to identify the larger suite of activities of interest, and if they can be reduced to a smaller number of key activities.

The key outcome is to provide an approach and tools to doing these types of ‘integrated social-ecological assessments’.

**NEXT STEPS**

By February 2013:
- to refine “cube” example;
- to select specific objectives and approach for this project.
to set-up a project web site for Project Science Team members;
to prepare a draft questionnaire for Indonesia, including identification of potential target participants;
to identify contacts and conduct the first scoping meeting with appropriate representatives in Indonesia.

By May, 2013:
to discuss details of a workshop in Indonesia at a Project Science Team meeting to be held, possibly, in conjunction with the PICES inter-sessional Science Board meeting (Kaliningrad or St. Petersburg, Russia, week of May 20, 2013, or alternatively independently of the inter-sessional Science Board meeting, for example, in Hawaii in May 2013.

Appendix 1

Project Science Team members and meeting participants

According to the organizational principles, agreed upon by MAFF/JFA and PICES, the project is directed by a Project Science Team, co-chaired by Drs. Mitsutaku Makino (Fisheries Research Agency, Japan, mmakino@affrc.go.jp) and Ian Perry (Fisheries and Oceans Canada, Ian.Perry@dfo-mpo.gc.ca). The Co-Chairmen of the Project Science Team serve as the Project Scientific Coordinators and are responsible for reporting annually to the PICES Science Board on the scientific implementation of the project. The current Science Team members are included in the table below (note: Dr. Mark Wells and Dr. Thomas Therriault were invited to join the Science Team at the meeting, and both accepted). All participants of the meeting are shown on the group photo.

<table>
<thead>
<tr>
<th>Name</th>
<th>Country</th>
<th>PICES Activity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Grant Murray</td>
<td>Canada</td>
<td>S-HD</td>
</tr>
<tr>
<td>Ian Perry, Co-Chairman</td>
<td>Canada</td>
<td>S-HD, WG28</td>
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<tr>
<td>Thomas Therriault</td>
<td>Canada</td>
<td>ACE-AP, MEQ, WG21, SB</td>
</tr>
<tr>
<td>Masahito Hirota</td>
<td>Japan</td>
<td>S-HD</td>
</tr>
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<td>Juri Hori</td>
<td>Japan</td>
<td>S-HD</td>
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<tr>
<td>Mitsutaku Makino, Co-Chairman</td>
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<td>Dohoon Kim</td>
<td>Korea</td>
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<td>Suam Kim</td>
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<td>Harold Batchelder</td>
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<td>S-HAB</td>
</tr>
<tr>
<td>Skip McKinnell</td>
<td>Secretariat</td>
<td></td>
</tr>
</tbody>
</table>
Appendix 1

Project Science Team meeting agenda

1. Member self-introductions
2. Background of the project (PIs)
3. Review of work related to the project
   - Previous PICES-MAFF Project (Vera Trainer and Mark Wells)
   - IMBER WG on *Human Dimensions* and Current Opinion in Environmental Sustainability (COSUST) Special Issues (Ian Perry)
   - “Sato-umi”-related initiatives in CBD, UNU, *etc.* (Mitsutaku Makino)
   - Others
4. Proposal of research topics by PT members
   - Proposal of candidate sites (PIs)
   - Potential intersects/synergies with WG-28, S-HD, and other groups within PICES and FUTURE Program (Ian Perry, Mitsutaku Makino, Harold Batchelder, Vera Trainer, *etc.*)
5. Discussions on the year plan and budget
6. Others
Appendix 3

QUESTIONNAIRE TO ASSESS PACIFIC MEMBER STATE NEEDS IN RELATION TO HAB MONITORING & MANAGEMENT AND STRENGTHENED SEAFOOD SAFETY

1. Do you see a need for assistance to strengthen capabilities for harmful algae and biotoxin monitoring and management capabilities in your country?
2. Do you see a need for assistance to strengthen capabilities for harmful algae and biotoxin research capabilities in your country?
3. Which authority is responsible for monitoring of harmful algae and biotoxin monitoring in relation to public health/seafood safety, aquaculture and fisheries in your country?
   a. Institution name & address
   b. Contact person, e-mail
4. Which institution/laboratory is in charge of implementation of monitoring of harmful algae and their biotoxins in relation to public health/seafood safety, aquaculture and fisheries in your country?
   a. Institution name & address
   b. Contact person, e-mail
5. Is there any working relationship between the above institutions and research institutions, for example, when there is a mortality/illness event, which scientists/groups assist regulators in researching the cause of the event?
   a. Research institution name & address
   b. Contact person, e-mail
   c. Please specify nature of this working relationship
6. At which institution/agency is national data on harmful algal events stored?
   a. Institution name & address
   b. Contact person, e-mail
7. Is there an interest by regulators to assure seafood safety of non-exported products?
8. Would there be an interest in your country in sharing knowledge on different approaches and methods in HAB management?
   a. In relation to export markets
   b. In relation to local non-exported fisheries and aquaculture
9. How would you assess the needs for short term technical training (you may indicate more than one, indicate priority with 1 as high, 5 as low priority)
   Regulatory labs and institutions:__  Research labs and institutions:__
   a. Regulatory monitoring and management laboratories:
      __Species identification __Toxicity testing __HAB data management __Introduction to new methodologies __other (please specify)
   b. Research institutions:
      __Species identification __Toxicity testing __HAB data management __Introduction to new methodologies __other (please specify)
10. Are there shortages among the authorities or institutions responsible for HAB monitoring and their laboratories technology (IT, microscopes, analytical facilities etc) that impede effective monitoring and management of HAB? Please specify.
11. Would there be interest in initiating or strengthening network activities (e.g. learning visits to sister labs in the region with a goal to compare methods in species identification or toxicity measurements etc)?
12. What would you identify as most needed network activities in your country in relation to harmful algae and management of their effects?
13. What would you identify as most needed network activities in your country in relation to harmful algae research?
14. What other needs or comments pertaining to protection of seafood safety from harmful algae events in your country are not covered above?

The answers to this questionnaire were submitted by:
Name:  Institution:  Address:  E-mail: