



PICES MEQ Committee

Action Plan 2006

Mission

The MEQ committee will expand its science from physical/chemical quality as related to toxic contaminants to include: structure, process, and function of the marine system that sustains both ecosystem and human health. Ecosystem health will ultimately affect human health. Rather than focusing on physical drivers of ecosystem change, MEQ is concentrating on anthropogenic drivers of marine ecosystem health.

The committee notes that each nation has a different approach and management structure for insuring marine environmental quality, which in turn influences the direction and relative priority for research and science advice. In other words, each culture and society has a different view of what quality represents. It is important to make sure that the efforts of MEQ include and are useful to each PICES member country.

Ecological health issues can include:

- Disease, biological pollution, bacteria, HABs;
- Biodiversity; species introductions and unintentional introductions of exotic species;
- Sustainability of the ecosystem; future use of resources;
- Integrated coastal zone management; ecosystem-based management;
- Predictive models, ecological forecasting.

Given the above view of the Committee's mission, the Committee made the following revisions to the list of issues in the current MEQ Strategic Plan:

Issues deleted because the focus is too narrow or they are the purview of another PICES Scientific Committee:

- Impacts of climate change on coastal ecosystems.
- Biogeochemical processes regulating contaminant dynamics in sediments;
- Harmonization of existing methods used in PICES countries;
- Scientific criteria for protection of marine ecosystems from contaminants.

Issues remaining unchanged, altered to broaden focus, or included *de novo* are as follows:

- Mariculture;
- Biological and physical transport of anthropogenic substances in the marine environment;
- Anthropogenic impacts on benthic habitat (formerly in the Plan as "trawling effects on benthic habitat");

- Identification and assessment of emerging chemical and biological pollutants (including exotic species), and their impacts on marine ecosystems;
- Defining indicators or biological markers of marine ecosystem health, with relevance to human health and welfare;
- Needing further clarification is a topic addressing: anthropogenic impacts on trophic dynamics and biodiversity that impact system sustainability.

Strategy of the MEQ Committee

The PICES mission has five central themes: (A) Advancing scientific knowledge; (B) Applying scientific knowledge; (C) Fostering partnerships; (D) Ensuring a modern organization in support of PICES activities; and (E) Distributing PICES scientific information. Specific goals are identified within each of these themes. The Actions of the MEQ will seek to meet goals under each of the themes.

Theme A. Advancing scientific knowledge

Goal 1. Understand the physical, chemical, and biological functioning of marine ecosystems

Action 1.1 Address the substantial need for improved data and information on the occurrence and mechanisms of harmful species in the North Pacific.

Task 1.1.1 Conduct a workshop on HAB species (Dinophysis and Cochlodinium) in 2006.

Task 1.1.2 Hold a scientific session on HAB research in the western Pacific (2006)

Task 1.1.3 Initiate discussion of the role of cnidarians and ctenophores in the marine environment.

Action 1.2 Develop a process for conducting holistic assessments of the impact of human activities, and identify a suite of indicators or variables that will facilitate the monitoring of ecosystem status. This will be achieved by the following activities:

Task 1.2.1 Produce an assessment of the spatial and temporal patterns of contaminants for inclusion in the NPESR

Task 1.2.2 In conjunction with 1.2.1 initiate assessment of relationship between contaminant levels and their effects on marine ecosystems.

Goal 2. Understand and quantify the impacts of human activities and climate on marine ecosystems

Action 2.1 Evaluate and increase knowledge in PICES of the potential impacts of aquaculture on ecosystems of the North Pacific.

Task 2.1.1 Hold a scientific session on “Aquaculture and the sustainable management of the marine environment”

- Task 2.1.2** Hold a workshop to train PICES scientists in methods to conduct risk assessments on aquaculture activities (note the ICES Code of Practice for Introductions and Transfer of Marine Organisms).
- Action 2.2** Evaluate and increase knowledge on the potential impacts of intentional and accidental introductions of non-native species and their vectors of introductions, and collaborate with ICES on Introductions and Transfers of Non-indigenous Organisms, including genetically modified organisms.
 - Task 2.2.1** Propose a PICES WG on introduced species (2006).
 - Task 2.2.2** Participate in the International Marine Bioinvasions Symposium (2007).
 - Task 2.2.3** Conduct a joint PICES/ICES workshop on introduced species (2007/8).
- Action 2.3** Evaluate and increase understanding of how human health issues are inextricably linked to ocean conditions, primarily in coastal areas.
 - Task 2.3.1** Conduct workshop/session on “Oceans and Human Health” issues in the North Pacific.
- Action 2.4** Develop the scientific basis for an ecosystem approach to management, including assessments and the provision of scientific advice. Specifically, the following activities are needed:
 - Task 2.4.1** Identify and evaluate the use of indicators for assessing the achievement of ecosystem based management.
 - Task 2.4.2** Continue and expand the development of ecosystem models that facilitate the assessment of monitoring and scientific knowledge of ecosystem functions in a holistic manner.
 - Task 2.4.3** Hold scientific session on approaches to designating ecoregions and areas that are ecologically and biologically significant. (2006)
 - Task 2.4.4** Develop country reports on approaches to ecosystem based management (2006).
 - Task 2.4.5** Hold a symposium on the science of ecosystem based management.

Goal 3. Provide advice on methods and tools to guide scientific activities

- Action 3.1** Examine and assess methods for measuring HAB species and toxins for use by scientists and agencies of PICES member countries
 - Task 3.1.1** Conduct workshop at PICES XIV to review methods *Pseudo nitzschia* and *Alexandrium*.
 - Task 3.1.2** Work to develop capacity for Russian scientists to assess and monitor HAB species and toxin levels.
 - Task 3.1.3** Conduct a laboratory demonstration of DSP detection.

Theme B. Applying scientific knowledge

Goal 4. Provide scientific advice towards wise use of the North Pacific Ocean

- Action 4.1** None

Theme C. Fostering partnerships

Goal 5. Promote collaboration with organizations, scientific programs, and stakeholders that are relevant to the PICES goals

Action 5.1 Develop an approach for formal linkages with ICES/IOC/IMO WGBOSV (WG on Ballast and Other Ship Vectors) and/or the ICES WGITMO (WG on Introductions and Transfers of Marine Organisms) over the long term.

Goal 6. Promote collaboration among scientists within PICES

Action 6.1 Develop and maintain joint activities of PICES scientists with IOC in development of an international HAB database (HAE-DAT).

Task 6.1.1 Prepare event reports for 2001.

Action 6.2 Provide input to the implementation of GEOHAB activities in the PICES area, such as the HAB event database (see 6.1) and IOC Intergovernmental Panel on Harmful Algal Blooms.

Theme D. Ensuring a modern organization in support of PICES activities

Goal 7. Provide an effective infrastructure to support PICES programs

Action 7.1 None

Theme E. Distributing PICES scientific information

Goal 8. Make the scientific products of PICES accessible

Action 8.1 Publish Working Group reports

Task 8.1.1 Publish country reports on status of mariculture in PICES member countries in the PICES Scientific Report series.

Task 8.1.2 Publish ANIS inventories for PICES member countries in the PICES Scientific Report series.

Task 8.1.3 Publish a brochure on ecosystem based management.