REPORT OF THE ADVISORY PANEL ON *MARINE BIRDS AND MAMMALS*

The eighth meeting of the Advisory Panel for *Marine Birds and Mammals* (MBM-AP; under the auspices of the BIO Committee) was held from 10:00–12:30 hours on October 26, 2008 during PICES XVII in Dalian, China. Drs. William Sydeman and Hidehiro Kato, Co-Chairmen of MBM-AP, called the meeting to order and welcomed the participants (*MBM-AP Endnote 1*). Revised Terms of Reference were reviewed and supported as written (*MBM-AP Endnote 2*). The agenda was reviewed and approved by the Panel members (*MBM-AP Endnote 3*). The meeting focused on current activities of MBM-AP and other relevant matters, including discussion of possible future workshops and topic sessions, and the role of MBM-AP in the new PICES Science Program, FUTURE. Members and observers reiterated the need for the Panel, that the Panel serves to generate interest in marine birds and mammals within the PICES community, and that the Panel has been active in coordinating and facilitating multi-disciplinary investigations, symposia, and workshops for PICES.

AGENDA ITEM 3
Reports from participants

Dr. Sydeman reported that a special volume based on the Topic Session (S11) on "*Phenology and climate change in the North Pacific: Implications of variability in the timing of zooplankton production to fish, seabirds, marine mammals and fisheries (humans)*" from PICES XVI (2007) is now slated for publication in the *Marine Ecology Progress Series* (MEPS). Originally, this special volume was to be published in *Deep-Sea Research II*, but only four papers were submitted which was insufficient for a special volume in this journal. MEPS is interested in the topic and additional potential contributions have been solicited. Papers are due by mid-December 2008. MBM-AP will solicit additional contributors. If fewer than four papers are accepted, each paper will be published as a stand-alone article. If more than four papers are accepted, there will be a special theme section in MEPS devoted to this topic.

Dr. Kato reported on activities of the International Whaling Commission (IWC) (*MBM-AP Endnote 4*). He is the PICES representative to the IWC and attended the 60th scientific committee meeting of the IWC in Santiago, Chile in June. Japan is contributing to ecosystem models on the impacts of whales on marine ecosystems. There will be a number of important workshops, one on climate change and cetaceans in March/April 2009 in the United States. Diseases, both emerging and resurging, were topics of conversation. A general discussion ensued on emerging issues affecting marine mammals, and cetaceans in particular. The effects of noise and ship-strikes generated considerable discussion, and resulted in potential proposals for future PICES workshops.

Dr. Kato reported on pinniped surveys off Hokkaido focusing on Steller's sea lions. There are potentially 600 animals in the population, and animals could be affected by entanglement in set and gill net fisheries. To avoid potential impacts, culling is proposed, and a model (Potential Biological Model) revealed that up to 120 animals could be taken without affecting the population.

Dr. Mikhail Stepanenko reported on many important Russian activities in 2008, including special surveys of marine mammals in the Sea of Okhotsk, Seal (Tuleny) Island, and research on endangered western gray whales. Efforts are focused on understanding the population dynamics of sea lions and fur seals and western gray whales. The surveys were conducted to assess potential pollock fishery effects on marine mammals, and no impacts were detected. A survey of the Commander Islands revealed 38 pinnipeds entangled in fishing nets, but this is a very small proportion of the population. TINRO-Center scientists have also been studying walruses in the Arctic Ocean where the situation is not good, reflective of the effects of climate change on ice.

Dr. Seok-Gwam Choi reported on a new survey for marine mammals in Korean waters in the Yellow Sea. The survey will be conducted every 3 years, with a focus on Minke whale distribution and abundance. The survey will be conducted from oceanographic research vessels, and hydrographic information will be obtained as well. Dr. Choi also reported on a tagging study on spotted seals; 10 seals were tagged and tracked in 2008. There have been recent pilot whale strandings in Korea which remain unexplained.

AGENDA ITEM 4
Discussions

a. The role of MBM-AP in FUTURE

Dr. Sydeman reviewed aspects of the new PICES Science Program (FUTURE) with the group, and solicited feedback and discussion. The Panel and observers considered how to best contribute to this program, which is focused on (1) understanding climate change and anthropogenic impacts on marine ecosystems in the PICES region, (2) forecasting future ecosystem change, and (3) better communications with society.

A number of important points were raised. There are many long-term datasets on marine birds and mammals that could and should be used in the analysis of marine ecosystem change. Marine birds and mammals are excellent indicators of marine ecosystem structure and functions and should be used in this capacity. Multi-decadal information on populations, diet, and demographic attributes are available for analysis.

There have been many long-term changes in marine bird and mammal populations in the North Pacific, as well as changes in range and distribution, and changes in phenology and other life history characteristics that are likely to be related to climate variability and change in the North Pacific. In particular, the Advisory Panel and observers thought that research on birds and mammals could be used to assess how much of the observed ecosystem variability could be attributed to natural or anthropogenic effects.

Changes in bird and mammal populations will also have an impact on the ocean, as these predators consume large quantities of prey and may act as "top-down controls" of food webs and ecosystem dynamics. The Panel and observers agreed that models of hypothetical changes in bird, but especially mammal, populations and rates of consumption based on either increasing or decreasing abundance would be revealing, with implications for future ecosystem dynamics and fisheries. In this manner, MBM-AP could play a role in the forecasting goals of FUTURE. A workshop on this topic should be proposed.

The potential for birds and mammals to play an important role in PICES communications was discussed. The Advisory Panel and observers agreed that birds and mammals are of great interest to the public, and therefore should play an important role in FUTURE communications. There were questions about the role of MBM-AP scientists, versus specialists in science communication, with this effort. Eventually, it was agreed that scientists could and should be involved, but that specialists in communication should play the primary role in crafting clear messages.

In summary, the group recommended new efforts to integrate marine birds and mammals into PICES models of energy and trophic interactions, end-to-end food web studies, and comparative responses of ecosystems to climate changes.

b. Workshop and Topic Session suggestions

Following the discussion of FUTURE, MBM-AP and observers discussed what could be put forth as a future workshop for PICES-2009 in Korea. A number of exciting ideas for workshops were suggested, including (1) cetacean ship-strikes: places and times were whales concentrate and are vulnerable to accidents with fast-moving vessels; (2) marine birds and mammals as ecosystem indicators, (3) comparative ecosystem studies focused on birds and mammals, and (4) how best to integrate information on marine mammals in ecosystem models and forecasting. It was decided that a workshop or topic session on seabirds and marine mammals as

ecosystem indicators would be deferred until PICES-2010 in the U.S. Eventually, the idea which rose to the top for PICES-2009 was how to incorporate marine mammals in ecosystem modeling and forecasting. A description for a proposed workshop on this topic can be found in *MBM-AP Endnote 5*. Co-convenors will be Drs. Sydeman and Kato.

AGENDA ITEM 5
Other ideas

In general, there has been good participation over the years in MBM-AP from Canada, Japan and the U.S. Korea provided one scientist (Dr. Seok-Gwam Choi) on behalf of its member, Dr. Zang-Guen Kim. Russia provided two scientists (Drs. Oleg Katugin and Mikhail Stepanenko) on behalf of their delegates. MBM-AP asks that China provide members, and that Canada and Korea provide seabird experts, in particular, a new seabird expert, Ms. Christine Abraham of DFO, Canada, would be a welcome addition.

MBM-AP Endnote 1

MBM-AP participation list

Members	Observers
Hidehiro Kato (Japan, Co-Chairman)	Russell Bradley (U.S.A.)
William Sydeman (U.S.A., Co-Chairman)	Seok-Gwam Choi (Korea)
	Marsha Gear (U.S.A.)
	George Hunt (U.S.A.)
	Jaime Jahncke (U.S.A.)
	Oleg Katugin (Russia)
	Jarrod Santora (U.S.A.)
	Mikhail Stepanenko (Russia)

MBM-AP Endnote 2

Terms of Reference

1. Provide information and scientific expertise to BIO and the FUTURE Program, and, when necessary, to other scientific and technical committees with regard to the biology and ecological roles of marine mammals and seabirds in the PICES region;
2. Identify important problems, scientific questions, and knowledge gaps in assessing the roles of marine mammals and seabirds in marine ecosystems;
3. Assemble relevant information on the biology of marine mammals and seabirds and disseminate it to the PICES community through scientific reports and symposia;
4. Develop strategies to improve collaborative, interdisciplinary research with marine mammal and seabird researchers and the PICES scientific community.

MBM-AP Endnote 3

MBM-AP meeting agenda

1. Call to order – review agenda (modify as needed)
2. Introductions from member nations, meeting participants
3. Reports from participants
   a. PICES XVI/S11 publication on climate change and phenology – Marine Ecology Progress Series (Sydeman);
   b. liaison with International Whaling Commission (Kato)
   c. others (group)?
4. Discussions
   a. MBM-AP and FUTURE (new PICES Science Program) – how can/should MBM-AP contribute? Goals of FUTURE:
      i. Understanding climate change, anthropogenic effects and ecosystem dynamics
      ii. Forecasting and forecasting tool development
      iii. Communicating

b. MBM-AP and PICES-2009
   i. Workshop suggestions?
      - Diet studies
      - Ecosystem indicators?
   ii. Theme session suggestions?
      - Beyond biomass: Comparative demography, lower and upper trophic levels
      - Ecosystem objectives: Setting the FUTURE
      - "Translational" science: Communicating to society
5. Other ideas?
6. Wrap-up

MBM-AP Endnote 4

PICES/MBM-AP participation in International Whaling Commission activities

Based on agreement between the Secretariats of PICES and IWC, an exchange of observers at annual meetings has occurred since 2001. Since 2003, PICES has sent Dr. Hidehiro Kato to the annual meeting of the IWC Scientific Committee. The emphasis of these meetings has been on studies of whale stocks in relation to ecosystem variability and environmental issues. Through the activities of MBM-AP, the PICES observer has reported back to the BIO Committee. An IWC observer has attended PICES meetings since 2001, participating in MBM-AP meetings as well as scientific sessions. The IWC observer has submitted official reports to both IWC Scientific Committee and the Commission meetings, which have been widely used in discussions at the relevant sub-committee levels.

At PICES XVI, the Advisory Panel reiterated the need for Dr. Kato to serve as the PICES observer to the 60th IWC Scientific Committee meeting; and this action was approved by BIO. Dr. Kato participated in the 60th IWC meeting held at Santiago, Chile in June 2008. He submitted the PICES observer report from the 60th IWC/SC at PICES XVII in Dalian, China (see below), and plans to continue as the observer/liaison between PICES and the IWC for the foreseeable future.

PICES Observer Report on the 60th IWC Scientific Committee Meeting

by Hidehiro Kato
Tokyo University of Marine Science and Technology, Tokyo 104-8477, Japan

The 60th scientific committee (SC) meeting of the International Whaling Commission (IWC) was held at Santiago, Chile from June 6–13, 2008. A total of 233 participants from 28 countries, including 77 invited experts and 11 observers from 6 international organizations (CCAMLR, ACCOBAMS, IOC, IUCN, NAMMCO and PICES) participated at this year's annual meeting. PICES was especially welcomed by the IWC/SC.

Under the SC, seven sub-committees (revised management procedure; bowhead, right and gray whales; in-depth assessment; Southern Hemisphere whales; small cetaceans; whale watching) and seven working groups (Aboriginal whaling management procedure; stock definition; bycatch and other human-induced mortality; environmental concerns; ecosystem modeling, DNA testing, IA-North Pacific minke whales). Every substantial issue was discussed at the sub-committees or the working group and then forwarded to plenary of the committee. The SC has worked mainly on Comprehensive Assessments (CA) of whale stocks, Implementation trials of Revised Management Procedure (RMP) after cessation of commercial whaling, and agreed with the scientific basis of RMP in 1996.

The SC has continued work on general RMP issues, including work towards finalizing the guidelines and requirement for implementing the RMP. This year, the SC focused especially on the review of stock status of Southern blue whales, humpback whales and population analyses on the Antarctic minke whales as well as North Pacific minke whales under the CA. In addition, the current population status of North Atlantic right whales and western North Pacific gray whales were reviewed and their endangered statuses were of special concern. Two ongoing Japanese scientific permit programs in the Antarctic (JARPA II) and in the western North Pacific (JARPN II) were highlighted and it was agreed that a dedicated review meeting would be held in early 2009.

For environmental issues, the SC discussed a number of matters related to environmental factors that affect cetaceans. In particular, the SC agreed to hold workshops during the inter-sessional period: the effects of climate change on cetaceans; the second phase of the POLLUTION 2000+ programme looking at the effects of chemical pollutants on cetaceans and the joint CCAMLR/IWC workshop for ecosystem modeling in the Antarctic.

Priorities for next year's meeting are:
(1) review report of the Second Climate Change Workshop,
(2) review report of the POLLUTION+ Phase II Planning Workshop,
(3) receive the State of the Cetacean Environment Report (SOCER),
(4) review the report from the inter-sessional group on Cetacean Emerging and Resurging Disease (CERD).

In addition, for ecosystem modeling, the following issues are high priority topics:
(1) review the report from the joint CCAMLR/IWC Workshop; and
(2) review models from JARPN II.

Next year's annual meeting of IWC/SC will be held at Madeira, Portugal in May 31 to June 12, 2009.

MBM-AP Endnote 5

Proposal for a 1-day BIO workshop at PICES-2009 on
"*Integrating marine mammal populations and rates of prey consumption in models of climate change-ecosystem change in the North Pacific*"

In many North Pacific marine ecosystems, marine mammals are showing considerable changes in abundance. In general, cetaceans, recovering from historical exploitation, are increasing, whereas some pinniped species are declining regionally, whereas others are increasing. Models of marine mammal prey consumption indicate that ~20-60% of secondary production may be taken by these top consumers. Therefore, marine mammals may exert "top-down" control on food webs, as well as functioning as competitors to fish, seabirds, and humans for mid-trophic level food resources. One of the goals of FUTURE is to forecast potential ecosystem change that may be attributable to climate and anthropogenic forcings. Given this goal, we are proposing this workshop to review and assess rates of marine mammal population and prey consumption changes in the North Pacific. Presentations will be solicited on changes in marine mammal abundance, distribution, diet, and prey consumption. Discussion will focus on how to best integrate this information into models of ecosystem dynamics, with and without climate change and anthropogenic fishing impacts.

Conveners: William Sydeman (U.S.A.), Hidehiro Kato (Japan)

Potential Invited Speakers: Ian Boyd (U.K.), Jeffrey Polovina (U.S.A.), Fei Chai (U.S.A.), Kerim Aydin (U.S.A.), Isaac Kaplan (U.S.A.)