

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

The ninth meeting of the Advisory Panel on *Marine Birds and Mammals* (MBM-AP; under the auspices of BIO Committee) was held from 18:00–20:15 hours on October 27, 2009 in Jeju, Korea. The business meeting focused on current activities of the Panel 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. Panel members and observers discussed the general need for MBM-AP within the PICES community, concluding that it has served PICES well and has been active in coordinating and facilitating multi-disciplinary investigations, symposia, and workshops for PICES.

### AGENDA ITEMS 1 AND 2

#### **Welcome and adoption of agenda**

Drs. William Sydeman and Hidehiro Kato, the Co-Chairmen of MBM-AP, called the meeting to order and welcomed the members and observers (*MBM- AP Endnote 1*). The revised Terms of Reference were reviewed (*MBM- AP Endnote 2*). The agenda was reviewed and approved by MBM-AP members (*AP-MBM Endnote 3*).

### AGENDA ITEM 3

#### **Review of workshop at PICES-2009**

Under the leadership of Dr. Sydeman and Dr. Kato, MBM-AP convened a workshop (W3) entitled “*Integrating marine mammal populations and rates of prey consumption in models and forecasts of climate change-ecosystem change in the North Pacific and North Atlantic Oceans*”. This was a collaboration between ICES and PICES, with Co-Convenor, Dr. Begoña Santos, representing ICES. A report of this workshop can be found in the Session Summaries section of the Annual Report.

### AGENDA ITEM 4

#### **Reports on sessional and inter-sessional activities**

Dr. Sydeman reported that a special volume based on Topic Session S11, convened by MBM-AP at PICES XVI in Victoria, Canada, on marine ecosystems, climate change, and phenology: impacts on top predators is slated to appear online in *Marine Ecology Progress Series* (MEPS) near the end of October. A total of 10 papers will be published. The Panel thanked Dr. Sydeman for taking this project to completion.

Dr. Kato reported on his activities as the PICES liaison to the International Whaling Commission (IWC) (*See MBM-AP Endnote 4*). Dr. Kato attends IWC meetings as a representative of PICES. This meeting in 2009 was held in Italy. Dr. Kato provided a written and verbal report to the group, and presented an overview of a new 10-year program to survey cetaceans of the central North Pacific. The Panel thanked Dr. Kato for his continuing efforts to integrate PICES science in the IWC science-policy arena. MBM-AP supports Dr. Kato’s continued involvement in the IWC on behalf of PICES and asks BIO to endorse his participation.

Dr. Choi (Korea) reported on surveys for marine mammals in Korean waters of the Yellow Sea, and population studies of endangered spotted seal. Numbers of seals have declined substantially, from about 1000 to 500 animals. Marine mammal populations in Korean waters are of concern. MBM-AP supports continued efforts by Dr. Choi and his colleagues to work towards the conservation of marine mammals and seabirds in Korea.

AGENDA ITEMS 5 AND 6

**Discussions**

*Workshop and topic session ideas*

MBM-AP members and observers discussed what topics to put forth as proposals for workshops or topic sessions at future PICES Annual Meetings, including PICES-2010 in Portland, U.S.A. Some ideas for workshops and/or topic sessions included:

1. marine birds and mammals as indicators of ecosystem change,
2. an update on the importance of spatial variability in ecosystem productivity to marine bird and mammal foraging ecology and consequences to demography,
3. models of marine bird and mammal prey consumption and “top-down” food web controls.

A consensus developed that, despite the late date, a request would be made to BIO to hold a workshop on the topic of variability and importance of certain locations and regions, *i.e.*, spatial variability in the ecology of ecosystems, and its importance to top predators, seabirds and marine mammals, and predatory fishes. Dr. Sydeman was tasked with preparing a blurb for consideration by BIO (*AP-MBM-AP Endnote 5*). Co-Conveners will be Drs. Sydeman, Yutaka Watanuki, and Rolf Ream, and a physical oceanographer from the West.

*Role of MBM-AP in PICES/FUTURE*

As was done last year, MBM-AP reviewed aspects of the new PICES Science Program, FUTURE. 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. The panel reiterated its primary mission to provide advice to the PICES community about the role of marine birds and mammals in marine ecosystems, and secondly to ensure that seabirds and marine mammals are included in PICES-related ecosystem research and communications, including FUTURE.

The Panel discussed how many long-term datasets on marine birds and mammals could and should be used in the analysis and models of marine ecosystem change. Marine birds and mammals are excellent indicators of marine ecosystem structure and functions and could be used in this capacity. Multi-decadal information on abundance, population variability, diet, prey consumption, and demographic attributes are available from numerous sites in the North Pacific for analysis. Changes in bird and mammal populations will also have an impact on the ocean as these predators consume large quantities of prey and may exert “top-down” control of food webs. The Advisory Panel and observers agreed that models of hypothetical or measured changes 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.

The focal points for MBM-AP were thus defined as follows:

- Spatial ecology of predators in marine ecosystems,
- Models of prey consumption of top predators,
- Marine birds and mammals as indicators of ecosystem change,
- Marine mammals as autonomous oceanographic sampling devices,
- Providing advice to the PICES community.

*Participation in MBM-AP*

There has been good participation over the years from Canada, Japan, Korea, and Russia, and the USA. in MBM-AP. Korea provided one scientist (Dr. Choi) on behalf of its member, Dr. Zang-Geun Kim, while no Russian delegates were in attendance. The Advisory Panel members were satisfied with participation at this meeting.

*Participation in CPR survey*

MBM-AP confirmed a desire to continue to integrate observations of marine birds and mammals with the North Pacific Continuous Plankton Recorder program. Dr. Sydeman will continue to investigate new funding opportunities for this activity. A 6-year dataset (June 2002–March 2007) could be augmented, and would be valuable to understanding ecosystem dynamics in the North Pacific on the macro-(basin) scale.

**MBM-AP Endnote 1****MBM-AP participation list**Members

Hidehiro Kato (Japan, Co-Chairman)  
William Sydeman (U.S.A., Co-Chairman)  
Rolf Ream (U.S.A.)  
Andrew Trites (Canada)  
Yutaka Watanuki (Japan)

Observers

Seok-Gwan Choi (Korea)  
George Hunt (U.S.A.)  
Hiroto Murase (Japan)  
Hiroshi Okamura (Japan)  
Jarrod Santora (U.S.A.)

**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. Review of workshop (W3) at PICES-2009 – plan for special volume and/or review paper?
4. Report from participants
  - a. PICES XVI/S11 publication on marine ecosystems, climate change and phenology – impacts on top predators in *Marine Ecology Progress Series* (Sydeman); to be released the week of October 26.
  - b. liaison with International Whaling Commission (Kato)
  - c. new IWC/Japan/U.S. central Pacific (10y project) (Kato)
  - d. others (group)?
5. Discussions
  - a. MBM-AP and FUTURE (new PICES Science Program) – how can/should MBMAP contribute?  
Goals of FUTURE:
    - i. Understanding climate change, anthropogenic effects and ecosystem dynamics
    - ii. Forecasting and forecasting tool development
    - iii. Communicating

6. MBM-AP and PICES-2010 (Portland), PICES-2011 (Russia)
  - a. Workshop suggestions?
  - b. Ecosystem indicators?
  - c. Theme session suggestions?
  - d. Others ideas?
7. Wrap-up

**MBM-AP Endnote 4**

**PICES Observer Report on the 61<sup>st</sup> IWC Scientific Committee Meeting**

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The 61<sup>st</sup> Scientific Committee (SC) meeting of the International Whaling Commission (IWC) was held at Madeira, Portugal from May 31 to June 12, 2009. A total 199 participants, including 134 national delegates from 29 countries, 50 invited experts, 1 local scientist, 9 observers from international organizations (CCAMLR, ACCOBAMS, IUCN, NAMMCO and PICES) and 5 from the IWC Secretariat, participated the annual meeting. PICES was especially welcomed by the IWC/SC.

Under the SC, 6 sub-committees (revised management procedure; bowhead, right and gray whales; in-depth assessment; Southern Hemisphere whales; small cetaceans; whale watching) and 7 working groups (Aboriginal whaling management procedure; stock definition; by-catch 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 level 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 at their 1993 meeting, subsequently endorsed by the Commission at the 1994 meeting.

The SC 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 and abundance trends of Antarctic minke whales, North Pacific common minke whales, and Southern blue and humpback whales under the CA. In addition, current population status of North Atlantic right whales and Western North Pacific gray whales were reviewed and their endangered statuses were of special concern. Regarding Japanese scientific permit programs, the SC received a report from the dedicated specialists' review meeting on the western North Pacific program (JARPN II) which was held January 2009.

For environmental issues, the SC discussed a number of matters related to environmental factors that affect cetaceans, such as the POLLUTION 2000+ programme, SOCER (State of the Cetacean Environment Report), CERD (Cetacean Emerging and Resurging Disease) workshop, and ecosystem modeling including a CCAMLR-IWC workshop. In addition, the SC received a report from the Climate Change Workshop which was held at Italy in February 2009 and identified the following items: (1) identifying existing long-term cetacean environmental datasets that can be analyzed and included in models in relation to climate change variables; (2) determining patterns that may be attributable to climate change via analyses of these datasets; (3) modeling mechanisms to consider cause and effect relationships, provide predictions and identify data gaps that, if filled, would improve our understanding of the effects of climate change on cetaceans; and (4) providing timely advice related to cetacean research, conservation and management via peer reviewed publications. Furthermore, the SC recommended that IWC member countries and relevant organizations:

1. Take the potential effects of climate change on cetaceans seriously and include these considerations in relevant climate-related and conservation management initiatives, including implementation of emission controls;
2. Support the research recommendations given in SC/61/Rep4.

For next year's meeting, the following items will be prioritized in regard to environmental issues:

1. Review progress on work from the three sub-groups of the 2<sup>nd</sup> Climate Change Workshop;
2. Review the results of the inter-sessional workshop and complete POLLUTION 2000+ phase II planning (carried over from last year);
3. Anthropogenic sound (focus on shipping noise);
4. Review progress of the cetacean emerging and resurging disease (CERD);
5. Ecosystem modeling;

It was also noted that a (large scale) North Pacific Cetacean Sighting Survey was proposed under the IWC international research project, and it is expected that the first cruise will take place in midsummer 2010 under the joint venture of Japan and IWC. The overall research area will cover a latitudinal zone between 30°N and 50°N, which almost agrees with the PICES region. The project has the potential to provide an opportunity to collect a wide range of data sets of marine mammals and birds.

The next year's annual meeting of IWC/SC will be held in Agadir, Morocco, from May 30 to June 11, 2010.

#### **MBM-AP Endnote 5**

##### **Proposal for a 1-day BIO/FUTURE Workshop at PICES-2010 on**

***“Location matters: Importance of spatial variability in physical–biological interactions to understanding, forecasting, and managing marine ecosystems”***

Integrated multi-disciplinary science on the large marine ecosystems (LME) scale of organization is required to build novel insights into ecosystem structure and functions and the services (fisheries) provided to humanity due this period of rapid climate change. However, within large marine ecosystems, physical and biological properties vary spatially. Spatial variability, from localized ‘hotspots’ to regional centers of biological productivity (or hypoxic ‘dead’ zones), coupled with within-system transport mechanisms, can play a substantial role in determining overall ecological productivity and interactions with humans. Understanding and forecasting change in marine ecosystems as well as implementing ecosystem-based approaches to management, such as protected area design, is dependent on developing a better understanding of the spatial organization of marine ecosystems and how physical–biological interactions integrate across vast spatial scales. Building on a previous PICES topic session on ecological ‘hotspots’, this BIO/FUTURE workshop will focus on the spatial ecology of marine ecosystems across multiple spatio-temporal scales. Papers are sought describing local to regional spatial ecology, the importance of spatial variability to ecosystem productivity, and the implications of spatial variability to societal interactions with the marine environment. In particular, papers dealing with the spatial distribution fisheries relative to the distribution of target species, and papers presenting models of spatially-explicit ecosystem interactions are desired. The session will be organized as a workshop with 2–3 presentations, followed by discussion. The workshop products may be a special volume of contributed papers in a peer-reviewed journal, or a group-authored review paper on spatial ecology as a key topic for understanding marine ecosystems.

Convenors: William Sydeman (U.S.A.), Yutaka Watanuki (Japan), Rolf Ream (U.S.A.), physical oceanographer (west), Ian Perry (Canada)?

Potential Invited Speakers:

Ben Halpern (U.S.A.) – spatial ecology and ecosystem services

David Schneider (Canada) – integrating spatial scales and scale-dependent relationships

Shoshiro Minobe (Japan) – climate and spatial ecology of marine ecosystems

Muyin Wang (U.S.A.) – regionalizing climate models for North Pacific marine ecosystems

Fei Chai (U.S.A.) – spatially explicit ecosystem models