

REPORT OF SECTION ON ECOLOGY OF HARMFUL ALGAL BLOOMS IN THE NORTH PACIFIC



The Section on *Ecology of harmful algal blooms in the North Pacific* (HAB-S) met from 8:30 to 17:30 hours on October 1, 2005, under the chairmanship of Drs. Hak-Gyoon Kim and Vera Trainer. The meeting was attended by 20 scientists representing all PICES member countries (*HAB-S Endnote 1*). The agenda for the meeting was approved as presented (*HAB-S Endnote 2*).

HAE-DAT presentation and discussions (Agenda Items 3-5)

Dr. Henrik Enevoldsen reviewed the progress made with the development of the HAE-DAT (Harmful Algal Event Database) partnership. He informed that IOC and PICES agreed (a formal agreement was signed in June 2005) to establish a partnership in systematically compiling, storing and presenting on-line records on harmful algal events. Event records will be compiled and stored annually in the format specified in the HAE-DAT database. A similar agreement was also signed between IOC and ICES.

Presentations were made by representatives of all PICES member countries (Dr. Charles Trick for Canada, Dr. Jinhui Wang for China, Dr. Yasunori Watanabe for Japan, Dr. Hak-Gyoon Kim for Korea, Dr. Tatiana Orlova for Russia, and Dr. Vera Trainer for the United States) on the first year of their involvement in the IOC/ICES/PICES HAE-DAT. Discussion focused on HAE-DAT effectiveness, possible modifications and future data efforts. This followed by a practical exercise on entering national HAB data for the year 2001 in the database. The exercise was organized in the morning of October 2, and led by Dr. Monica Lion (IOC-IEO Science and Communication Centre on Harmful Algae). HAB-S members agreed on the following guidelines for HAE-DAT submissions:

- At a minimum, ASP, PSP, and DSP data will be entered in area codes where they have occurred;
- Entry of red tide (high biomass) data is optional, and only entered if phytoplankton species are known;
- Entry of data corresponding to high toxigenic cell numbers, without any information regarding toxicity, is also optional (for example, offshore cruise data where there is no known impact on coastal shellfish);
- At least one harmful algal event should be reported in each area code when such an event has occurred, but multiple events in a given area code can be listed in the comments section of a single report;
- If an event has spread from one area code to another, this can be described in a single report, but should list both area codes.

Planning for PICES XV (Agenda Item 6)

The Section recommends a 1-day MEQ Workshop on “*Review of selected harmful algae in the PICES region: II. Dinophysis and Cochlodinium spp.*”, co-chaired by Drs. Charles Trick and Yasunori Watanabe. A product from the workshop will be a list of recommendations to help guide collaborative HAB research priorities in PICES countries over the next five years. The workshop will be preceded by a ½-day laboratory demonstration on Diarrhetic Shellfish Poisoning (DSP) detection (*HAB-S Endnote 3*). Drs. Ichiro Imai and Yasunori Watanabe have agreed to co-lead the demonstration. Travel funds are requested for 1 invited speaker to attend the workshop.

The Section also proposes a 1-day MEQ Topic Session on “*Harmful algal blooms in the PICES region: New trends and potential links with anthropogenic influences*”, co-convened by Drs. William Cochlan and Ichiro Imai (*HAB-S*

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Endnote 4). Travel funds are requested for 1 invited speaker to attend the session.

A 1½-day HAB-S meeting is recommended which includes discussion of HAE-DAT use by

each country led by Drs. Henrik Enevoldsen and Monica Lion of IOC. To strengthen and ensure the success of HAE-DAT, the Section requests participation by a delegate from China and funding for this delegate, if needed.

HAB-S Endnote 1

Participation list

Members

William Cochlan (U.S.A.)
Ichiro Imai (Japan)
Shigeru Itakura (Japan)
Hak-Gyoon Kim (Korea, Co-Chairman)
Changku Lee (Korea)
Olga Lukyanova (Russia)
Tatiana Yu. Orlova (Russia)
Mikhail Simonon (Russia)
Vera L. Trainer (U.S.A., Co-Chairman)
Charles Trick (Canada)
Yasunori Watanabe (Japan)
Mark L. Wells (U.S.A.)

Observers

Stephen Bates (Canada)
Robin Brown (Canada)
Henrik Enevoldsen (Denmark/IOC)
Sam Geon Lee (Korea)
Monica Lion (Spain/IOC)
John E. Stein (U.S.A.)
Jinhui Wang (China)
Satoshi Nagai (Japan)

HAB Section members not in attendance:
Jennifer Martin (Canada), Gennady Kantakov and Nina Klochkova (Russia), Qiu-Fen Li and Mingyuan Zhu (China)

HAB-S Endnote 2

HAB-S meeting agenda

1. Welcome, introductions, goals of HAB-S meeting, and review of HAB-S terms of reference
2. Scientific presentations:
 - “*Domoic acid: The synergy of iron, copper, and the toxicity of diatoms*” by M.L. Wells, C.G. Trick, W.P. Cochlan, M.P. Hughes, and V.L. Trainer;
 - “*Oceanological conditions and HAB monitoring in Aniva Bay, Sea of Okhotsk during 2003*” by G.A. Kantakov, M.S. Selina, I.V. Stonik, and T.Y. Orlova;
 - “*Why the timing of a large-scale HAB of *Prorocentrum* in the area south of the Yangtze River Estuary was delayed in the spring of 2005*” by M.Y. Zhu and R. Li (presented by Jinhui Wang).
3. HAE-DAT presentation:
 - “*Progress in the development of an international collaborative harmful algal event database: The joint IOC-ICES-PICES HAE-DAT*” by H.O. Enevoldsen, M. Lion and B. Sims
4. Participation in the IOC/ICES/PICES Harmful Algae Event Database (HAE-DAT): The first year of PICES involvement
5. Discussion of HAE-DAT effectiveness including possible modifications and future data efforts
6. Planning for PICES XV
7. HAE-DAT entry of HAB data for the year 2001 (practical exercise)

HAB-S Endnote 3**Proposal for a 1-day MEQ Workshop and ½ day laboratory demonstration at PICES XV on “Review of selected harmful algae in the PICES region: II. *Dinophysis* and *Cochlodinium* spp.”**

This workshop is the second of an annual series in which Harmful Algal Bloom (HAB) species that impact all or most countries in the North Pacific are discussed in detail. In 2006, we will focus on two genera, *Dinophysis* and *Cochlodinium*. *Dinophysis*, including DSP (Diarrhetic Shellfish Poisoning) producing species such as *D. acuminata*, *D. acuta*, *D. caudata* and *D. fortii*, is distributed in the PICES region. The integration of the information from each country will advance our understanding of this genus. *Cochlodinium polykrikoides* causes serious damage to finfish aquaculture in Korea and Japan. It also has potential to spread to other countries. Topics will include detection methods, ecosystem comparisons, and new

advancements in physiology and ecology from each of the member countries. In particular, we would like to stress those factors which need additional study in order to develop a predictive capacity for these HABs. This workshop will be preceded by a half-day DSP (Diarrhetic Shellfish Poisoning) detection demonstration led by Dr. Toshiyuki Suzuki (Tohoku National Fisheries Research Institute, Japan).

Recommended convenors: Charles Trick (Canada) and Yasunori Watanabe (Japan).

Recommended invited speakers: Patrick Gentien (IFREMER, France) and Kazumi Matsuoka (Nagasaki University, Japan).

HAB-S Endnote 4**Proposal for a 1-day MEQ Topic Session at PICES XV on “Harmful algal blooms in the PICES region: New trends and potential links with anthropogenic influences”**

This session will highlight recent advances in the understanding of the ecology and physiology of harmful algal bloom (HAB) species in the coastal waters of the PICES region. Of particular interest will be laboratory and field research where anthropogenic factors have been studied in order to elucidate if links exist between the apparent increase in the duration, distribution and impact of HABs, and environmental factors associated with human activities, including urban and agricultural

runoff, climatic change and mariculture. This session will complement the continuing series of annual MEQ workshops where two new HAB genera found in the PICES region are examined in detail, but encourages studies of other HAB genera of interest in the coastal waters of the North Pacific Ocean.

Recommended convenors: William Cochlan (U.S.A.) and Ichiro Imai (Japan).

