

W4 MEQ Workshop and laboratory demonstration **Review of selected harmful algae in the PICES region: III. *Heterosigma akashiwo* and other harmful raphidophytes**

Co-Convenors: Charles G. Trick (Canada) and Ichiro Imai (Japan)

This workshop is the third 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 2007, we will focus on one species of raphidophytes, in particular, *Heterosigma akashiwo*. This species is distributed throughout the PICES region and has caused serious damage to finfish aquaculture, resulting in severe economic losses in PICES member countries. The integration of information from each country will advance our understanding of this organism. Topics will include modes of toxicity, distribution, impact (differences between toxic and nontoxic strains), as well as physiology and ecology in each of the member countries. In particular, we would like to identify additional studies needed specifically to define *H. akashiwo*'s mode of toxicity. Comparison with similar raphidophytes, namely *Chattonella* and *Fibrocapsa*, will also be included. The workshop will be preceded by a half-day laboratory demonstration on *Heterosigma* cell and toxin detection.

Friday, October 26, 2007 13:00 – 18:00

Laboratory demonstrations on detection techniques for algal toxins

- 13:00 **Carmelo R. Tomas**
Microscopic observations and detailed analysis of raphidophyte taxonomy (W4-4506)
- 13:30 **Roman Marin III, Nilo Alvarado and Christopher A. Scholin**
Rapid detection of *Heterosigma akashiwo* in natural samples using DNA probe based assay (W4-4505)

Saturday, October 27, 2007 09:00 – 18:00

MEQ workshop

- 09:00 **Introduction by convenors**
- 09:10 **Carmelo R. Tomas (Invited)**
The Raphidophyceae: Enigmas in taxonomy, identification and morphology (W4-4288)
- 09:50 **Hakgyoon Kim, Samgeun Lee, Changkyu Lee, Kyongho An, Wolae Lim, Sookyang Kim, Youngtae Park and Yoon Lee**
Two decadal changes of *Heterosigma akashiwo* blooms in Korean coastal waters (W4-4080)
- 10:10 **Jack E. Rensel and K. Bright**
Bloom dynamics of *Heterosigma akashiwo* in Puget Sound and the Strait of Juan de Fuca (W4-4471)
- 10:30 **Coffee / tea break**
- 10:50 **Ichiro Imai, Shigeru Itakura and Mineo Yamaguchi (Invited)**
Life cycle strategies and occurrences of red tides of *Heterosigma akashiwo* and *Chattonella* spp. in

- temperate coastal sea (W4-4336)
- 11:30 **Jinhui Wang and Yutao Qin**
Blooms of *Heterosigma akashiwo* and *Chattonella marina* in Chinese coastal waters (W4-4175)
- 11:50 **Takashi Kamiyama**
Effects of *Heterosigma akashiwo* blooms on planktonic food webs: Responses of microbial loop components (W4-4162)
- 12:20 **Lunch**
- 14:00 **Tatsuya Oda (Invited)**
Generation of ROS (reactive oxygen species) by *Chattonella marina* as a possible factor responsible for the fish-killing mechanism (W4-4038)
- 14:40 **Roman Marin III, Scott Jensen, Brent Roman, Eugene Massion, Christina Preston, Dianne Greenfield, William Jones, Gregory Doucette, Tina Mikulski, Kristen King, Mike Parker, Mark Brown and Chris Scholin**
Routine rapid detection of *Heterosigma* in natural samples using DNA probes (W4-4357)
- 15:00 **Charles G. Trick, M. Klein and C. Ling**
Environmental parameters regulate exoenzyme and haemolysin production in *Heterosigma akashiwo* (W4-4290)
- 15:20 **Desmond J. Johns and Patricia Glibert**
Characterization of nitrogen uptake by *Heterosigma akashiwo* grown in turbidostat culture under two light intensities (W4-4161)
- 15:40 **Coffee / tea break**
- 16:00 **Julian Herndon and William P. Cochlan**
Nitrogen utilization by the raphidophyte *Heterosigma akashiwo*: Growth and uptake kinetics in unialgal cultures and natural assemblages of San Francisco Bay (W4-4415)
- 16:20 **William Bjornsson and Charles G. Trick**
Regulation of environmental metabolites in *Heterosigma akashiwo*: Nutrient-limited chemostat studies (W4-4373)
- 16:40 **Summary and wrap up**

W4 Poster

- W4-4484 **Li Zheng, Xiaotian Han, Xiuchun Guo, Ping Han, Zhiming Yu and Xiaoru Wang**
Study on algicidal activity of marine bacteria to two HAB species *Heterosigma akashiwo* and *Prorocentrum micans*