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Scientific fields: Marine phytoplankton (morphology, ultrastructure, ecology and distribution), bloom-forming and harmful algae.

Phytoplankton practical training

## **IDENTIFICATION OF HARMFUL AND BLOOM FORMING**

### **PHYTOPLANKTON SPECIES**

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The Phytoplankton practical training “Identification of Harmful and Bloom Forming Phytoplankton Species” was held at Portovik recreation department (Vladivostok, Russia) 26 October, 2005. The main goal of these course was to train and upgrade the qualified young scientists to identify the phytoplankton species under the light microscope (LM).

The Course included the studies of the general morphology and taxonomy of the marine phytoplankton harmful and bloom forming species; the practical training including the examination of fixed and live specimens. Samples were shown by light microscope for each young scientist. Relevant techniques were presented aimed at collecting phytoplankton specimens and displaying taxonomic characters essential for identification. Training included a field trip to collect samples from the coastal waters of Amursky Bay.

Marine phytoplankton include about 300 can at times occur in such high numbers that they obviously discolour the surface of the sea (so-called “red tides”), while only 40 species have the capacity to produce potent toxins that can find their way through fish and shellfish to humans. Species of *Alexandrium* and *Pseudo-nitzschia* can produce neurotoxins dangerous for marine vertebrates and human health. Their classification and correct identification are the aim of an open and actively developing field of research.

The knowledge of phytoplankton species from the taxonomic point of view is a tool that cannot be renounced for any ecological or ecophysiological work on marine phytoplankton. Due to its small scale response to environmental changes, phytoplankton community composition and its shifts represent an excellent tool to interpret the dynamics of the pelagic ecosystem and detect variations induced by river discharges, eutrophication and unusual climatic phenomena.

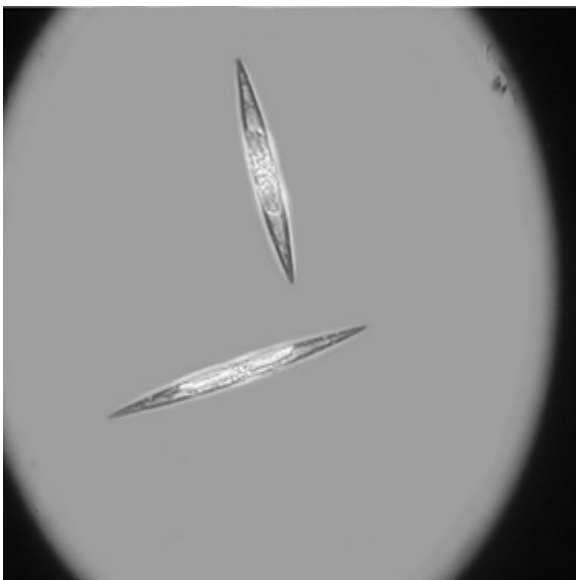
The practical training included the following activities:

- Practical classrooms on the identification of selected HAB species under the light microscope.

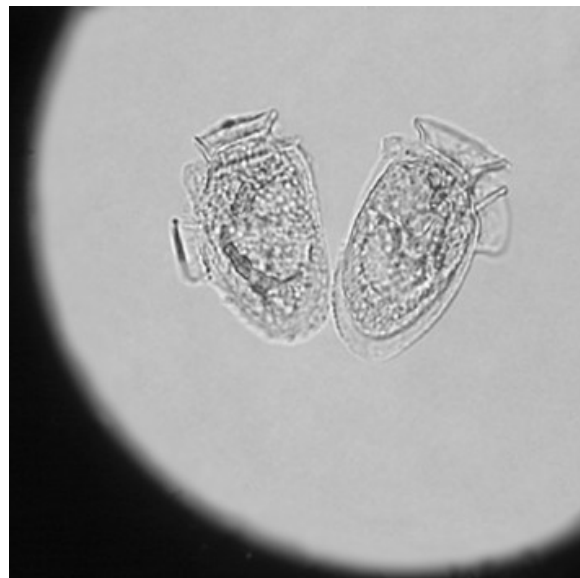
A wide selection of fixed or living samples were available to each participant to be observed and identified under the light microscope. Bloom species and harmful species belonging to the different groups were given special attention and shown in comparison to related non-harmful species. Ultrastructural features of cells not visible under the light microscopy were illustrated by electronmicroscopical pictures.

- Field trips with demonstration of sampling techniques. Collection of phytoplankton samples was conducted with plankton nets.

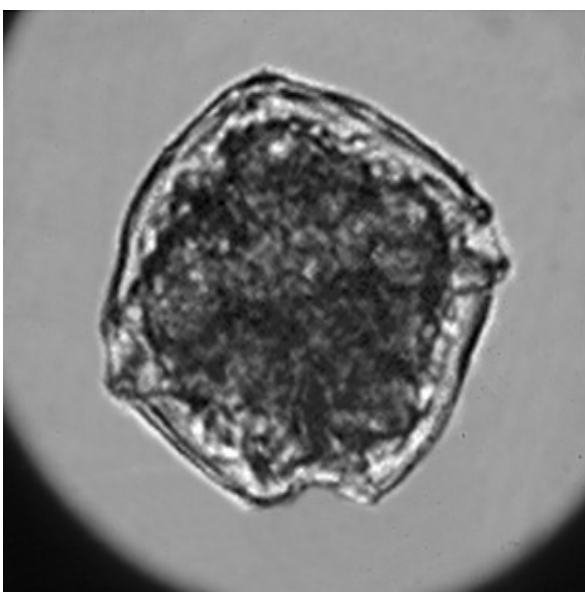
### Species identifying during practical training



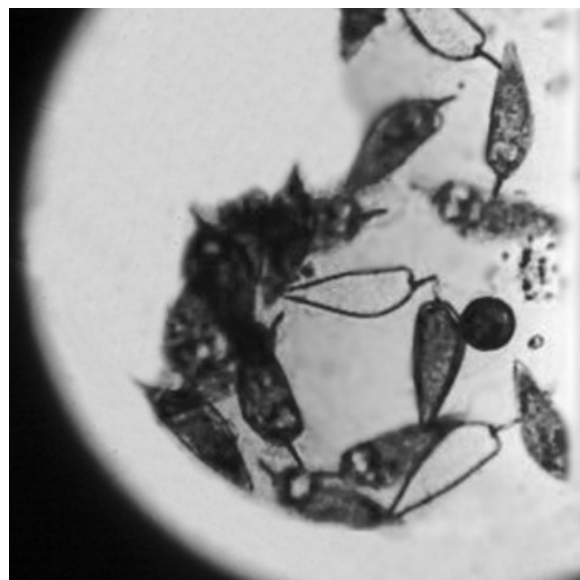
*Pseudo-nitzschia pungens*, LM



*Dinophysis acuminata*, LM



*Alexandrium tamarense*, LM



*Prorocentrum triestinum*, LM