SEASONAL DYNAMICS OF PHYTOPLANKTON IN CHERNYSHEV COVE (PETER THE GREAT BAY, THE SEA OF JAPAN)

Kirill O. Tevs[1], Olga G. Shevchenko[2, 3]

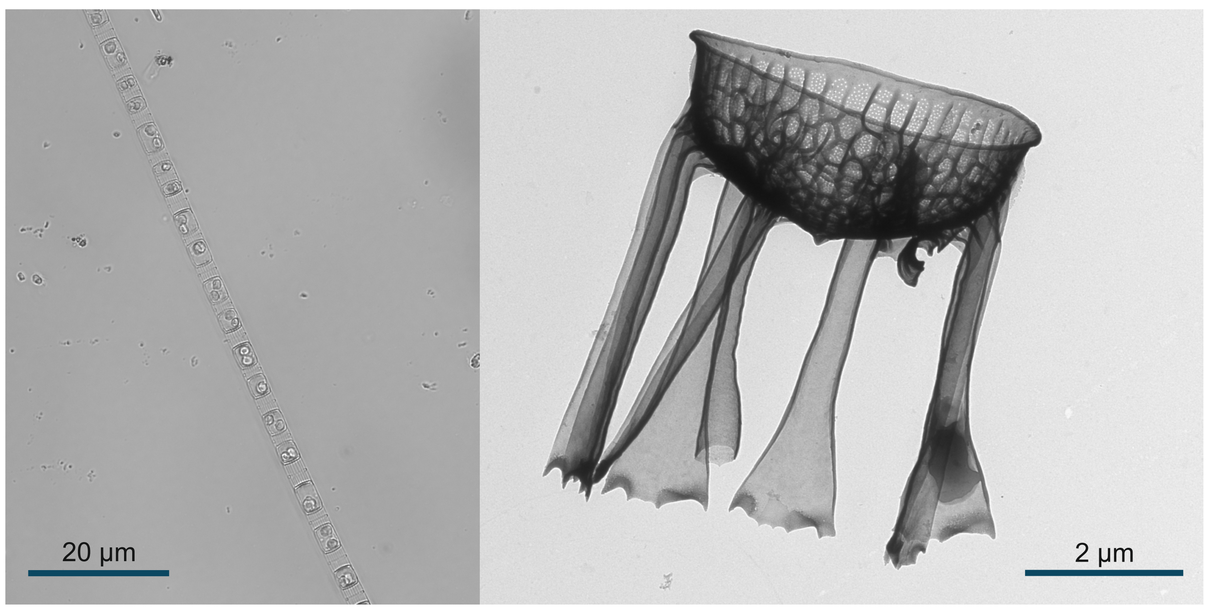
[1]"Primorsky Aquarium", "National Scientific Center of Marine Biology", FEB RAS, Vladivostok, Russia.
[2]A.V. Zhirmunsky National Scientific Center of Marine Biology, Far Eastern Branch, Russian Academy of Sciences, Vladivostok, Russia.
[3]Far Eastern State Technical Fisheries University, Vladivostok, Russia.

INTRODUCTION

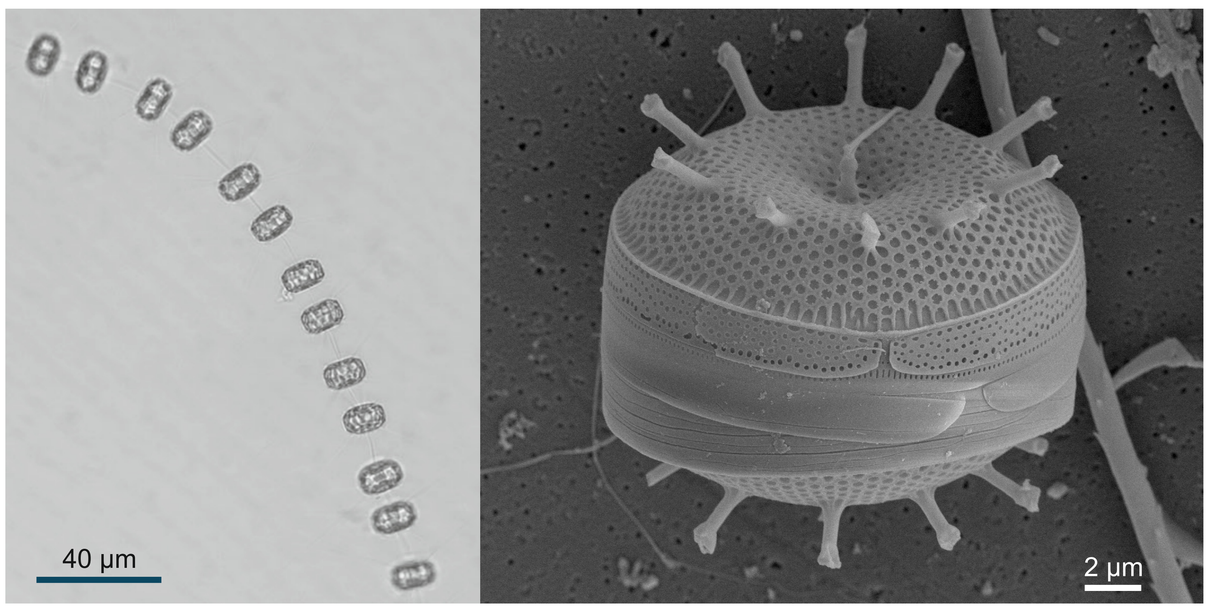
Characterization of a phytoplankton community is a necessary basis for assessing the state of the environment of coastal waters, which occupy a special place among marine ecosystems due to their intensive economic use. Long-term studies on phytoplankton in the coastal waters off Vladivostok have been conducted mainly in Amur Bay, with little attention being paid to algal communities in Ussuri Bay. The data provided in this paper shed light on phytoplankton community structure and abundance in Chernyshev Cove, a small bay within Ussuri Bay, and will be used as a basis for prediction of water quality changes in the study area.

MATERIAL AND METHODS

In this work, we studied bottle plankton samples that were collected during the period from January to December 2020 at station of Chernyshev Cove (42°57′35.6″ N, 131°53′59.6″ E) in the waters of the Ussuri Bay. Phytoplankton samples were collected twice a month from near the surface water level with a 5-liter Niskin bottle. The temperature and salinity of the surface water layer were measured using a HORIBA U-52G multiparameter meter. Microalgae cell density was calculated in a 0.05 mL. Taking into account the minimum representative sample, at least 3 thousand specimens were counted for all of the phytoplankton, regardless of the initial number of cells in each sample. Nageotte counting chamber. A “bloom” was considered to be a massive development of microalgae with cell densities exceeding 10^6 cells/L. The species composition of microalgae was determined using a Carl Zeiss Scope A1 light microscope (LM). A detailed study of dominant species was performed using a Carl Zeiss Sigma 300 scanning electron microscope (SEM) and a Carl Zeiss Libra 120 transmission electron microscope (TEM).



Skeletonema dohrnii



Thalassiosira nordenskioeldii

RESULTS AND DISCUSSION

During the summer, one peak was observed in June (t_{water}=15.0°C; S=33.0‰), and the other occurred in August (t_{water}=19.5°C; S=31.0‰), with *Skeletonema dohrnii* dominating the community in both months ($4.2x10^5$ cells/L and $1.5x10^6$ cells/L, respectively). The winter peak of phytoplankton abundance ($1.0x10^6$ cells/L) was dominated by *Thalassiosira nordenskioeldii* (t_{water}=-1.8°C; S=31.8‰). The absence of an autumn peak can probably be ascribed to the impact from typhoons Maysak and Haishen, which occurred in autumn 2020.They caused a significant storm surge in the study area, resulting in a large amount of debris being washed into the coastal waters and the stirring up of the bottom sediments, accompanied by an increase in the turbidity and a decrease in the photosynthetic capacity of the algal cells.

The dynamics of the cell density of phytoplankton (A); temperature and salinity (B) of the surface water layer in the study area

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