Potentially toxic phytoplankton species in the coastal waters off the eastern part of Russkiy Island (Peter the Great Bay, the Sea of Japan)

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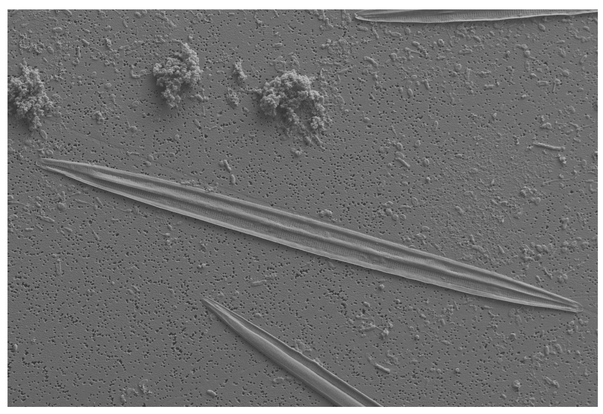
Metods

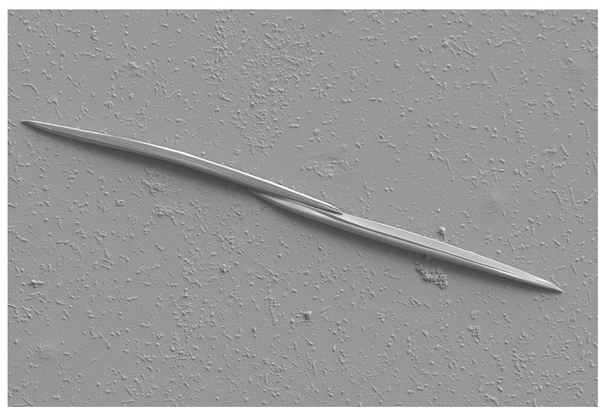
The temperature and salinity of the surface water layer were measured using a HORIBA U-52G multiparameter meter. Microalgae cell density was calculated in a 0.05 mL. Taking into account the minimum representative sample, at least 3 thousand specimens were counted for all of the phytoplankton, regardless of the initial number of cells in each sample. Nageotte counting chamber. The species composition of microalgae was determined using a Carl Zeiss Scope A1. (Carl Zeiss Microscopy GmbH, Jena, Germany) light microscope (LM). A detailed study of dominant species was performed using a Carl Zeiss Sigma 300 (Carl Zeiss Microscopy GmbH, Jena, Germany) scanning electron microscope (SEM) and a Carl Zeiss Libra 120 (Carl Zeiss Microscopy GmbH, Jena, Germany) transmission electron microscope (TEM).

Results

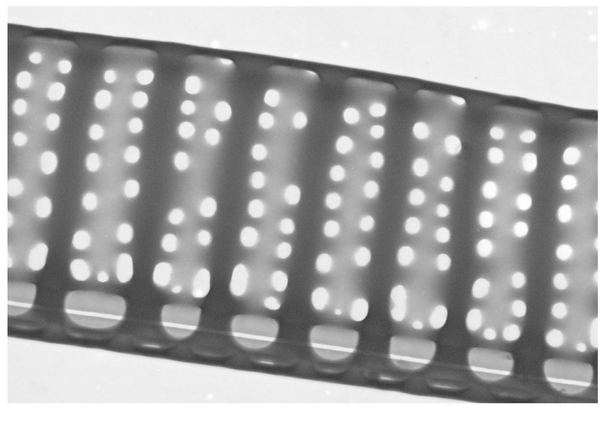
From January to December 2019, nine species of potentially toxic algae, namely *Pseudo-nitzschia delicatissima* (at cell concentrations up to $1.7x10^5$ cells/L), *P. pungens* ($12.0x10^4$ cells/L), *P. caliantha* ($14.0x10^4$ cells/L), *P. seriata* ($14.0x10^4$ cells/L), *Dinophysis acuta* ($2.5x10^4$ cells/L), *D. norvegica* ($3.5x10^2$ cells/L), *Prorocentrum micans* ($4.6x10^3$ cells/L), *P. cordatum* (=*P. minimum*) ($8.6x10^4$ cells/L) and *Fibrocapsa japonica* ($1.2x10^3$ cells/L), were found in Paris Bay, a small bay within Peter the Great Bay. Though a warm-water species, *F. japonica* was recorded at a water temperature of 1°C and salinity of 34.1‰. The absence of a distinct seasonality in occurrence may suggest that the species is highly tolerant to different environmental conditions.

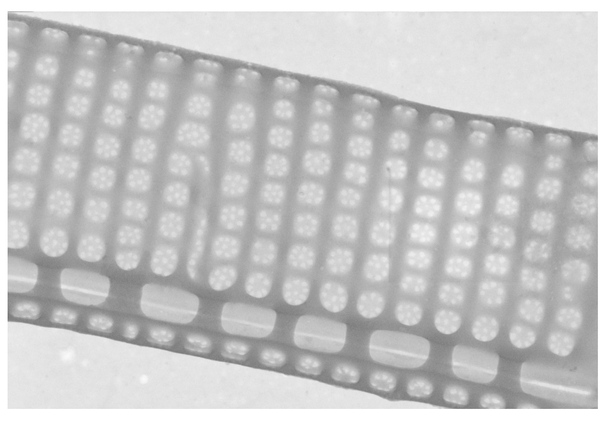


Pseudo-nitzschia pungens



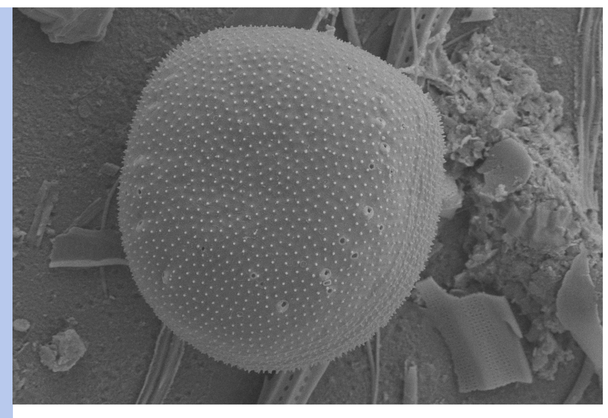
Pseudo-nitzschia caliantha





Conclusion

During the study, the reported species of harmful algae were present in concentrations below maximum levels set by European Regulation for aquatic life. The occurrence of potentially toxic phytoplankton in Paris Bay highlights the importance of year-round monitoring for assessing the health of the marine ecosystem and informing the public about harmful algal blooms and their impacts.



Prorocentrum cordatum

The work was conducted at the Primorsky Aquarium Shared Equipment Facility of the A. V. Zhirmunsky National Scientific Center of Marine Biology, Far Eastern Branch, Russian Academy of Sciences (NSCMB FEB RAS).