

Lomonosov Moscow State University

**MARINE BIOLOGY, GEOLOGY
AND OCEANOGRAPHY —
INTERDISCIPLINARY STUDIES BASED
ON THE MARINE STATIONS AND LABS**

**80th anniversary of the Nikolai Pertsov
White Sea Biological Station**

International conference

Moscow ❖ 2018

УДК [574.5+551.46](063)
ББК 28.082я431+26.22я431
М80

Marine biology, geology and oceanography — interdisciplinary studies based on the marine Stations and Labs. 80th anniversary of the Nikolai Pertsov White Sea Biological Station. International conference. Abstracts. Moscow: KMK Scientific Press. 2018. 70 p.

Морская биология, геология, океанология — междисциплинарные исследования на морских стационарах. К 80-летию Беломорской биостанции им. Н.А. Перцова. Международная конференция. Тезисы докладов. Москва: Товарищество научных изданий КМК. 2018. 70 с.

The conference “Marine biology, geology and oceanography – interdisciplinary studies based on the marine Stations and Labs” (November 19–21, 2018) is dedicated to the 80 anniversary of Nikolai Pertsov White Sea Biological Station. This conference is held in the framework of the scientific-practical conference “Marine Research and Education”. The conference includes following topics: physiology, developmental biology and regeneration, ecology, taxonomy and phylogeny, biology of marine animals, interdisciplinary research, marine mycology, algology and microbiology, functional structure of marine species distribution ranges, and biotopes of marine communities, studies of biota and ecosystems of relict coastal lakes performed at marine Stations and Labs, including WSBS of Lomonosov Moscow State University.

В сборник вошли тезисы докладов, подготовленные участниками международной конференции, посвященной празднованию 80-летия Беломорской биологической станции им. Н.А.Перцова «Морская биология, геология, океанология — междисциплинарные исследования на морских стационарах» (19–21 ноября 2018 г.). Конференция проходит в рамках научно-практической конференции «Морские исследования и образование». Темы конференции затрагивают следующие тематики: физиология, биология развития и регенерация, экология, таксономия и филогения, биология морских животных, междисциплинарные исследования, морская микология, альгология и микробиология, функциональная структура ареалов морских организмов и биотопическая основа сообществ, исследования биоты и экосистем реликтовых прибрежных озер выполненных на морских стационарах, в том числа на ББС МГУ.

Organising committee: Sadovnichiy V.A., Abramochkin A.D., Andrianov A.V., Bubnova E.N., Dobrolyubov S.A., Grum-Grgimaylo O.A., Kirpichnikov M.P., Kosevich I.A., Krasnova E.D., Malakhov V.V., Masey Y.A., Mokievsky V.O., Puscharovskiy D.Y., Rimskaya-Korsakova N.N., Romanenko F.A., Rubtsov A.M., Shabalin N.V., Shoba S.A., Skulachev V.P., Spiridonov V.A., Tokarev M.Yu., Tzetlin A.B., Vortsepneva E.V., Zhadan A.E.

***The conference is supported by the Russian Fond for Basic Research,
grant No. 18-04-20101***

ISBN 978-5-907099-39-5

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Seasonal changes in the spectral and physico-chemical characteristics of water from the separating lakes of the Kandalaksha Bay of the White Sea

Zhiltsova Anna¹, Pavel Emelyantsev¹, Krasnova Elena², Voronov Dmitriy^{3,4}, Kharcheva Anastasia¹, Svetlana Patsaeva¹

¹ *Lomonosov Moscow State University, Faculty of Physics, Moscow, Russia.*

² *Lomonosov Moscow State University, Faculty of Biology, Moscow, Russia.*

³ *Institute for Information Transmission Problems of the Russian Academy of Sciences (Kharkevich Institute), Moscow, Russia.*

⁴ *Lomonosov Moscow State University, A.N. Belozersky Institute of Physico-Chemical Biology, Moscow, Russia.*

The work is devoted to the investigation of seasonal variability of spectral characteristics of water with green sulfur bacteria and its relationship with the distribution of water's hydrological parameters (temperature, salinity, oxidation-reduction potential, hydrogen index). Water with microorganisms for the optical measurements was sampled from different depths in several lakes (the lagoon on cape Zeleny, Bolshie Khruslomeny, N. Ershovskoye and Trekhtzvetnoe lakes) during the expeditions carried out in the spring and winter in 2016-2018 years. In the work the optical density spectra were measured with the Solar PB 2201 spectrophotometer, and the fluorescence emission and excitation spectra were recorded by the Solar CM2203 luminescence spectrometer. The concentration of photosynthetic pigments of GSB, bacteriochlorophylls, was calculated using the Overmann-Tilzer formula for extracts of natural water samples. During the work it was shown that in the autumn-summer period the concentration of oxygen in the surface layers in all lakes was much higher than in winter. Moreover in September the water samples from different depths showed a much sharper decrease in oxygen concentration in contrast to the March samples from the same lakes. The main result of the work was the demonstration of the fluorescence quenching phenomenon in the upper layers of chemocline, which was more pronounced in summer (July) than in autumn (September) or winter (March). This fact can be explained by the high illumination of the upper layers of chemocline in the autumn-summer period and the presence of oxygen in these layers. Based on the obtained results, it can be concluded that the separated reservoirs of the White Sea are self-regulating ecosystems whose microbial community is able to adapt to environmental conditions, including changing its physiological state (its photosynthetic activity) depending on external conditions.