



Pacific Congress
on Marine Science and Technology

Marine Science and Technology for Sustainable Development

**26th International Conference
of Pacific Congress on Marine Science and Technology
(PACON-2019)**

July 16-19, 2019 Vladivostok, Russia

Abstracts

**Vladivostok
2019**

Organizers:



Far Eastern Branch of Russian Academy of Sciences



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North Pacific Marine Science Organization



Office of Naval Research Science and Technology



Федеральное государственное бюджетное учреждение науки
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**МОРСКИЕ НАУКИ И СОВРЕМЕННЫЕ ТЕХНОЛОГИИ
ДЛЯ УСТОЙЧИВОГО РАЗВИТИЯ**

26-я международная конференция
Тихоокеанского конгресса морских наук и технологий
(PACON-2019)

16–19 июля 2019 г., Владивосток, Россия

Тезисы докладов

**MARINE SCIENCE AND TECHNOLOGY
FOR SUSTAINABLE DEVELOPMENT**

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Владивосток
2019

УДК 551.468

Морские науки и современные технологии для устойчивого развития: тезисы докладов 26-й международной конференции Тихоокеанского конгресса морских наук и технологий (PACON-2019), 16–19 июля 2019 г., Владивосток, Россия. – Владивосток : ТОИ ДВО РАН, 2019. – 366 с.
ISBN 978-5-6043211-0-2

Научные конференции некоммерческой научной организации Тихоокеанского конгресса морских наук и технологий (PACON International) в течение 35 лет служат площадками, на которых ученые и инженеры обмениваются результатами исследований, технических и коммерческих разработок в области морских наук и технологий. На 26-й конференции PACON-2019, впервые проводимой во Владивостоке на базе ДВФУ, будут обсуждаться проблемы динамики океана, изменений глобального климата и их проявлений в Азиатско-тихоокеанском регионе и Восточной Арктике, исследования и прогнозирования морских опасных явлений, морской окружающей среды и экосистем, рыболовства и аквакультуры, морской геологии, морского инжиниринга и строительства, возобновляемой энергии, разработки подводных аппаратов и роботизированных устройств, акустики океана, разработки подводных аппаратов и роботизированных устройств, технологии морских измерений, экономические, общественно-политические и юридические аспекты освоения океана и морских побережий.

Проводится при финансовой поддержке Министерства науки и высшего образования РФ, РФФИ (проект № 19-05-20099), Всемирного бюро по военно-морским исследованиям (ONRG) и Северо-тихоокеанской организации по морским наукам (PICES).

Редакторы: к.г.н. В.Б. Лобанов, к.т.н. О.О. Трусенкова

Marine Science and Technology for Sustainable Development: Abstracts of the 26th International Conference of Pacific Congress on Marine Science and Technology (PACON-2019), July 16–19, 2019, Vladivostok, Russia. – Vladivostok : POI FEB RAS, 2019. – 366 p.

Regular conferences of Pacific Congress on Marine Science and Technology (PACON International Inc.) serve as forums for scientists and engineers for sharing state-of-the-art findings of research, engineering, and commercial developments in the field of marine science and technology. The 26th International Conference «Marine Science and Technology for Sustainable Development» to be held on 16-19 July, 2019, in the new campus of the Far Eastern Federal University, Vladivostok, Russia, will cover the themes of ocean dynamics, climate and hazards, marine geology and geological resources in the ocean, ocean environment, ecosystem, fisheries and aquaculture, polar ocean research and explorations, ocean engineering, marine constructions and renewable energy, undersea vehicles, robotics, acoustics, ocean observation technologies, sustainable economy, ocean policy making and education.

With financial support from the Ministry of Science and Higher Education of the Russian Federation, Russian Fund for Basic Research, ONR Global – Office of Naval Research, North Pacific Marine Science Organization (PICES).

Edited by Vyacheslav B. Lobanov, PhD, and Olga O. Trusenkova, PhD

ISBN 978-5-6043211-0-2

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Selenium in the food chain of Peter the Great Bay (Sea of Japan) ecosystems

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Background. The levels of chemical elements in living organisms are determined primarily by the conditions of existence, the trophic status of the species and their physiological need for the elements.

Materials and methods. The paper covers the features of the accumulation of an element by marine organisms of various trophic levels. *Se* content was determined in 21 species of algae and grasses, 27 species of bivalve mollusks, 4 species of echinoderms, 22 species of fish, bottom sediments, also taking into account the background content of *Se* in seawater. As a criterion, the coefficient of *Se* accumulation in separate links of trophic chains was used (the ratio of the absolute *Se* concentration in the subsequent trophic link to its concentration in the previous one). *Se* was found using a flameless atomic absorption method.

Results. For the waters of Primorsky Territory, it has been established that at the first trophic level (water / algae), *Se* accumulation coefficients are high and reach 7,000 [1]. Despite this, the level of *Se* content in algae and sea grasses is low and comparable to *Se* concentrations in algae from open regions of the World Ocean (does not exceed 0.8 µg / g dry weight)[2, 3]. *Se* concentrations in organs of invertebrates are similar to known values in commercial mollusks living in other parts of the World Ocean with moderate and low elemental content in the environment. The maximum values of the accumulation factors at the second level (algae / echinoderma, algae / mollusks) are 11.4. The average *Se* concentration in the soft tissues of mollusks from Peter the Great Bay is 4 µg / g dry weight. The level of *Se* concentrations in fish of the northwestern part of the Sea of Japan (1–6 µg / g dry weight) makes it possible to assign this region to selenium-deficient provinces. At the third trophic level (fish / crustacean, starfish / mollusks), the *Se* accumulation coefficient is about 1.0. In the transformation of *Se* in marine waters, an important role is assigned to biogenic detritus [4]. However, for highly productive ecosystems of the Peter the Great Bay, *Se* remains unexplored in the composition of the detritus formed during the death of marine organisms. In the literature, biogenic detritus is considered as a depot of a number of chemical elements and as a nutrient substrate for the bacterial community.

Conclusions. There are significant differences in the accumulation of *Se* by organisms of different trophic levels. Analysis of selenium migration in marine ecosystems requires an understanding of the role of organic sediments in the transfer of an element along the food chain.

Key words: Selenium, marine ecology, Sea of Japan.

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