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# МОРСКИЕ ПРИБРЕЖНЫЕ ЭКОСИСТЕМЫ. ВОДОРОСЛИ, БЕСПОЗВОНОЧНЫЕ И ПРОДУКТЫ ИХ ПЕРЕРАБОТКИ

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# MARINE COASTAL ECOSYSTEMS. SEAWEEDS, INVERTEBRATES AND PRODUCTS OF THEIR PROCESSING

Abstracts of the Fourth International Scientific and Practical Conference (September 19–22, 2011, Russia, Yuzhno-Sakhalinsk)



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Сборник тезисов докладов Четвертой международной научно-практической конференции содержит материалы пяти секций: «Прибрежные и эстуарные экосистемы: методы и результаты комплексных исследований», «Методический и экологический подход к оценке запасов рыб, беспозвоночных и водорослей морских прибрежных экосистем», «Марикультура водорослей и беспозвоночных», «Переработка прибрежных гидробионтов (характеристика сырья; технологии, биотехнологии; биологически активные вещества, строение, свойства; пищевые продукты и ФПП)», «Социально-экономические проблемы и перспективы освоения биоресурсов и развития марикультуры для прибрежных регионов России и других стран», в работе которых приняли участие ученые НИИ Росрыболовства России – ВНИРО, ТИНРО-Центр, СахНИРО, КамчатНИРО, МагаданНИРО, ПИНРО, СевПИНРО, ХфТИНРО, РАН – ММБИ, ИПЭЭ, Центр биоинженерии РАН, ЗАО «Биопрогресс», ДВО РАН, МГУ, МГУТУ, а также ученые из Китая, Японии и Израиля, являющиеся представителями как прикладной, так и фундаментальной науки.

Тематика конференции посвящена многообразным сторонам изучения и практического использования промысловых и культивируемых гидробионтов морей европейской части России, Дальнего Востока, прибрежных вод стран Азиатско-Тихоокеанского региона и тропического пояса.

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The collected abstracts of the Fourth International Scientific and Practical Conference contain materials presented by the scientists from different Russian fisheries research institutes, Russian Academy of Sciences, including FEB RAS, some technological centers and other institutions, and also by representatives of applied and fundamental science from China, Japan, and Israel.

This collection is devoted to studies and practical use of commercial and cultivated aquatic biological resources in the European and Far East seas of Russia and coastal zones of countries of the Asia-Pacific region and reflects fundamental directions presented in five sections: 1. Coastal and estuarine ecosystems: methods and results of complex study. 2. Methodical approach for the assessment of fish, invertebrate and seaweed stock abundances in marine coastal ecosystems. 3. Mariculture of seaweeds and invertebrates. 4. Processing of coastal hydrobionts (characteristics of raw material; technologies; biologically active additives). 5. Social-economic problems and prospects for the development of bioresources and mariculture in the coastal regions of Russia and other countries.

English variant of abstracts is presented without editing.

Photo on book cover is presented by A. K. Klitin, D. A. Galanin, N. V. Evseeva.

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## SOFT BOTTOM COMMUNITIES OF JARNYSHNAJA BAY, BARENTS SEA

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Benthos of soft bottoms is an important component of marine coastal communities. It is a main food source for many commercial fishes and invertebrates and it can be an indicator of environmental changes.

There are only some data on the current state of soft bottom communities of the Barents Sea bays. Besides, study of changes of bottom communities' structure is very important in context of the red king crab introduction, appearance of the snow crab and current warming of Arctic.

The Jarnyshnaja Bay (69°06'N 36°03'E) is one of the few bays which soft-bottom benthic communities have been studied in the past years. It is an open fjord-type bay with depth up to 90 m. Our material was collected in August 13–18 of 2009. We have taken 43 samples by grab of 0.1 m<sup>2</sup> from 21 sites at the depths of 13–82 m. Samples were washed out through the set of sieves (mesh of bottom sieve is 1mm) and animals were fixed by 4% formaldehyde solution for further study. Cluster analysis of qualitative and quantitative data has been used for distinguishing of communities. Additionally, one sample was taken for sediment analysis in every site. The studies were supported by programs "Biological diversity", "Fundamental basis of resource management" of RAS and RFRB No. 10-04-011764-a.

Average benthic biomass in the bay was 56 g/m<sup>2</sup> and average density of settlement – 961 ind./m<sup>2</sup>. One hundred sixty four species of invertebrates were found including two species of bivalves (*Gari fervensis*, *Abra prismatica*) and two species of polychaetes (*Aonides paucibranchiata*, *Pisionidae* sp.) which are new for the Russian part of the Barents Sea. Four communities were distinguished. Community with dominance by biomass of Macoma calcarea (74 species, density of settlement – 1 122 ind/m<sup>2</sup>, biomass – 139 g/m<sup>2</sup>) was found in the inner part of the bay in the depth range from 13 to 30 m on the silty bottom. Communities of *Heteranomia squamula* (58 spc, 420 ind./m<sup>2</sup>, 28 g/m<sup>2</sup>) and *Spisula elliptica* (88 spc, 819 ind./m<sup>2</sup>, 75 g/m<sup>2</sup>) were found in the middle part of the bay (at the depths of 15–75 m) on the sandy bottom with shells and gravel. Community of Galathowenia oculata (81 spc, 1285 ind./m<sup>2</sup>, 19 g/m<sup>2</sup>) located in the outer part of the bay on silt-and-sandy bottom (depth 58–75 m).

Although soft bottom communities in Jarnyshnaja Bay study since 1930s, the published data often are not detail. Anyway, we can suggest that communities of S. elliptica and G. oculata were not observed here before. It was recorded about community of Arctica islandica (13.3 ind./m<sup>2</sup>, 99 g/m<sup>2</sup>) on the sand bottom from Jarnyshnaja Bay where S. elliptica was only one of subdominant species (7.2 ind./m<sup>2</sup>, 2.2 g/m<sup>2</sup>). Also observed community of A. islandica at the one of site. In our material some juveniles and only one adult specimen of A. islandica were present what could be caused by predatory of the red king crab. Community with dominance of G. oculata was not recorded from for Jarnyshnaja Bay, but this species was one of the subdominant species for silt-and-sandy bottom communities in this area. An increase of oweniids portion and their dominance in communities were reported for the Varangerfjord and explained also as a result of the red king crab influence. Besides, some boreal gastropods species were recorded recently from the Murman coast of the Barents Sea. Thus, the appearance of polychaetes and bivalves known before only from the North Sea and West Norway may be seem regular from the point of view climate changes.

Thus, we got quantitative data on the current state and distribution of the soft bottom communities in Jarnyshnaja Bay.