**Bulletin 60**

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| УДК 664.641.19:635.62 DOI: 10.17217/2079-0333-2022-60-6-17  **FEATURES OF SEED FLOUR PROTEINS FROM DIFFERENT PUMPKIN**  **VARIETIES AS EMULSIFIERS**  Artemova E.N.1, Vlasova K.V.2  1 Orel State University named after I.S. Turgenev, Orel, Komsomolskaya Str. 95.  2 Moscow State University of Technology and Management named after K.G. Razumovsky (PKU), Zemlyanoy Val Str. 73.  The emulsifying ability of pumpkin seed flour determines the range of its application in food technology. Identification of varietal characteristics of pumpkin seed flour proteins raises the efficiency of its use. The pumpkin seed flour of the four most common and different in ripening period kinds was selected for study, such as Kroshka, Vitaminnaya, Mozoleevskaya and Golosemennaya. The protein composition of the seed flour of the selected pumpkin varieties was evaluated by such indicators as the mass fraction of proteins, the distribution of proteins into individual fractions and their polypeptide composition. Pumpkin seed flour Golosemennaya contains albumins and globulins most of all, it has the most active low- and high-molecular polypeptides and the best ability to form emulsions.  **Key words**: albumins, proteins, pumpkin seed flour, polypeptides, varieties, electrophoresis, emulsions. |
| УДК 574:664 DOI: 10.17217/2079-0333-2022-60-18-38  **EXPERIENCE IN MARINE MICROALGAE METABOLITES USE  TO COMBAT PATHOGENIC BIOFILM-FORMING BACTERIA**  Ognistaya A.V.1, 2,Markina Zh.V.1  1 A.V. Zhirmunsky National Scientific Center for Marine Biology FEB RAS, Vladivostok, Palchevsky, Str. 17.  2 Far Eastern Federal University, Vladivostok, Island Russkiy, The Ajax Bay 10.  The effect of marine microalgae metabolites on pathogenic bacteria biofilm-formation on polystyrene was estimated in the paper. Experiments revealed that extracellular compounds *Prorocentrum foraminosum* PrRUS\_7 and *Heterosigma akashiwo* HAK-SR11 inhibit bacterial growth on polystyrene surfaces. It was also found that *Alexandrium affine* metabolites stimulated the biofilms development in several cases. By means of scanning electron microscopy it was possible to visualize the effects of inhibition and stimulation of pathogen growth manifested by microalgae metabolites. The obtained data can be used for further research in order to create disinfectants for polystyrene materials processing in food production.  **Key words:** biofilm, marine microalgae, pathogenic bacteria, food industry, polystyrene, exometabolites, endometabolites. |
| УДК 582.272(265.52) DOI: 10.17217/2079-0333-2022-60-39-51  **MORPHOGENETIC DEVELOPMENT AND FORMATION OF REPRODUCTIVE ORGANS  IN THE BROWN ALGA, *FUCUS DISTICHUS*, UNDER DIFFERENT GROWTH CONDITIONS OF THE AVACHA BAY (SOUTH-EASTERN KAMCHATKA)**  Kashutin А.N.1, Klochkova N.G.2  1 Kamchatka State Technical University, Petropavlovsk-Kamchatskу, Klyuchevskaya Str. 35.  2 Kamchatka Branch of Pacific Geographyсal Institute (KB PGI) FEB RAS, Petropavlovsk-Kamchatskу, Partizanskaya Str. 6.  Brown alga *Fucus distichus* is one of the widespread, eurybiont species and is a promising object for commercial and sanitary mariculture. This determines the interest in studying its development under different growing conditions. In this paper, we discuss the morphogenetic development of *F. distichus* labeled samples in different areas of the Avacha Bay: Zavoiko Bay and Seroglazka Bay, from May to August. The bays differ significantly in the level of anthropogenic pollution and hydrodynamic load and, to a lesser extent, in the temperature regime and pH level of coastal waters. During observations, which began in May and ended in August, the total height and length of branches of different orders were measured and the state of fertility was determined in the studied samples. During the research period, the morphometric processing of labeled samples was carried out 4 times in Zavoiko Bay and 6 times – in Seroglazka Bay. The study results showed that anthropogenic pollution has the greatest impact on the development of the studied species. In Seroglazka Bay, where the berths of 2 large fishing enterprises are located and also household and industrial discharge from 12 city sewers occurs, *F. distichus* formed only 3 dichotomous branches from May 29 to August 12, and the fertility stage was absent. In Zavoiko Bay, which is widely open to tidal currents and does not have sewage discharge, *F. distichus* formed6 dichotomous branches and all the terminal branches were at different stages of fertility. Based on the obtained data, we concluded that *Fucus* can be used for biomonitoring of the ecological state in the coastal areas.  **Key words:** Avacha Bay, developmental biology, brown algae, Kamchatka, reproduction, *Fucus distichus*. |
| УДК 594.32:574.52 DOI: 10.17217/2079-0333-2022-60-52-62  **EVALUATION OF COMMON RIVER SNAIL *VIVIPARUS VIVIPARUS* (L.)  FILTRATION ACTIVITY BY THE INDICATOR OF *CHLORELLA* CULTURE  OPTICAL DENSITY**  Volgina D.D.1, Yanygina L.V.1, 2  1 Institute for Water and Environmental Problems SB RAS, Barnaul, Molodezhnaya Srt. 1.  2 Altai State University, Barnaul, Lenin Str. 61.  The role of natural self-purification processes aimed at restoring water original properties and composition increases in conditions of high anthropogenic pressure on freshwater ecosystems. A significant contribution to these processes is made by filter-feeding hydrobionts, which can deposit suspended particles from water column. A main part of the research in this area is devoted to filter-feeding mollusks – bivalves and gastropods, but gastropods are less studied. The data obtained during the experimental study of the filtration activity effect of the river *Viviparus viviparus* (L.) on the change in the optical density of the suspension of the unicellular algae *Chlorella* sp. are presented in this paper. The results showed that the average value of optical density of *Сhlorella* suspension in the presence of the mollusk decreased by 2 times, from (0.151 ± 0.0090) to (0.068 ± 0.0400) B. Various changes in optical density in each of the experimental glasses are associated primarily with the unequal physiological state of the mollusks. It was suggested that numerous populations formed as a result of *V. viviparus* invasion into the Novosibirsk Reservoir are able to change water quality, potentially affecting the functioning of the reservoir ecosystem.  **Key words:** biological self-purification of water, *Gastropoda*, water quality, self-purification of water bodies, filtration activity, *Viviparus viviparus*. |
| УДК 598.2(571.66) DOI: 10.17217/2079-0333-2022-60-63-83  **MODERN CONCEPTS ABOUT ORNITHOLOGICAL GEOGRAPHY**  **OF THE COMMANDER ISLANDS**  Lobkov E.G.1, Pilipenko D.V.2  1 Kamchatka State Technical University, Petropavlovsk-Kamchatsky, Klyuchevskaya Str. 35.  2 Nature and Biosphere Reserve Commander Islands named Marakov S.V., Kamchatka Territory, Aleutian District, Nikolskoye Village, 50-let Oktyabrya Str. 31.  The validity of the allocation of the Commander ornithogeographic district on the zoogeographic map of Kamchatka has been confirmed. This diagnosis is relevant, despite some doubts among taxonomists about the independence of individual endemic Commander subspecies of birds. The similarity of the nesting and probably nesting bird fauna of Kamchatka, the Commander and Aleutian Islands was estimated using the Jacquard formula [Pesenko, 1982] based on the revision results of the avifaunistic lists of these regions. The opinion that the avifauna of the Commander Islands is related to the Aleutian one was confirmed. The similarity index between the avifauna of the Commander and Aleutian Islands is greater (38.1%) than between the Commander Islands and Kamchatka (24.7%), despite the fact that Kamchatka is much closer to the Commander Islands. The Commander avifauna meets the most important criteria of island faunas, such as impoverishment and subspecific endemism. In addition, the representatives of archaic forms lived on the Commander Islands not so long ago, which disappeared primarily due to human extermination. The current state of most Commander endemic bird subspecies is quite stable. American mountain finch may show some tendency to decline.  **Key words:** avifauna, the Commander Islands, Kamchatka, the Aleutian Islands, ornithogeography, similarity index, endemic subspecies. |
| УДК 597.553.2:639.211 DOI: 10.17217/2079-0333-2022-60-84-97  **POPULATION DYNAMICS AND CATCH PROSPECTS OF RUSSIAN PACIFIC SALMON  (*OHCORHYNCHUS*, SALMONIDAE)**  Makoedov A.N.1, 2, Makoedov A.A.3   Don State Technical University, Rostov-on-Don, Russian Federation, Gagarin Square, 1.  2 Southern Scientific Center of the Russian Academy of Sciences, Rostov-on-Don, Chekhov Avenue, 41.  3 Sakhalin Region Fisheries Agency, Yuzhno-Sakhalinsk, Mir Avenue, 107.  The official statistics data of domestic catches do not allow to form appropriate estimate about the actual state of stocks and population dynamics of Russian Pacific salmon in the 20th – early 21st centuries, because a significant fishing load was provided by Japanese fishermen for a long time. During this period  the stocks were on the rise twice (from 1929 till 1960 and from 2004 till present time) and once they were in a depressed state (1961–2003). Apparently, the maximum abundance values during the rise periods were approximately at the same level. The duration of high and low abundance periods is approximately similar. The full cycle of changes in was 65–75 years. The current period of the Russian Pacific salmon high abundance, according to the rhythm of previous periods, may last until the early 2030s. The minimum recorded catches during this period of time will be at least 250 thousand tons and the maximum will be in the range of 500–600 thousand tons.  **Key words:**pink salmon,population dynamics,chum salmon, sockeye salmon, catch forecasting, fishing, Pacific salmon, genus *Ohcorhynchus*, *O. gorbuscha*, *O. keta*, *O. nerka*. |
| УДК 599.745.1(265.52) DOI: 10.17217/2079-0333-2022-60-98-122  **SYNANTROPIZATION OF STELLER SEA LION  (*EUMETOPIAS JUBATUS*,SCHREBER, 1776)IN KAMCHATKA  WITHIN THE LIMITS OF PETROPAVLOVSK-KAMCHATSKY  (RESULTS OF 20-YEAR-LONG MONITORING)**  Kornev S.I.  Kamchatka Branch of the Russian Federal Research Institute of Fisheries and Oceanography (KamchatNIRO), Petropavlovsk-Kamchatsky, Naberezhnaya Str. 18.  The problem of adaptation of the Steller's northern sea lion (*Eumetopias jubatus*, Schreber, 1776) to the coastal water area adjacent to the town of Petropavlovsk-Kamchatsky is presented in the article. There are two stages in the sea lion synanthropization. The first stage is associated with rookeries formation, foraging near vessels and in the bay in area, in the usual habitat of these animals, in seawater. The second stage is connected with pioneering a new habitat and feeding on land. During sea lion adaptation to new conditions over a 20-year period, the fear of humans noticeably decreased in animals, new behavioural traits such as cadging appeared. The group of sea lions wintering in Petropavlovsk-Kamchatsky during the  20-year period was characterized by statistically significant fluctuations in numbers by year and season. The further coexistence of wintering animals depends on the dynamics of the influence of both natural and anthropogenic factors.  **Key words:** rookery, Petropavlovsk-Kamchatsky, dieting, cadging, Steller’s sea lion, synantropization. |