**Bulletin 57**

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| УДК 613+611.1 DOI: 10.17217/2079-0333-2021-57-6-19  **ADAPTATION OF THE SHIP'S CREW TO THE CONDITIONS OF A LONG VOYAGE  ACCORDING TO THE CHARACTERISTICS OF THE HEART**  Koval V.T.1, Petrachenko N.E.2, Soshina N.S.1, Zorchenko N.K.3  1 Far Eastern Federal University, Vladivostok, about. Russian, p. Ajax, 10, building 20.  2 Pacific Higher Naval School named after S.O. Makarov of the Ministry of Defense of the Russian Federation, Vladivostok, Kamsky Lane 6.  3 Far Eastern State Technical Fisheries University, Vladivostok, Lugovaya Str. 52B.  The article is devoted to identifying the regularities of the process of adaptation of the crew members to the sailing conditions of the round-the-world voyage of the TSS ‟Pallada”. The initial data were the results of measuring the parameters of the cardiac activity of the ship's crew members for the entire period of being on board the ship. A method for processing experimental data was proposed to separate the individual characteristics of cardiac activity from the influence of the external environment. The hypothesis of a stressful situation and gradual adaptation of the ship's crew was confirmed. To illustrate the proposed method, the dependence of the deviation of the systolic index from the mean is given. It was shown that the greatest deviation of the Systolic Index (SI) values from the physiological norm was observed at the moments of crossing the equator in both directions and at the crossing of the Greenwich meridian.  **Key words:** adaptation, correlation coefficient, systolic index, ship crew. |
| УДК 537.87: 004.9 DOI: 10.17217/2079-0333-2021-57-20-29  **INVESTIGATION OF THE INFLUENCE OF ELECTROMAGNETIC RADIATION  NEAR THE “ATMOSPHERE – ICE”  MEDIA SECTION DURING A ROUND-THE-WORLD ROUTE**  Koval V.T.1, Korochentsev V.I.1, Soshina N.S.1, Shpak Yu.V.1, Zorchenko N.K.2, Belash A.P. 3  1 Far Eastern Federal University, Vladivostok, about Russian, p. Ajax, 10, building 20.  2 Far Eastern State Technical Fisheries University, Vladivostok, Lugovaya Str. 52B.  3 Kamchatka State Technical University, Petropavlovsk-Kamchatsky, Klyuchevskaya Str. 35.  The article is devoted to the study of the influence of electromagnetic radiation near the “atmosphere – ice” section of the media during the round-the-world route of the TSS “Pallada”. The paper presents the calculation of electromagnetic radiation, where the source is selected as a model, which is located on the mast of the ship, which is in the air. A mathematical model of the radiation of an electromagnetic wave is given, as well as a calculation of the intensity of electromagnetic radiation that has passed through the interface between the media “atmosphere – ice”. This article discusses a mathematical algorithm based on the theory of directed Green's functions. The results of the propagation of electromagnetic radiation depending on the frequency of the source are presented. To illustrate the presented method, a diagram of the propagation of electromagnetic waves is given. Data were obtained showing the features of the scattering of electromagnetic radiation in the Arctic.  **Key words:** round-the-world route, directional Green's function, TSS “Pallada”, electromagnetic waves. |
| УДК 564.5:664 DOI: 10.17217/2079-0333-2021-57-30-43  **SUBSTANTIATION OF SQUID INTEGUMENTARY TISSUES DRYING TECHNOLOGICAL PARAMETERS USING INFRARED RADIATION** Blagonravova M.V., Samokhin А.В. Kamchatka State Technical University, Petropavlovsk-Kamchatskу, Klyuchevskaya 35.  The article presents the results of research to substantiate the technological parameters of dried products manufacturing from the skin of Pacific and Commander squid. The data of our own studies of the mass composition of squid, as well as the chemical composition of the skin, are presented, the high protein content in the squid integumentary tissues is shown. Rational modes of drying the skin with infrared rays are justified – the temperature is 55ºC, the duration is 5 hours. Regression equations describing the dependence of the mass fraction of water on the duration of drying at different temperatures are obtained. The fractional composition of the dried product after grinding was studied; rational parameters of grinding were established.  **Key words:** squid skin, commander squid *B. magister*, dried products, Pacific squid *T. pacificus*. |
| УДК 598.2:639.2.081.117.21 DOI: 10.17217/2079-0333-2021-57-44-53  **SEABIRD INTERACTIONS WITH FISHING GEAR IN POLLOCK AND HERRING  FISHERY IN THE SEA OF OKHOTSK during WINTER-SPRING 2020**  Artukhin Yu.B.  Kamchatka Branch of Pacific Geographical Institute FEB RAS, Petropavlovsk-Kamchatsky, Rybakov Prospect 19a.  The studies were carried out aboard the large freezing-processing trawler in the northern part of the Sea of Okhotsk in February – May 2020. During 763 observation rounds (374.4 hours), 488 contacts of seabirds (mostly northern fulmars) with trawl wires were recorded. The fulmars were equally often in contact with left warp and depth sounder cable (1.2 times per hour). All strikes were light and non-lethal. Frequency of contacts with wires varied greatly by the fishery districts. Much more strikes with wires were observed in the East Sakhalin subzone (7.3/hour for fulmars) than in the West Kamchatka (0.1) and Northern Okhotsk (0.0) districts. In comparison with similar data from 2015, the dependence of contact frequency for fulmars with fishing gear on their abundance near the trawler was confirmed. At the same time, the previously established relationships between the frequency of contacts and intensity of waste discharges after fish processing and wind direction relative to the vessel course were not found. Presumably, these interannual differences are due to more complex ice conditions in 2020, as a result of which 66% of trawling took place in ice-covered areas (in 2015 – only 11%). Under these conditions, fishermen use methods of deepening wires closer to the ship stern in order to avoid damage by ice floes, which significantly reduces the zone of potential collisions of birds with trawl wires.  **Key words:** Pollock, seabirds, the Sea of Okhotsk, by-catch, trawl fishery. |
| УДК [597.556.31+597.556.33](265.52) DOI: 10.17217/2079-0333-2021-57-54-69  **PECULIARITY OF SIZE-AGE STRUCTURE OF SOME SPECIES  OF SCORPAENIFORMES AND PERCIFORMES ORDERS  OF NEAR KAMCHATKA WATERS**  Tokranov A.M.  Kamchatka Branch of Pacific Geographical Institute FEB RAS, Petropavlovsk-Kamchatsky, Partyzanskaya Str. 6  Base on analysis of size-age data of 65 species of 11 families of Scorpaeniformes (Cottidae, Hemitripteridae, Psychrolutidae, Agonidae, Liparidae, Sebastidae) and Perciformes (Zoarcidae, Stichaeidae, Bathymasteridae, Zaproridae, Ammodytidae) orders, are collected in near Kamchatka waters in 1978–2020, three ecological groups of fishes (short cycle, middle and long living), differencing by size-age structure, are identified. Maximum sizes of species of first group as a rule are not exceeded 15–25 cm and 100–200 g, limit age – 8–10 years. Maximum sizes of species of second group are more 40–50 cm and 1–2 kg, limit age – 12–20 years. Sizes of individual species of third group are arrived more 70–80 cm and 8–10 kg, limit age – 25–45 years.  **Key words:** near Kamchatka waters, size-age structure, fishes of Scorpaeniformes and Perciformes orders. |
| УДК 599.323.4:574.24+599.363.2:574.24DOI: 10.17217/2079-0333-2021-57-70-81  **SOME ASPECTS OF THE ECOLOGY OF SMALL MAMMALS  IN URBAN AREAS DURING THE SNOWY SEASON**  Yuodvirshis S.V., Starikov V.P.  Surgut State University, Surgut, Lenin Avenue 1.  The winter ecology of small mammals in the urbanized territories of the Khanty-Mansi Autonomous Area-Ugra has been poorly studied; previously, systematic studies on this topic and comparison of the data obtained with the summer period in the district have not been carried out. This paper characterizes the species composition and abundance of small mammals inhabiting various biotopes of the city and its adjacent territories during the snowy period, as well as analyzes the change in body weight in dominant species during this period of the year and considers the influence of some abiotic factors on it. The study was carried out during the snowy periods of 2017/18 and 2018/19 from October to May. The collection of biomaterial was carried out in the city of Surgut by the method of trap lines in 16 biotopes belonging to three large sections (forest, swamp, floodplain) with subsequent office processing.  **Key words:** winter season, red-backed vole, small mammals, common shrew. |
| УДК 582.272.46(265.53) DOI: 10.17217/2079-0333-2021-57-82-95  **DISTRIBUTION OF RARE ENDEMIC ALGA *PHYLLARIELLA OCHOTENSIS* (LAMINARIALES, PHAEOPHYCEAE) IN THE SEA OF OKHOTSK**  Klimova A.V., Klochkova T.A., Klochkova N.G.  Kamchatka State Technical University, Petropavlovsk-Kamchatskу, Klyuchevskaya Str. 35.  We discuss the peculiarities of distribution and dispersal of the endemic Laminariaceaen species, *Phyllariella* *ochotensis* Petrov et Vozhinskaya, 1966, on the continental coast of the Sea of Okhotsk, as well as its differences from other taxa from the order Laminariales. We studied specimens personally collected near western Kamchatka, Ptichij Island in 2020 and from several sites in the Taui Bay in 2021, as well as herbarium collections by other researchers and references containing information on this species. We report this species for the first time in the flora of the Taui Bay, which was actively studied previously by marine hydrobiologists and phycologists. On Nedorazumeniya Island, we discovered the monodominant species community of *P.* *ochotensis* with a biomass of more than 4 kg/m2. The unexpected appearance and strengthening of the biocoenotic role of *P. ochotensis* in this coastal area, where it was previously absent, is most likely caused by recent changes in the hydrological regime in the northern regions of the Sea of Okhotsk. The data analysis of changes in the surface water layer’s average temperature near Ptichij and Nedorazumeniya Islands (Taui Bay) for July – August confirms this idea. As generally shown, *P. ochotensis* is distributed near the continental coast of the Sea of Okhotsk: in the central areas of western Kamchatka, in the Gizhiginsky and Taui Bays, to the south only off Shantar Islands and in the proximate Ulbinsky, Tugursky and Ekaterina Bays. According to the taxonomic features traditionally used to distinguish kelp families, this species has affinity to the Alariaceae and Laminariaceae. It is necessary to survey *P. ochotensis* molecular-phylogenetically for clarifying its family affiliation*.[[1]](#footnote-1)\**  **Key words:** *Phyllariella ochotensis*, laminariacean species, endemic species, Taui Bay, Sea of Okhotsk. |
| **Research note**  УДК: 661.74 DOI: 10.17217/2079-0333-2021-57-96-100  **Using triflouroacetic acid in acetolysis of pollen grains  in melissopalynological analysis**  Goncharov B.I.1, Snegur P.P.2, 3  1 Center of Hygiene and Epidemiology on Kamchatka Territory, Petropavlovsk-Kamchatsky, Ryabikivskaya Str. 22.  2 Kamchatka Branch of Pacific Geographical Institute FED RAS, Petropavlovsk-Kamchatsky, Partizanskaya Str. 6.  3 Kamchatka Research Institute of Agriculture, Sosnovka, Elizovsky District, Kamchatka Territory, Centralnaya Str. 4.  The possibility of using the triflouroacitic acid for performance of pollen grains acetolysis in melissopalinological analysis instead of currently prohibited acetic anhydrite was demonstrated in this investigation. Glacial acetic acid and ethyllacetate were also used in testing without required effects.  **Key words:** acetolysis, intine layer of pollen grain, melissopalinological analysis, pollen grains, triflouroacetic acid, acetic anhydrite. |
| УДК 597.555.5(739.8)DOI: 10.17217/2079-0333-2021-57-101-106  **CURRENT STOCK STATUS, ECOSYSTEM CONSIDERATIONS,  AND BYCATCH IN THE EASTERN BERING SEA POLLOCK FISHERY[[2]](#footnote-2)\***  Estabrooks A.C. 1, 2  1 Pollock Conservation Cooperative, 4039 21st Ave W, Suite 400 Seattle, WA USA 98199  2 At-sea Processors Association, 4039 21st Ave W, Suite 400 Seattle, WA USA 98199  The walleye pollock fishery off the coast of Alaska accounts for roughly one third of the global pollock fish production and is the largest fishery by volume in the United States and among one of the largest in the world. The health and sustainability of those fishery resources is paramount, not only for the economic benefits they provide, but also for global food security. This article describes the global market profile, current stock status, some important ecosystem considerations, and recent bycatch issues in the pollock fishery that occurs in the Eastern Bering Sea.  **Key words:** Alaska pollock, ecosystem, bycatch, Bering Sea. |
| УДК 639.2(739.8) DOI: 10.17217/2079-0333-2021-57-107-111  **THE ECONOMIC VALUE OF ALASKA SPORT FISHERIES[[3]](#footnote-3)\***  Knapp G.P.  University of Alaska Anchorage, Alaska, Anchorage, 3211 Providence Drive, Anchorage, Alaska 99508 USA  Alaska sport fisheries create significant economic value. A 2007 study found that about 475 thousand sport fishermen fished in Alaska on a total about 2.5 million sport-fishing days. They spent about  $1.3 billion in Alaska for sport fishing-related purchases. That spending created about $1.6 billion in output value, $550 million in income, and about 16,000 jobs. These economic impacts were particularly important for coastal communities in regions of Alaska where salmon and halibut are abundant. Alaska sport fisheries demonstrate that the economic potential of sport fisheries in northern regions is very large –  if sport fishery resources are protected, allocation conflicts with other fisheries are resolved, and sport fishing infrastructure and services are developed and maintained.  **Key words:** Alaska, sport fishing, economic value, fisheries management. |

1. \* This study was supported by the grant from Russian Foundation for Basic Research (RFBR) (project № 19-04-00285 А) [↑](#footnote-ref-1)
2. \* *Proceedings of the mini-symposium ‟Pollock Day” in the framework of the XII National (All-Russian) scientific-practical conference ‟Natural resources, their current state, protection, commercial and technical use" (April 28–29, 2021, Petropavlovsk-Kamchatsky)* [↑](#footnote-ref-2)
3. \*  *Proceedings of the mini-symposium ‟Pollock Day” in the framework of the XII National (All-Russian) scientific-practical conference ‟Natural resources, their current state, protection, commercial and technical use" (April 28–29, 2021, Petropavlovsk-Kamchatsky).* [↑](#footnote-ref-3)