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| Original article  УДК 556.332.52 DOI: 10.17217/2079-0333-2024-70-8-17  **WATER LEVEL MEASUREMENT IN THE OBSERVATION WELLS: INTERNAL CONTROL ORGANIZATION OF SYSTEMATIC ERRORS**  Opryshko B.A.1, Shvetsov V.A.2, Belavina O.A.2, Yastrebov D.P.2  1 Regional State Unitary Enterprise “Kamchatka Vodokanal”, Petropavlovsk-Kamchatsky, Tsiolkovsky Ave. 3/1.  2 Kamchatka State Technical University, Petropavlovsk-Kamchatsky, Klyuchevskaya Str. 35.  In this paper, we proposed a method for controlling systematic errors in the results of water level measurements in the field condition, obtained using modern “Levelogger Edge M10” measuring systems. The research was carried out in 2023 at Avachinsky water intake well № 24. Our analysis showed that the measurement results obtained using the M10 device, which has been in operation for 5 years, contained a significant systematic error due to the drift of hydrostatic pressure sensor. The measurement results obtained using new M10 devices showed an acceptable systematic error.  **Key words:** water intake observation wells, water level, “Levelogger Edge M10” measuring systems, systematic error of measurements. |
| Original article  УДК 621.315:614.841.415 DOI: 10.17217/2079-0333-2024-70-18-27  **IMPLEMENTATION OF A METHOD FOR CHECKING PROTECTION DEVICES AGAINST PARALLEL ARC BREAKDOWN AND SPARK GAPS FOR OPERATION**  Tyurin A.N.1, 2, Erashova Yu.N.3  1 JSC “Tatelektromontazh”, Kazan, Adoratsky Str. 50A.  2 “Roselectromontazh” Association, Moscow, Electricheskij lane. 3/10.  3 Kazan State Power Engineering University, Kazan, Krasnoselskaya Str. 51.  The work carried out a detailed analysis of breakdowns in the form of an electric arc. The operating principle of the arc flash and spark gap protection device (AFDD) was studied. The objective of the research is to substantiate the requirements for an AFDD and create a method for testing them for operation when a parallel arc occurs. A method for testing an AFDD may consist of simulating an arc flashover and observing the device response. Tests of protection devices against dangerous sparks were carried out under conditions close to reality. Conducted experiments on the triggering conditions of the AFDD may include creating a controlled arc flash situation, observing the operation of the device and analyzing the data obtained. Only after successfully passing the tests can it be stated that the AFDD meets the requirements.  **Key words:** spark discharge, fire prevention, safety equipment, arc flash protection devices, electric arc. |
| Original article  УДК 593.95 DOI: 10.17217/2079-0333-2024-70-28–37  **Similarity of sea urchin (Echinodermata: Echinoidea)  FAUNA of russian seas**  Stepanov V.G.1, Panina E.G.2  1 Kamchatka Branch of Pacific Geographical Institute of FEB RAS, Petropavlovsk-Kamchatskу, Partizaskaya Str. 6.  2 Zoological Institute of Russian Academy of Sciences, St.-Petersburg, Universitetskaya Emb. 1.  A comparative analysis of the sea urchins fauna from Russian seas was carried out based using known published references and personal data by these authors. We analyzed the species diversity of sea urchins from the Arctic seas of Russia (White Sea, Barents Sea, Kara Sea, Laptev Sea, East-Siberian Sea, and Chukchi Sea), Far Eastern seas (Bering Sea, Sea of Okhotsk, Japan Sea) and the Central Polar Basin. In these areas, the sea urchins fauna can be clearly divided into 2 groups: 1) Arctic seas, 2) Far Eastern seas. Among the Far Eastern seas, the fauna from the Sea of Okhotsk and Japan Sea is most similar. Among the Arctic seas, the fauna of the Barents Sea is most different. Therefore, 2 groups can be distinguished: 1) Kara Sea, Laptev Sea and Central Polar Basin, 2) White Sea, East-Siberian Sea and Chukchi Sea.  **Key words:** sea urchin, distribution, Russian seas, fauna comparison Echinoidea. |
| Original article  УДК 615.012.6:582.272(265.52) DOI: 10.17217/2079-0333-2024-70-38–53  **AQUEOUS EXTRACTS FROM KAMCHATKA BROWN SEAWEEDS  AS STIMULATORS OF PHAGOCYTIC FUNCTION OF NEUTROPHILS *IN VITRO***  Klochkova N.G.1, 2, Perervenko O.V.3  1 Kamchatka Branch of Pacific Geographyсal Institute of FEB RAS, Petropavlovsk-Kamchatskу, Partizanskaya Str. 6.  2 Vitus Bering Kamchatka State University, Petropavlovsk-Kamchatsky, Pogranichnaya Str. 4.  3 Federal State Institution “1477 Naval Clinical Hospital”, Branch № 2, Petropavlovsk-Kamchatsky, Ammonalnaya pad Str. 1.  The data on quantitative content of different groups of substances, including organic and water-soluble, and minerals from Kamchatka brown seaweeds *Alaria esculenta*, *Hedophyllum bongardianum* and *Fucus distichus* are discussed, as well as the information on the content of alginic acids, fucoidan, mannitol, iodine, nitrogenous and mineral substances. The possibility of using the aqueous extracts from these seaweeds as immunostimulants of non-specific resistance of neutrophils was experimentally proven. For *in vitro* experiments, we used venous blood of 35 young men, adding the aliquoted samples of daily bacterium culture to it (strain VKPM B-8172 *Staphylococcus aureus* ATCC 25923), and then solutions of seaweed extracts after 30 min. We estimated phagocytosis using generally accepted indices: phagocytic activity of neutrophils, phagocytic number, absolute phagocytic index and sum of phagocytosis. Our experimental data showed that low-concentrations of seaweed extracts actively primed neutrophils when diluted to 0.5 and especially to 1 and 2%. At these concentrations, the above indices increased by 50–80%. The highest immunomodulatory activity was demonstrated by *A. esculenta* extract and the lowest by *F. distichus* extract.  **Key words:** brown seaweeds, aqueous extracts, neutrophil priming, phagocytic activity, *Alaria еsculenta*, *Fucus distichus*, *Нedophyllum bongardianum.* |
| Original article  УДК [574.2: 574.5: 595.36]9282.243.4/.6 DOI: 10.17217/2079-0333-2024-70-54–72  **FEATURES OF THE BIOLOGY OF *GAMMARUS VARSOVIENSIS* JAZDZEWSKI, 1975 (CRUSTACEA, AMPHIPODA, GAMMARIDEA) IN THE MIDDLE CURRENT  OF THE PREGOLYA RIVER IN JULY – SEPTEMBER 2021**  Shiryaeva N.S., Sudnik S.A.  Kaliningrad State Technical University, Kaliningrad, Sovetskiy Prospekt 1.  *Gammarus varsoviensis* is an amphipod species widespread in the rivers of Central and Eastern Europe. The sex ratio in the samples (341 individuals in total: 243 females and 98 males) collected in the Pregolya river of Kaliningrad varied in July–September 2021, but females dominated two-five times numerically. The total body length of the individuals was 3.2–16.5 mm (females – 3.2–11.7 mm, males – 3.5–16.5 mm); the size of juvenile individuals was less than 3.2 mm. The age group included individuals of 0+…2+ years old; individuals of the first year of life dominated. Egg-bearing females (they have embryos at different stages of development) were found 3.8 times less than females without eggs, their sizes were similar. The size of the first spawning was about 5.5 mm. Fertility reached 36 eggs, 0.4–0.7 mm long in newly laid eggs; the number of juveniles 0.4–1.75 mm long in marsupiums reached 15 specimens.  **Key words:** amphipods, sexual dimorphism, egg sizes,realized fertility, sex ratio, *Gammarus varsoviensis*. |
| Original article  УДК 631.4(571.66) DOI: 10.17217/2079-0333-2024-70-73-86  **RIDGE-HUMMOCK RELIEF ON THE UKSICHAN PLATEAU  OF THE SREDINNY RANGE OF KAMCHATKA:  THE ROLE OF PERMAFROST AND VEGETATION**  Kazakov N.V., Dulchenko E.V.  Kamchatka Branch of Pacific Geographyсal Institute of FEB RAS, Petropavlovsk-Kamchatskу, Partizanskaya Str. 6.  The global warming affects the state of permafrost, activating erosion processes that complicate economic activity in the cryolithozone. In this regard, the study of relief forms formed with the participation of permafrost factors is becoming increasingly relevant. In the Middle Mountains of Kamchatka, these processes are most pronounced at altitudes of 800–1 000 m. Permafrost heaving of soil in this area is closely related to the vegetation type. This article provides descriptions of soils and specific mesorelief of the Uksichan basalt plateau slope in Sredinny Range of Kamchatka in the zone of dwarf forests and mosaic manifestation of permafrost. We provide first description of a specific relief form, which we called “ridge-hummocky”. A probable scenario of its formation and the role of vegetation in the long-term preservation of permafrost typical for this region are proposed.  **Key words:** mountain tundra, ridge-hummocky mesorelief, Kamchatka, dwarf pine, permafrost. |
| Original article  УДК [619:639.113](571.66) DOI: 10.17217/2079-0333-2024-70-87-107  **INCREASE OF STOMACH NEMATODE, *SOBOLIPHYME BATURINI*,INFECTION IN SABLE AND ERMINE AS ONE OF THE RESULTS  OF AMERICAN MINK ACCLIMATIZATION IN KAMCHATKA**  Tranbenkova N.A.  Kamchatka Branch of Pacific Geographical Institute of FEB RAS, Petropavlovsk-Kamchatskу, Partizaskaya Str. 6.  The host and biogeographic characteristics of the hemipopulation of the stomach nematode *Soboliphyme baturini*, Petrow, 1930 in the Kamchatka Peninsula are considered. The archival (1952–1979) and our own (1980–2024) materials of commercial predators helminthological monitoring were analyzed. It was proved that one of the reasons for increasing infestation of the Kamchatka subspecies of sable with this nematode is the introduction of the American mink in the 70s of the last century, who became an obligate host of *S. baturini* and increased the flow of its invasive origin and infection probability of other predatory species. Using the example of sable and ermine, the relationship of their invasiveness indicators with the phases of the acclimatization process of the American mink is shown. Before mink settling the average *S. baturini* invasion extensity in sable on the southeastern coast of the peninsula was (34.89 ± 7.81)%, after – (44.26 ± 4.8)%. This figure increased from (60.56 ± 6.94)% (1966–1981) to (83.05 ± 8.89)% (2012–2023) on the southwestern coast.  **Key words:** American mink, helminthological monitoring, ermine, infection, Kamchatka sable, invasion, intensity, extensity, nematode. |
| Original article  УДК 638.162 DOI: 10.17217/2079-0333-2024-70-108–121  **polen analysis of honeis from THE avacha lowland IN kamchatka**  Goncharov B.I.1, Snegur P.P.2, 3  1 Kamchatka Branch of the Russian Federal Research Institute of Fisheries and Oceanography, Petropavlovsk-Kamchatsky, Naberezhnaya Str. 18*.*  2 Kamchatka Branch of Pacific Geographical Institute of FEB RAS, Petropavlovsk-Kamchatskу, Partizaskaya Str. 6.  3 Kamchatka Research Institute of Agriculture, Kamchatka Territory, Elizovsky District, Sosnovka Village, Centralnaya Str. 4.  Kamchatka honey has a number of special qualities, which makes it always in high demand on the local market. To control the authenticity of its geographical origin, it is necessary to identify the features of a local product, which help to distinguish it from the imported analogues. The pollen analysis of honey samples of 2023 harvest from eight apiaries located in the Avacha lowland was carried out. The basis of the pollen spectrum consists of five plant taxa: *Salix sp.*, *Rubus idaeus*, *Trifolium sp.,* *Sorbus aucuparia L. subsp. Sibirica* and *Crataegus chlorosarca*, which account for more than 90% of pollen grains. The size of 95% of them does not exceed 30 micrometers. This work initiated research to establish the identification indicators of Kamchatka honey.  **Key words:** Kamchatka honey, [food base](https://context.reverso.net/%D0%BF%D0%B5%D1%80%D0%B5%D0%B2%D0%BE%D0%B4/%D0%B0%D0%BD%D0%B3%D0%BB%D0%B8%D0%B9%D1%81%D0%BA%D0%B8%D0%B9-%D1%80%D1%83%D1%81%D1%81%D0%BA%D0%B8%D0%B9/food+base) of honey bee, melissopalinological analysis, plant taxon, pollen grains. |