**Bulletin 53**

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| УДК 621.313:004.9 DOI: 10.17217/2079-0333-2020-53-6-15  **CONSTRUCTION OF COMPUTER MODEL OF PROPELLER ELECTRIC PLANT  BY GENERATOR – MOTOR SYSTEM**  Marchenko A.A.  This article discusses the creation of a computer model of a single-circuit propeller electric plant. The first step was to construct a mathematical model of the system. On the basis of this model, a computer model was created in *Matlab* and was thereafter checked in a nominal mode. Then we verified the model and actual system by conducting an experiment to adjust the frequency of the propeller motor. The results obtained indicate the correctness of the constructed mathematical and computer models and the effectiveness of this system.  **Key words:** asynchronous motor, propeller motor, commutation, mechanical power, network frequency,  electric current. |
| УДК 004.94 DOI: 10.17217/2079-0333-2020-53-16-24  **METHOD FOR CALCULATING STRENGTH CHARACTERISTICS  OF POLYETHYLENE CORDS**  Osipov E.V., Syumakov G.V.  The method for calculating the strength characteristics of a polyethylene cord taking into account the design and based on the study of its destruction processes was described. The calculation method includes determining the actual inner diameter of the braid, which allows identifying the effective layout of the cord braid and to determine the possibility of core and cord joint work, which ensures maximum breaking load of polyethylene cords. To determine the diameter of the core formed by the threads the optimal ratios were used. The formulas for determining the ratio of the braid and core threads length were obtained, which allow to determine the utilization coefficient of braid threads included in the fracture process. The deviation of the results of calculated values due to the proposed method and experimental data do not exceed 3–5%. The proposed method can be used to calculate the strength characteristics of polyethylene cords, in which the joint work of the core and braid threads is structurally possible at break.  **Key words:** calculation method, polyethylene cords, strength characteristics. |
| УДК 663.5:634 DOI: 10.17217/2079-0333-2020-53-25-36  **DEVELOPMENT OF BALSAM TECHNOLOGY BASED ON ALCOHOL INFUSIONS  FROM WILD PLANTS OF KAMCHATka region** Blagonravova M.V. A recipe and technology for the production of balms from plant raw materials from Kamchatka region are discussed. A panel of descriptors as well as taste and aroma portraits of the ‟perfect” balm was developed. A sample that matches the profile of the ‟ideal” drink was identified. It is shown that the developed balm fully meets the requirements of the standard. The study results of the biological value of the drink were mentioned. The product contains 0.27 g/100 cm3 of acids, iodine is in the amount of 1.52 mcg/100 cm3 and vitamin C is 0.1019 mg%.  **Key words:** vitamin C, descriptor-profile method, iodine, Kamchatka, mass concentration of titratable acids, infusion of kelp, infusions of berries, alcohol-based infusions. |
| УДК 582.272.462(571.66) DOI: 10.17217/2079-0333-2020-53-37-53  **THE KELP SPECIES OF WESTERN KAMCHATKA**  Klochkova N.G., Klimova A.V., Klochkova T.A.  Western Kamchatka is still poorly studied in floristic and fishing aspects and there is no accurate understanding on the boundaries of different kelp species distribution in the area. During the 2020 field study in the coastal area located from Cape Ambon to the mouth of Utholok river, including the area proximate to Ptichiy Island, we found 5 kelp species, including *Phyllariella ochotensis, Pseudolessonia laminarioides, Laminaria inclinatorhiza,* *Saccharina latissima,* and *Alaria esculenta* sensu lato. The first 3 species are endemic to the mainland coast of the Sea of Okhotsk. A special search off the coast of southwestern Kamchatka for another Okhotsk endemic species, *Laminaria appressirhiza*, showed that it was absent. A representative of the Bering Sea kelp flora *Hedophyllum bongardianum* does not occur on western Kamchatka north of 51°N. The morphometric characteristics of plants belonging to different age groups and morphological features typical for Western Kamchatka’s populations of these species are discussed. Additionally, the molecular phylogeny of *L. appressirhiza* and *H. bongardianum* collected from the Sea of Okhotsk are discussed. As shown, the first species belongs to the genus *Laminaria.* From a commercial point of view, this coastal area was estimated as unpromising for the organization of kelp collection by a traditional manual method[[1]](#footnote-1)\*.  **Key words:** western Kamchatka, Laminariales, molecular phylogeny, COI, *Hedophyllum bongardianum*, *Laminaria appressirhiza*, *Laminaria inclinatorhiza*, *Phyllariella*, *Pseudolessonia*. |
| УДК 582.232:519.876.5 DOI: 10.17217/2079-0333-2020-53-54-65  **CULTURAL AND BIOCHEMICAL PARAMETERS OF two microalgae, *PHAEODACTYLUM TRICORNUTUM* AND *TETRASELMIS SUECIACA***, **IN CUMULATIVE CULTURES**  Kovalev N.N., Leskova S.E., Mikheev E.V., Pozdnyakova Yu.M., Esipenko R.V.  A comparative study of cultural and biochemical parameters of two microalgal species, *Tetraselmis sueciaca* and *Phaeodactylum tricornutum*, was performed. Cell density in the storage culture was 2.88 million cells per one ml for *T. sueciaca* and 20.37 million cells per one ml for *Ph. tricornutum.* As shown, determination of optical density of the culture medium is a more objective characteristic of the cumulative culture growth. For *T. sueciaca*, cell growth rate during the course of experiment made 400% and for *Ph. tricornutum* – 700%. Difference in the chemical composition of microalgal biomass was revealed. The microalgae did not differ in their energy value. The prospects of cumulative culture of microalgae in mariculture farms are discussed.  **Key words:** algae biomass, fatty acids, microalgae, cumulative culture, growth rate, chemical composition, chlorophyll. |
| УДК 597.2/5 (265.5) DOI: 10.17217/2079-0333-2020-53-66-80  **ICHTHYOFAUNA of INTERTIDAL ZONE FROM KAMCHATKA’s neighbouring  WATERS AND ADJACENT NORTH-WESTERN PART OF the BERING SEA**  Tokranov A.M.  The composition of intertidal ichthyofauna from Kamchatka’s neighboring areas is characterized. Since 1930-es, 61 fish species from 17 families have been recorded in the intertidal zone, and most (82%) are representatives of Scorpaeniformes and Perciformes. Fishes recorded in the intertidal zone are components of six ichthyocenes, but its nucleus (86.9%) is formed by representatives of only 3 of them: littoral, sublittoral, and elittoral ichthyocenes. Most species are rare (56.3−81.8%). Juveniles constitute a prevailing proportion of fish species recorded in the intertidal zone near Kamchatka waters.  **Key words:** species composition, ichthyocenes, abundance, intertidal zone, Kamchatka waters. |
| УДК 634.75:631.524.84:631.8 DOI: 10.17217/2079-0333-2020-53-81-92  **GENERATIVE AND VEGETATIVE PRODUCTIVITY OF LARGE-FRUITED STRAWBERRY *FRAGARIA ANANASSA* WHEN USING BIOSTIMULANTS FROM MARINE HYDROBIONTS OF KAMCHATKA**  Dakhno T.G., Dakhno O.A.  The influence of organic fertilizers (biostimulants) “Bio-Algo”, “Bio-Mix” and “Bio-Fish” made from Kamchatka’s marine organisms on the indicators of generative and vegetative productivity of large-fruited strawberries were represented. Comparison of organic biostimulants effect on such indicators as winter hardiness, general condition and pathogen damage revealed that the most effective biological product is “Bio-Algo”, the use of which had a positive effect on the development of strawberry plants and subsequent recovery processes after overwintering, increasing their generative and vegetative productivity. When processing strawberry plants with the preparation an increase in the mass of the berry was noted, this ultimately increases generative productivity, without reducing the quality characteristics of the fruit – the content of ascorbic acid and soluble dry substances. It was stated that the use of organic fertilizer Bio-Algo increases the generative productivity of large-fruited strawberries by 1.3 times and the generative productivity by 1.6 times.  **Key words:** organic fertilizers, biostimulants, “Bio-Algo”, “Bio-Mix”, “Bio-Fish”, large-fruited strawberries, *Fragaria ananassa*, generative productivity, vegetative productivity. |

1. \* This study was supported by the grant from Russian Foundation for Basic Research (RFBR) (project № 19-04-00285 А). [↑](#footnote-ref-1)