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| УДК [378:908](571.66)**S.V. Gavrilov****THE BEGINNING OF FISHERY EDUCATION IN KAMCHATKA.****TO THE 75th ANNIVERSARY OF KAMCHATKA STATE TECHNICAL UNIVERSITY**Circumstances of organization in 1942 and development of secondary technical institution of a fishery profile for the first five years are considered. It has become the ancestor of present Kamchatka State Technical University, celebrating its 75th anniversary in the fall of 2017.**Key words:** fishing industry, Joint-Stock Kamchatka Company, People's Commissariat for Fishing Industry of the USSR, technical school, students, technological, navigator and marine engineering departments, academic year.*DOI: 10.17217/2079-0333-2017-40-6-11***Information about the author****Gavrilov Sergey Vitalevich** – Kamchatka State Technical University, 683003, Russia, Petropavlovsk-Kamchatsky; Docent, Associate Professor of Refrigeration and Power Plants Chair; gavrilov\_sv@kamchatgtu.ru |
| УДК 621.317:620.197:629.5.023**O.A. Belov****CHALLENGES FOR INVESTIGATION OF THE ELECTRIC FIELD OF SHIPS AND VESSELS AND WAYS OF THEIR SOLUTIONS**Corrosion is one of the main reasons for deterioration of ships, reducing their strength and safety of operation. Elimination of corrosive destruction requires significant costs. One of the main factors influencing the intensity of corrosion processes is the electric field of the vessel. Investigation of the nature of this phenomenon and the mechanisms of the development of corrosion processes is extremely necessary to improve corrosion protection and improve the efficiency of methods for monitoring the hull. Taking into account the influence of the electric field on the technical, operational and sea-going properties of ships and vessels, the article examines tasks and basic methods for investigating these phenomena and processes associated with them.**Key words:** technical operation, research method, electric field, corrosion process, electrocorrosion, modeling.*DOI: 10.17217/2079-0333-2017-40-12-17***Information about the author****Belov Oleg Aleksandrovich** – Kamchatka State Technical University; 683003, Russia, Petropavlovsk-Kamchatskу; Candidate of Technical Sciences; Head of Electrical and Radio Equipment of Ships Chair; boa-1@mail.ru |
| УДК 664.8.039.1:664.95**M.V. Votinov, M.A. Ershov****RESEARCHING THE INFRARED RADIATION INFLUENCE ON THE PROCESS OF FISH HEAT TREATMENT**Modernization and upgrading of the existing facilities in the manufacturing activities of the fishing industry is one of the main challenges facing the fisheries complex of the Russian Federation. Searching the energy efficient modes of thermal treatment during smoking, drying and curing plays an important role. The research described in the paper is devoted to determining the effect of the power of infrared lamps KGT 220-1000-1 for heating the layers of fish. Blue whiting – Micromesistius poutassou and redfish – Sebastes marinus were used as raw material. The power of infrared lights ranged from 50% to 100% in increments of 10%. In the experiments the fish surface temperature and the temperature at the depth of muscle tissue to 3 mm and 14 mm (25 mm for perch) were investigated. Blue whiting was undergone by heat treatment both in the movement of the air mixture and without it. The conducted study allowed to identify operation optimal capacity of the infrared lamps saving up to 15% of electricity in the process.**Key words:** heat processing, infrared radiation, fish, energy efficiency.*DOI: 10.17217/2079-0333-2017-40-18-24***Information about the authors****Votinov Maksim Valerevich** – Murmansk State Technical University; 183010, Russia, Murmansk; Candidate of Technical Sciences; Associate Professor of Automatic and Computer Engineering Chair; votinovmv@yandex.ru**Ershov Mikhail Aleksandrovich** – Murmansk State Technical University; 183010, Russia, Murmansk; Candidate of Technical Sciences; Associate Professor of Food Production Technologies Chair |
| УДК 624.154.8**B.A. Opryshko, V.A. Shvetsov*,* A.P.Lyakh, O.A. Belavina, A.Y. Bessonov****DEVELOPMENT AND IMPLEMENTATION OF THE CAP FOR OBSERVATION FLOWING HOLE****OF UNDERGROUND WATER FIELD**The article introduces the construction of the cap for observation flowing hole of underground water field. It is shown that adopting of this cap is effective to tackle the problem of the underground water level, pressure and debit monitoring. The application of this cap also allows to avoid accidental water overflows. **Key words:** observation hole, monitoring, field, model, underground water, human impact.*DOI: 10.17217/2079-0333-2017-40-25-29***Information about the authors****Opryshko Boris Alekseevich** – Kamchatka State Unitary Enterprise «Kamchatsky Vodokanal»; 683009, Russia, Petropavlovsk-Kamchatskу; Water Chief Process Engineer; BAOpryshko@pkvoda.ru**Shvetsov Vladimir Alekseevich** – Kamchatka State Technical University; 683003, Russia, Petropavlovsk-Kamchatskу; Doctor of Chemical Sciences, Docent, Professor of Electrical and Radio Equipment of Ships Chair **Lyakh Artem Pavlovich –** Kamchatka State Unitary Enterprise «Kamchatsky Vodokanal»; 683009, Russia, Petropavlovsk-Kamchatskу; Environmental Engineer 1st category**Belavina Olga Aleksandrovna** – Kamchatka State Technical University; 683003, Russia, Petropavlovsk-Kamchatskу; Specialist in Technical and Scientific Information of Science and Innovation Department; oni@kamchatgtu.ru **Bessonov Aleksandr Yurevich –** Kamchatka State Technical University; 683003, Russia, Petropavlovsk-Kamchatskу; Postgraduate  |
| УДК [550.388:621.396](571.55)**V.P. Sivokon, I.M. Voroshilov, B.I. Khanenya****OBSERVATIONS OF HEATING RADIATION IN KAMCHATKA**In experiments on active influence on the ionosphere the powerful short-wave complexes such as heating facilities are used. As a result of such influence the set of the physical processes [1] which are of scientific interest is formed. One of them is formation of artificial field-aligned irregularities. Studying the properties of natural magnetically oriented heterogeneities in Kamchatka [2], the authors have come to a conclusion about a possibility of implementing the received approaches to study them on short-wave lines of a big extent. Observation results in Kamchatka of active influence on the ionosphere in Tromse (Norway) are given in the paper.**Key words:** ionosphere, magnetically oriented heterogeneities, propagation of radio-waves.*DOI: 10.17217/2079-0333-2017-40-30-36***Information about the authors****Sivokon Vladimir Pavlovich** – Institute of Cosmophysical Researches and Radio Wave Propagation FEB RUS, 684034, Russia, Kamchatkа region, Paratunkа; Kamchatka State Technical University; 683003, Russia, Petropavlovsk-Kamchatskу; Doctor of Technical Sciences, Docent, Professor of Electrical and Radio Equipment of Ships Chair; vsivokon@mail.ru**Voroshilov Ivan Mikhailovich** – Kamchatka State Technical University; 683003, Russia, Petropavlovsk-Kamchatskу; Student; ivan.voroshilov.1994@gmail.com**Khanenya Bogdan Igorevich** – Kamchatka State Technical University; 683003, Russia, Petropavlovsk-Kamchatskу; Student; el\_toro95@mail.ru |
| УДК [664.956:639.228.2](571.66)**M.V. Blagonravova** **DEVELOPING THE FORMULATIONS OF DRIED FLOUNDER FILLET WITH KAMCHATKA WILD PLANTS** The article presents the results of studies on developing the formulations of dried flounder with wild plants of the Kamchatka Territory. It is proved that the introduction of herbal supplements in considered proportions to produce a dried product with high organoleptic characteristics, the quality of the relevant regulatory requirements.**Key words:** dried fish, flounder, herbal supplements, organoleptic characteristics, profilograms, wild garlic, fern orlyak.*DOI: 10.17217/2079-0333-2017-40-37-44***Information about the author****Blagonravova Majya Vladimirovna –** Kamchatka State Technical University; 683003, Russia, Petropavlovsk-Kamchatskу; Candidate of Technical Sciences, Associate Professor of Food Production Technologies Chair; mblagonravova@mail.ru  |
| УДК 664.952/.957:594.124**Y.V. Karnaushenko****PHYSICAL MODELLING OF RAPANA MEAT (RAPANA VENOSA) DRYING** Physical modeling of the drying process is proposed to consider as the subject of experiment planning, choice of a number of experiments and test conditions to develop the technology of dried Rapana meat in the form of powders and snacks. The result of research is a description of the drying process of Rapana meat, which is confined to the solution of the experimental task aimed at determining the optimal conditions of the process. The statistical method of experiment planning was conducted to determine the effect of the drying process in the fluidized bed. The data on the organization of the experiment using experiment skills are presented. The regression equation taking into account all interaction factors is given. Obtained model is checked for adequacy and interpreted. In the process of research the relevant objective to extract the maximum amount of data on the studied processes with limited costs is achieved.**Key words**: processing, hydrobionts, process, drying, fluidized bed, organization of the experiment.*DOI: 10.17217/2079-0333-2017-40-45-50***Information about the author****KarnaushenkoYuliyaViktorovna** –Kerch State Maritime Technological University; 298309, Russia, Kerch; Candidate of Technical Sciences, Associate Professor of Machinery and Equipment for Food Production Chair; yuliyakgmtu@mail.ru |
| УДК 664.7:637.5**O.G. Chizhikova, K.V. Nizhelskaya****PROSPECTS FOR USING SPROUTED RYE FOR GERODIETICAL MEAT CHOPPED SEMI-FINISHED PRODUCTS**The results of studies on the use of sprouted rye grains in the recipe of the minced meat semi-finished product in order to create a product for gerodietical nutrition are demonstrated in this article. The chemical composition of sprouted rye, including the amino acid composition is studied. It is compared to corresponding indicators of rye flour and minced meat. The choice of sprouted rye as an ingredient in the meat-cereal semi-finished product intended for gerodietical nutrition is shown; the maximum possible dosage of sprouted grains of rye, which allows, while maintaining acceptable consumer properties of the semi-finished product, to increase its nutritional value is determined. Including the plant additives (sprouted rye grains) in minced meat has created meat-cereal semi-finished product and its amino acid composition is more than the meat meets the specifics of gerodietical nutrition.**Key words:** gerodietical, meat-cereal semi-finished product, sprouted grains, rye, amino acid composition, dietary fiber.*DOI: 10.17217/2079-0333-2017-40-51-57***Information about the authors****Chizhikova Olga Grigorevna –** Far Eastern Federal University, School of Economics and Management; 690950, Russia, Vladivostok; Candidate of Technical Sciences, Professor of Merchandising and Examination of Goods Chair; nizhelskaia.kv@gmail.com**Nizhelskaya Kseniya Vladimirovna** – Far Eastern Federal University, School of Economics and Management; 690950, Russia, Vladivostok; Postgraduate; nizhelskaia.kv@gmail.com |
| УДК [597.2/.5:504.5](262.5+62.54)**G.G. Kornienko, S.I. Dudkin, S.G. Sergeeva, L.P. Ruzhinskaya, N.I. Tsema, L.A. Bugaev, A.V. Voykina****PHYSIOLOGICAL AND BIOCHEMICAL CHARACTERISTICS OF THE AZOV AND BLACK SEA FISHES UNDERGOING ANTHROPOGENIC PRESSURE**Multi-year data on the physiological state of the main commercial species of fish living in different parts of  he Azov-Black Sea basin are presented, the materials for which were collected for the period 2007–2015. Changes in biomarkers of pollution, metabolic rate, reproductive function, condition of blood and blood-forming organs that occur in fish living in the waters contaminated with substances of different nature have been analyzed. It is shown that the risk of deterioration in the condition of fish fauna in modern habitat is insignificant, and most fish species show high adaptive capabilities.**Key words:** fish, physiological condition, reproductive system, blood and blood-forming organs, Sea of Azov, Kerch strait, pollution.*DOI: 10.17217/2079-0333-2017-40-58-66***Information about the authors****Kornienko Galina Gavrilovna –** Azov Fisheries Research Institute (AzNIIRKH); 344002, Russia, Rostov-on-Don; Doctor of Biological Sciences, Professor, Leading Researcher**Dudkin Sergey Ivanovich** – Azov Fisheries Research Institute (AzNIIRKH); 344002, Russia, Rostov-on-Don; Candidate of Biological Sciences, Docent; Head of Service of Legal Regulation of Fisheries, International and Educational Activities**Sergeeva Svetlana Grigorevna** – Azov Fisheries Research Institute (AzNIIRKH); 344002, Russia, Rostov-on-Don; Candidate of Biological Sciences; Leading Researcher; sgs1301@yandex.ru**Ruzhinskaya Lyudmila Petrovna** – Azov Fisheries Research Institute (AzNIIRKH); 344002, Russia, Rostov-on-Don; Senior Researcher**Tsema Nina Ivanovna** – Azov Fisheries Research Institute (AzNIIRKH); 344002, Russia, Rostov-on-Don; Senior Researcher**Bugaev Leonid Anatolevich** – Azov Fisheries Research Institute (AzNIIRKH); 344002, Russia, Rostov-on-Don; Head of Department**Voykina Anna Vladimirovna** – Azov Fisheries Research Institute (AzNIIRKH); 344002, Russia, Rostov-on-Don; Head of Laborator |
| УДК 639.3**E.A. Maxim, N.A. Yurina, D.A. Yurin, N.L. Machneva****METHOD OF GROWING YOUNG STURGEON WITH PROBIOTICS**The effect of the use of probiotic feed supplements for growing of young sturgeons was studied. It was found that heating of the product up to 30 minutes at 100° C in a wet form and at 120° C in a dry form does not significantly affect the survival rate of microorganisms of the probiotic group. We studied the effect of feeding probiotics on weight change, body length, dynamics of average daily gain, survival rate, condition factors, consumption and cost of feed, morphological structure, development of muscle, internal organs and body chemistry of juvenile sturgeon; we conducted histological study of the liver. Final weight of fish fed the probiotic «Prolam» increased by 5,5%, probiotic «Bacell» – by 9,1%, and the use of probiotic «Sporotermin» – 16,7%. The survival rate of the fish in the experimental groups increased when feeding juveniles probiotic «Prolam» – by 2,8%, «Bacell» – by 5,7%, «Sporotermin» – by 11,4%, «Antibak» – by 2,8%. The average daily weight gains in sterlets fed probiotics increased by 14,6–26,5%. The internal organs of fish were developed in the normal range; there was no evidence of pathological changes, judging by their appearance and histological structure in all groups of fish. The use of probiotics in compound feed for fish has a positive effect on the organism, which makes the organization of fish breeding more efficient. Production check was performed in "Sturgeon South Centre" in Yeisk, Yeisk district of Krasnodar region.**Key words**: fish breeding, sturgeon, probiotics, microflora, feeding.*DOI: 10.17217/2079-0333-2017-40-67-76***Information about the authors****Maksim Ekaterina Aleksandrovna** – North Caucasus Research Institute of Animal Husbandry; 350055, Russia, Krasnodar; Candidate of Biological Sciences**Yurina Natalya Aleksandrovna** – North Caucasus Research Institute of Animal Husbandry; 350055, Russia, Krasnodar; Doctor of Agricultural Sciences, Leading Researcher of Feeding and Physiology of Farm Animals Laboratory; skniig@skniig.ru**Yurin Denis Anatolevich** – North Caucasus Research Institute of Animal Husbandry; 350055, Russia, Krasnodar; Candidate of Agricultural Sciences, Senior Researcher of Livestock Technology Department; 4806144@mail.ru**Machneva Nadezhda Leonidovna** – Kuban State Agrarian University; 350044, Russia, Krasnodar; Candidate of Biological Sciences, Senior lecturer of the Department of Biotechnology, Biochemistry and Biophysics; machneva1982@mail.ru |
| УДК 597.556.31(265.5)**M.Y. Murasheva, A.M. Tokranov****SIZE-AGE STRUCTURE OF STONE COCKSCOMB *ALECTRIAS ALECTROLOPHUS* (STICHAEIDAE) OF THE AVACHA BAY (EASTERN KAMCHATKA)**The size-age structure of stone cockscomb *Alectrias alectrolophus* in the Avacha Bay was investigated. This species is the most numerous representative of ichthyofauna in the gravel-boulder areas of the intertidal zone of the Avacha Bay. It was shown that the species of the stone cockscomb at the age interval from 0+ to 7 years with of 30–143 mm body length and 0,3–15,9 g mass were found during the period of May to September in the tide zone. Major part of fish, however, was at the age 3+ with of 81–100 mm body length and 3–6 g mass. Seasonal and interannual dynamics of size-age structure of this species is analysed.**Key words**: stone cockscomb, size-age structure, intertidal zone, Avacha Bay, Eastern Kamchatka.*DOI: 10.17217/2079-0333-2017-40-77-85***Information about the authors****Murasheva Marya Yurevna** – Kamchatka State University by V. Bering, 683032, Russia, Petropavlovsk-Kamchatsky; Postgraduate; rossiavaslubit@gmail.com**Tokranov Alexey Mikhailovich** – Kamchatka Branch of Pacific Geographical Institute FEB RAS; 683000, Russia, Petropavlovsk-Kamchatsky; Doctor of Biological Sciences, Senior Researcher, Director, Head of Hydrobiology Laboratory; tok\_50@mail.ru |
| УДК 597.585.1**A.M. Tokranov****SPECIFIC FEATURES OF DISTRIBUTION AND SIZE COMPOSITION OF THE GRAY ROCKFISH *SEBASTES GLAUCUS* (SEBASTIDAE) IN THE NEAR KAMCHATKA WATERS OF THE SEA OF OKHOTSK**Based on studies of the years 1979–2002 data on the occurrence, spatial-bathymetric distribution and size structure of the gray rockfish *Sebastes glaucus* in the near Kamchatka waters of the Sea of Okhotsk are provided. In the summer time this representative of the family Sebastidae occurs practically over the whole study region at depths of 11 m to 200 m and water temperature near the bottom from –1,1 to 10,6°С. However, the majority of individuals of this species occur at the depths less 40 m in limit of the warm surface water mass of seasonal modification at near-bottom temperature of 6-10oC and gravel-stone grounds. The correlation between the harvesting depth and the fish size of the gray rockfish in the near Kamchatka waters of the Sea of Okhotsk has been analyzed.**Key words**: gray rockfish *Sebastes glaucus*, distribution, size structure, near Kamchatka waters of the Sea of Okhotsk.*DOI: 10.17217/2079-0333-2017-40-86-93***Information about the author****Tokranov Alexey Mikhailovich** – Kamchatka Branch of Pacific Geographical Institute FEB RAS; 683000, Russia, Petropavlovsk-Kamchatsky; Doctor of Biological Sciences, Senior Researcher, Director, Head of Hydrobiology Laboratory; tok\_50@mail.ru |
| УДК 639.2.06(571.66)**I.V. Levskaya****EFFECTIVE MECHANISMS FOR RENEWAL OF THEFISHING FLEET IN KAMCHATKA KRAI**The paper gives a critical assessment of the level of technical condition of fishing enterprises in Kamchatka Krai. Financial resources necessary to ensure investments in the renewal of the fishing fleet are analyzed. New mechanisms of State support for the fishing industry and the conditions for their use by fishing enterprises are studied.**Key words:** fishing fleet, shipbuilding, ship leasing, investment quotas.*DOI: 10.17217/2079-0333-2017-40-94-99***Information about the author****Levskaya Irina Vladimirovna** – Kamchatka State Technical University; 683003, Russia, Petropavlovsk-Kamchatskу; Candidate of Economic Sciences; Associate Professor of Economics Chair;shainaira@rambler.ru  |
| УДК 330.522.2:639.2**E.G. Mikhaylova****FEATURES OF EFFICIENCY ASSESSMENT OF FIXED ASSETS IN FISH BRANCH**The features of the fishing industry that affect the valuation of fixed assets, including the most important part of them - the fleet, are considered. The system of indicators to assess the effectiveness of using the fixed assets in the fishing industry, taking into account the parameters of sustainable development is proposed. The indicators reflecting the types of efficiency such as time use, industrial, economic, ecological and social efficiency are considered. The characteristic of information security of calculations is given. There is a lack of information sources for individual indicators. The main problems in the comparability of statistical data are shown. The horizontal and vertical disparity of statistical data is revealed.**Key words:** efficiency, fixed assets, core funds, fishing, sustainable development, fishing fleet, fishing industry, capital productivity, return on assets.*DOI: 10.17217/2079-0333-2017-40-100-110***Information about the author****Mikhaylova Elena Gennadevna** – Kamchatka branch of Pacific Geographical Institute FEB RAS; 683000, Russia, Petropavlovsk-Kamchatsky, Candidate of Economic Sciences; Associate Professor, Senior Researcher of Ecological and Economic Research Laboratory; rozotop@mail.ru |