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| УДК 551.2.01+51-7  **A.A. Dolgaya, A.V. Vikulin, A.I. Gerus**  **RESEARCHING THE REGULARITIES OF GEODYNAMIC ACTIVITY  BY THE METHODS OF MATHEMATICAL MODELLING**  The paper presents the results of research of time, space-time and energy regularities of geodynamic process that takes place within the tectonically active regions of the planet. With the help of methods developed by the authors it has been found seismicity and volcanism have the properties of cyclicity (quasi-periodicity) with  a common period *T*0≈250 years. Also migration is demonstrated to be a characteristic feature of the planet's seismic and volcanic activity. We have proposed the wave model of geodynamic process that is based on revealed general concepts about periodicity of seismic and volcanic processes, their spatio-temporal properties (migration) and about the conserving vector-like value which is sensitive to the direction of geodynamic process.  **Key words:** mathematical modeling, Markov processes, spectral analysis, seismicity, volcanism, geodynamics.  *DOI: 10.17217/2079-0333-2016-38-6-15*  **Information about authors**  **Dolgaya Anna Andreevna –** Institute of Volcanology and Seismology of Far Eastern Branch of Russian Academy of Science; 683006, Russia, Petropavlovsk-Kamchatsky; Researcher of Geodynamics and Geophysics Laboratory; Kamchatka State Technical University; 683003, Russia, Petropavlovsk-Kamchatsky; Senior Lecturer of Information Systems Chair; ann-dolgaya@yandex.ru  **Vikulin Aleksandr Vasilevich** – Institute of Volcanology and Seismology of Far Eastern Branch of Russian Academy of Science; 683006, Russia, Petropavlovsk-Kamchatsky; Leading Researcher of Geodynamics and Geophysics Laboratory; Kamchatka State Technical University; 683003, Russia, Petropavlovsk-Kamchatsky; Doctor of Physical and Mathematical Sciences, Professor of Information Systems Chair; vik@kscnet.ru  **Gerus Artyom Igorevich –** Institute of Volcanology and Seismology of Far Eastern Branch of Russian Academy of Science; 683006, Russia, Petropavlovsk-Kamchatsky; Senior Laboratory Assistant of Geodynamics and Geophysics Laboratory; Vitus Bering Kamchatka State University; 683032, Russia, Petropavlovsk-Kamchatsky; Postgraduate; gerus@kscnet.ru |
| УДК 621.313.333 + 629.5  **A.A. Marchencko, S.Y. Trudnev**  **PILOT STUDIES ON THE PROCESS OF ARTIFICIAL LOADING  OF SHIP INDUCTION MOTORS**  The results of experiments to load induction motors under operational conditions are presented in this article.  The authors have developed computer models. Their adequacy has been checked under the nominal conditions by the comparison of the model parameters and electric motor ratings. The problem of computer modeling is the lack of possibility to account all electromechanical processes of the electrical machine, one of which is the recovery of electric energy. For obtaining the specified parameters of the process of artificial loading the laboratory machine which is suitable for transmitting electric power to the mains has been designed and assembled.  Pilot studies of the process of artificial loading confirm obtaining current and torque of the induction motor which are equal to the ratings. It demonstrates the possibility to carry out tests without mechanical loading on the machine shaft.  **Key words**: induction motor, power, reverse mode, rated current, regenerative braking, torque, switching, frequency.  *DOI: 10.17217/2079-0333-2016-38-16-22*  **Information about authors**  **Marchencko Aleksey Aleksandrovich** – Kamchatka State Technical University; 683003, Russia, Petropavlovsk-Kamchatsky; Senior Lecturer of Electrical and Radio Equipment of Ships Chair; [Marchencko29@mail.ru](mailto:Marchencko29@mail.ru)  **Trudnev Sergey Yurevich** – Kamchatka State Technical University; 683003, Russia, Petropavlovsk-Kamchatsky; Acting Dean of Maritime Department; trudnev@mail.ru |
| УДК 664.951.037.5: 639.27  **E.N. Kim**  **TECHNOLOGY OF FROZEN CRAB BASED ON THE USE OF ULTRASONIC TREATMENT**  It has been experimentally proved that the effect of ultrasonic processing intensity of Kamchatka crab limbs on the saturation rate of muscle tissue with phosphorus oxide. The total impact of ultrasound and polyphosphates on saving water-holding capacity of limb muscle tissue and also vitamin B12 and nonprotein nitrogen during thermal processing of raw materials is shown. The rational parameters of ultrasonic treatment on king crab species when using polyphosphates are set. Frozen crab technology using polyphosphate and ultrasound is developed and tested under production conditions.  **Key words**: crab, muscle tissue, polyphosphates, ultrasound, phosphorus oxide, water holding capacity, non-protein nitrogen, yield.  *DOI: 10.17217/2079-0333-2016-38-23-28*  **Information about author**  **Kim Eduard Nikolaevich** – Far Eastern State Technical Fisheries University, 690950, Russia, Vladivostok, Doctor of Technical Science; Professor; kiman@mail.ru |
| УДК 637.3 + 664.955.7 : 639.211.2  **A.A. Kostenko, I.N. Kim**  **PRACTICAL APPLICATION OF THE TECHNOLOGY OF TOFU WITH**  **THE POLYNUCLEOTIDE SALMON MILT COMPLEX**  This article describes the results of studies on the development of the soy cheese recipe with the addition of the polynucleotide salmon milt complex. It is proved that such cheese has high organoleptic characteristics which are close to the traditional product.  **Key words**: soy cheese, polynucleotide complex, milt of salmon, organoleptic characteristics, profilograms.  *DOI: 10.17217/2079-0333-2016-38-29-35*  **Information about authors**  **Kostenko****Alina Aleksandrovna** – Far Eastern State Technical Fisheries University; 690087, Russia, Vladivostok; Assistant of Deputy Vice President for Academic Affairs and Research on Science; alya91@bk.ru  **Kim Igor Nikolaevich** – Far Eastern State Technical Fisheries University; 690087, Russia, Vladivostok; Vice Rector for Academic Affairs and Research on Science; kimin57@mail.ru |
| УДК 664.952 + 593.9  **T.N. Pivnenko, N.N. Kovalev, G.N. Kim, Y.M. Pozdnyakova, A.D. Pertzeva**  **SUBSTANTIATION OF THE TECHNOLOGY OF BIOLOGICALLY ACTIVE SUPPLEMENTS WITH SEA CUCUMBERS USING** **ULTRASONIC TREATMENT**  The technology of receiving the oily extract from holothurian internals is founded. The extract contains carotenoids and triterpen glycosides as biologically active agents. Modes of ultrasonic processing of raw materials such as power of ultrasonic effect, temperature, process duration are justified. The dependence of extraction of biologically active agents on the process parameters is shown. According to the developed method after homogenizing fresh or frozen interiors have been treated with ultrasound at 20-50 Hz, 250-300 W for 5-10 minutes. The apparatus IKASONIC U 50 has been used for ultrasonic processing of extracts. The received preparations having antioxidant and immunoprotective properties are offered as a dietary supplement, an additional source of carotenoids, triterpen glycosides, vitamin E and polyunsaturated fatty acids.  **Key words:** holothurians, carotenoids, triterpen glycosides, ultrasonic treatment, dietary supplement.  *DOI: 10.17217/2079-0333-2016-38-36-43*  **Information about authors**  **Pivnenko** **Tatyana Nikolaevna** – Far Eastern State Technical Fisheries University; 690087, Russia, Vladivostok; Doctor of Biological Sciences, Professor, Chief Researcher of Research Center «Marine Biotechnologies»; tnpivnenko@mail.ru  **Kovalev Nicolay Nicolaevich** – Far Eastern State Technical Fisheries University; 690087, Russia, Vladivostok; Chief Researcher of Research Center «Marine Biotechnologies»; kovalevnn61@yandex.ru  **Kim** **Georgiy Nikolaevich** – Far Eastern State Technical Fisheries University; 690087, Russia, Vladivostok; Doctor of Technical Sciences, Professor, Rector of Far Eastern State Technical Fisheries University; festfu@mail.ru  **Pozdnyakova** Yuliya Mikhailovna – Far Eastern State Technical Fisheries University; 690087, Russia, Vladivostok; Candidate of Technical Sciences, Director of Research Center «Marine Biotechnologies»; pozdnyakova.julia@yandex.ru  **Pertzeva** **Anna Dmitrievna** – Far Eastern State Technical Fisheries University; 690087, Russia, Vladivostok; Researcher of Research Center «Marine Biotechnologies»; 50@mail.ru |
| УДК 661.123 :+ 582.272  **A.M. Rogov, I.A. Kadnikova, N.M. Aminina**  **INFLUENCE OF ENZYME TREATMENT OF *SAСCHARINA JAPONICA*  ON ITS CHEMICAL COMPOSITION**  The alginase activity of the enzyme complexes of *Strongylocentrotus intermedius* and *Cucumaria japonica* viscera was determinated. The hydrolytic action of the enzyme complexes of the echinoderm innards on *Saccharina japonica* polysaccharides at pH 8 was established. The differences of the enzymatic hydrolysis of basic compounds of the algae at 30–45 0C were detected. The effect of *S.japonica* enzyme treatment on its chemical composition was studied.  **Key words:** *Saccharina japonica*, alginase activity, enzyme complex, viscera, echinoderms, chemical composition.  *DOI: 10.17217/2079-0333-2016-38-44-50*  **Information about authors**  **Rogov Aleksandr Maksimovich** – Pacific Scientific Research Fisheries Centre; 690091, Russia, Vladivostok; Junior Researcher of Seaweed Raw Material Safety and Quality Laboratory; aleksandr.rogov@tinro-center.ru  **Kadnikova Irina Arnoldovna** – Pacific Scientific Research Fisheries Centre; 690091, Russia, Vladivostok, Doctor of Technical Sciences; Senior Scientist, Leading Researcher of Seaweed Raw Material Safety and Quality Laboratory; kadnikova@tinro.ru  **Aminina Natalya Mikhailovna** – Pacific Scientific Research Fisheries Centre; 690091, Russia, Vladivostok; Candidate of Biological Sciences; Senior scientist, Head of Seaweed Raw Material Safety and Quality Laboratory; aminina@tinro.ru |
| УДК 582.272.(265.5)  **A.V. Klimova, T.A. Klochkova, N.G. Klochkova**  **FINDING TYPE SPECIMENS OF SPECIES FROM THE GENUS ALARIA GREVILLE DISTRIBUTED IN THE MARINE FLORA OF KAMCHATKA**  This paper describes taxonomic problems with type specimens of the representatives of the genus *Alaria* from Kamchatka. We propose lectotypes for species *Alaria angusta* and *Alaria marginata* that were selected from the authentic specimens stored in herbarium collections of the Museum of Evolution of Uppsala University and Botanical Institute of K.V. Komarov of Russian Academy of Sciences, respectively. For *Alaria ochotensis*, new information on the storage place of the holotype specimen is provided. Photographic images of type specimens of three discussed species are shown for the first time.  **Key words:** Alariaceae, *Alaria angusta*, *Alaria marginata*, *Alaria ochotensis*, type specimen, type locality, Kamchatka, Northern Pacific area.  *DOI: 10.17217/2079-0333-2016-38-51-62*  **Information about authors**  **Klimova Anna Valerevna –** Kamchatka State Technical University; 683003, Russia, Petropavlovsk-Kamchatskу; Researcher of Science and Innovation Department; annaklimovae@mail.ru  **Klochkova Tatyana Andreevna** – Kamchatka State Technical University; 683003, Russia, Petropavlovsk-Kamchatskу; Candidate of Biological Sciences; Doctor of Philosophy in Biology (Ph.D.); Associate Professor of Ecology and Nature Management Chair; tatyana\_algae@mail.ru  **Klochkova Nina Grigorevna** – Kamchatka State Technical University; 683003, Russia, Petropavlovsk-Kamchatskу; Doctor of Biological Sciences; Director of Center for Scientific Education, Research and Innovation Projects; ninakl@mail.ru |
| УДК 594.35  **T.A. Klochkova, G.H. Kim**  **SENESCENCE AND PATHOHISTOLOGICAL CHANGES IN cells of the MARINE SACOGLOSSAN MOLLUSKS from the genus *elysia* risso, 1818**  This paper describes the event of aging and pathohistological changes, which occurred in the cells of the marine sacoglossan mollusks *Elysia atroviridis* and *E. nigrocapitata* (Opisthobranchia). Our results contradicted the previously expressed opinion that (1) after laying of the eggs, representatives of the genus *Elysia* exhibit synchronized death due to the disease caused by a retrovirus living in their cells, and that (2) the synchronized death of the whole population is caused by the apoptosis.  **Key words:** *Elysia*, sacoglossan mollusks, green algae, kleptoplasty, autolysosome, pathohistology, senescence, transmission electron microscope.  *DOI: 10.17217/2079-0333-2016-38-63-73*  **Information about authors**  **Klochkova Tatyana Andreevna –** Kamchatka State Technical University; 683003, Russia, Petropavlovsk-Kamchatskу; Candidate of biological sciences, Doctor of Philosophy in Biology (Ph.D.), Associate Professor of Ecology and Nature Management Chair; tatyana\_algae@mail.ru  **Kim Gwang Hoon** – Kongju National University, Department of Biology; Kongju 314–701, Korea; Doctor of Phylosophy in Biology (Ph.D.), Professor, Dean of College of Natural Sciences; ghkim@kongju.ac.kr |
| УДК 66.02:639.4  **N.N. Kovalev, G.N. Kim, E.V. Mikheev, Y.M. Pozdnyakova, R.V. Esipenko**  **RESEARCHING THE SEASONAL DYNAMICS OF TECHNOCHEMICAL COMPOSITION  AND ENZYME ACTIVITY IN SCALLOP TISSUE**  The researches on the content of protein, lipids and minerals in mantle and adductor muscle of scallop (*Patinopecten yessoensis*) were conducted. The analysis of fractional composition of scallop muscle protein has shown seasonal variation during the spring and autumn period. The scallop muscle tissues mainly contain water and alkali-soluble proteins. The level of the quantitative content of which varies during the summer season. The highest content of the studied proteins in the scallop muscle was observed in May and June. The dynamics in the indicators of protein fractional composition coincides with the period of the reproductive cycle of mollusks. The activity of acid, alkaline and neutral proteases in different tissues and organs of scallops: in gonads, hepatopancreas and stalk scallop is determined. Gonads and hepatopancreas of scallop are characterized by high proteolytic activity. The increase in the proteolytic activity is associated with physiological and biochemical processes of gonad maturation and can be used as an additional criterion for assessing their maturity. Insignificant activity of acid and alkaline proteases in some summer months is found in the hemolymph of molluscs. The research of the cholinesterase activity of the mollusk hemolymph is conducted. The analysis of seasonal dynamics of cholinesterase and proteolytic activity in the hemolymph of the mollusk has shown the dependence on gametogenesis and spawning stages.  **Key words:** scallop, adductor muscle, mantle, hemolymph, technochemical composition, cholinesterase, proteases.  *DOI: 10.17217/2079-0333-2016-38-74-80*  **Information about authors**  **Kovalev Nicolay Nicolaevich** – Far Eastern State Technical Fisheries University; 690087, Russia, Vladivostok; Chief Researcher of Research Center «Marine Biotechnologies»; kovalevnn61@yandex.ru  **Kim** **Georgiy Nikolaevich** – Far Eastern State Technical Fisheries University; 690087, Russia, Vladivostok; Doctor of Technical Sciences, Professor, Rector of Far Eastern State Technical Fisheries University; festfu@mail.ru  **Mikheev** **Evgeniy Valerevich –** Far Eastern State Technical Fisheries University; 690087, Russia, Vladivostok; Candidate of Technical Sciences, Senior Researcher of Research Center «Marine Biotechnologies»; zhenyasuper79@mail.ru  **Pozdnyakova Yuliya Mikhailovna** – Far Eastern State Technical Fisheries University; 690087, Russia, Vladivostok; Candidate of Technical Sciences, Director of Research Center «Marine Biotechnologies»; pozdnyakova.julia@yandex.ru  **Esipenko Roman Vladimirovich –** Far Eastern State Technical Fisheries University; 690087, Russia, Vladivostok; Equipment Engineer of Research Center «Marine Biotechnologies»; azt@bk.ru |
| УДК 639.3 (571.64)  **A.V. Litvinenko, D.S. Popova**  **THE EFFICIENCY OF SOME HATCHERIES IN SAKHALIN ACCORDING  TO THE RESULTS OF MASS MARKING OF PACIFIC SALMON**  Otolithe tagging of salmon can be used for different purposes. The scientific application of this technique mainly focuses on the differentiation of hatchery juveniles and young fish of natural origin during their joint downstream migration in rivers, in estuaries, in the early period of feeding at sea and finally in the open ocean. In addition,  the results allow to evaluate the performance of salmon hatcheries and the efficiency of artificial reproduction.  As a result of years of mass marking at the salmon hatcheries in Sakhalin region it has been found that the basis of the spawning part of the population in Sokolnikovskiy hatchery is fish aged 4+, "Naiba" of Sokolovsky shop is fish aged 3+. The return rate of certain age groups in Sokolnikovskiy chum salmon hatcheries were 2+, from 0 to 0,01%, 3+ – 0,1% to 0,6% of 4+ – 0,2 to 0,7% and group 5+ –0,1%. For the period of these studies the fish aged 2+,3+,4+ and 5+, from 0,01% to 0,02%, from 0,2 to 3,4%, 0,2% and 0,1% respectively have returned to Sokolovsky shop (LRK "Naiba"). The data on the return of the first marked generation of hatchery chum salmon will be completed in 2016.  **Key words**: otoliths, mass marking, return rate, dry tagging, thermal tagging.  *DOI: 10.17217/2079-0333-2016-38-81-89*  **Information about authors**  **Litvinenko Anna Vladimirovna –** Sakhalin State University; 693008, Russia, Yuzhno-Sakhalinsk; Candidate of Biological Sciences, Associate Professor of Ecology, Geography and Natural Resources Chair; vesna271@rambler.ru  **Popova** **Darya** **Sergeevna** – Sakhalin Interregional Veterinary Laboratory; 693003, Russia, Yuzhno-Sakhalinsk; Ichthyologist of Parasitology Laboratory; fgu\_sakhmvl@mail.ru |
| УДК 332.1  **S.G. Bilchinskaya, I.N. Syulzhyn, Y.A. Chernyavskiy, E.V. Shabinskaya**  **DOUBLE-COMPONENT REGRESSION ANALYSIS OF THE INFLATION COMPONENT  IN SYSTEMATIC INDICATORS OF REGIONAL ECONOMIC ACTIVITY**  The subject of the regression analysis is the system statistical data of regional economic development, characterizing the overall inflation in comparison with the growth (decline) in wages for the period from 01.01.2015 till 30.06.2016. The regression dependences are given according to "wages – time"; "wages without inflationary component – time" and "general inflation – time." The calculation of these observations has been made for the two time periods: the first one is for 2015 year; the second one is from 1.01.2016 till 30.06.2016. The compliance of the above linear regression equations with the used statistics is estimated by coefficients of determination. The necessity to use regression methods for multivariate analysis of inflation is identified. Such methods allow to evaluate the statistical differences between linear and non-linear relationships.  **Key words:** regression analysis, inflation rate, economy of the region, average salary.  *DOI: 10.17217/2079-0333-2016-38-90-99*  **Information about authors**  **Bilchinskaya Svetlana Gennadevna** – Academy of Public Administration under the aegis of the President of the Republic of Belarus; 220007, Belarus, Minsk; Candidate of Physical and Mathematical Sciences, Associate Professor, Director of the IT Centre; [Bilchinskaya\_SG@pac.by](mailto:Bilchinskaya_SG@pac.by)  **Syulzhyn Ivan Nikolaevich** – Belarusian State University; 220030, Belarus, Minsk; Assistant of Intellectual Systems Chair; ivan.syulzhin@yandex.ru  **Chernyavskiy Yuriy** **Aleksandrovich** – Belarussian State University of Informatics and Radio electronics; 220037, Belarus, Minsk; Candidate of Technical Science, Dean of Advanced Training and Retraining Department of Institute of Information Technologies; chernyavskiy@bsuir.by  **Shabinskaya Elena Vladimirovna –** A.N. Sevchenko Institute of Applied Physics Problems of Belarusian State University; 220045, Belarus, Minsk; Candidate of Technical Science; Associate Professor, Leading Researcher of Computer Systems Laboratory; shabinskaya@rambler.ru |
| УДК 338.43:639.2 +519.866  **E.G. Mikhaylova, M.U. Dyakov**  **EFFICIENCY ASSESSMENT OF RESOURCE-SAVING IN FISH INDUSTRY  ON THE BASIS OF SIMULATION MODELLING**  The article describes the results of the simulation model allowing to evaluate possible strategic directions of resource saving in the processing of aquatic biological resources. Absolute and relative measures of the experiment results by various options of humpback salmon and pollock processing are estimated.  **Key words:** simulation model, efficiency, resource-saving, waste, fishing industry, sustainable development.  *DOI: 10.17217/2079-0333-2016-38-100-108*  **Information about authos**  **Mikhaylova Elena Gennadevna** – Kamchatka Branch of Pacific Geographical Institute of Far Eastern Branch of Russian Academy of Sciences; 683000, Russia, Petropavlovsk-Kamchatskу; Candidate of Economic Sciences, Associate Professor, Senior Researcher of Ecological and Economic Research Laboratory; [rozotop@mail.ru](mailto:rozotop@mail.ru)  **Dyakov Maksim Yurevich** – Kamchatka Branch of Pacific Geographical Institute of Far Eastern Branch of Russian Academy of Sciences; 683000, Russia, Petropavlovsk-Kamchatskу; Candidate of Economic Sciences, Senior Researcher of of Ecological and Economic Research Laboratory, ekftig@mail.ru |
| УДК 336.774  **G.A. Sakhabieva**  **ABOUT THE SCORING METHOD OF ASSESSING THE CUSTOMER CREDITWORTHINESS**  Banks face loss of funds because of loan defaults. In order to manage credit risks effectively, it is necessary to be able to measure them. One of the promising methods of credit risk assessment is the scoring method for the assessment of customer creditworthiness. The article suggests using the modern economic-mathematical methods to analyze the creditworthiness of borrowers and to increase the client base of reliable customers.  **Key words:** credit risk, economic-mathematical methods, system of decision support, software implementation.  *DOI: 10.17217/2079-0333-2016-38-109-115*  **Information about author**  **Sakhabieva Galina Aleksandrovna –** Samara National Research University; 443086, Russia, Samara; Сandidate of Physical and Mathematical Sciences, Associate Professor, Аssociate Professor of Mathematics and Business Informatics Chair; galinasakh@mail.ru |
| УДК 323.2:930  **А.О. Shulikov**  **ECONOMIC AND POLITICAL FACTORS INFLUENCING  ON THE CONSOLIDATION OF POWER ELITES IN RUSSIA’S MODERN HISTORY**  The article describes the characteristics of the main socio-economic and political factors that have contributed to the fragmentation and consolidation of Russian economic and political elite. The analysis of the stages and the characteristics and the conditions of these processes are provided. Suggestions for their further development are formulated  **Key words:** elite, the federal center, President of the Russian Federation, political activities, political actor, political consolidation, fragmentation, financial and economic assets.  *DOI: 10.17217/2079-0333-2016-38-116-125*  **Information about author**  **Shulikov Aleksey Olegovich** – Kamchatka State Technical University; 683003, Russia, Petropavlovsk-Kamchatskу; Senior Lecturer of Management Chair; Shulikov\_a@mail.ru |