PROBLEMS OF FISHERIES

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CONTENTS

INTRODUCTION OF THE RED KING CRAB INTO THE BARENTS SEA AND ITS IMPACT ON THE ECOSYSTEM (A REVIEW). 4. FISHERIES AND SOCIO-ECONOMIC ASPECTS

© 2014 y. A.G. Dvoretsky

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Stock dynamics of the red king crabs and socio-economic aspects of their introduction in the Barents Sea are discussed in the paper. New commercially important fishery target had a number positive consequences including profits sale of the crab, development of local economics, tourism and aquaculture. An unavoidable negative consequence was uncontrolled illegal crab fishing. In general, introduction of the red king crab has no strongly pronounced
negative impacts for the ecosystem of the Barents Sea.

Keywords: red king crab, Barents Sea, introduction, socio-economic consequences.

Distribution of rare and vulnerable species of fish and cyclostomes in the reservoirs of Vologda region

© 2014 y. A. F. Konovalov, M. Ya. Borisov, N. L. Bolotova

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Modern and historical materials on the distribution of rare and vulnerable species of fish and lamprey in the reservoirs of the Vologda region were generalized in the article. The distributions of species in the region were researched for basins of the Caspian, White and Baltic Seas. The changes of population abundance of rare and vulnerable fish and lamprey were analyzed within the boundaries of species areas.

Keywords: rare and vulnerable fish and lamprey, distribution, basin, White, Caspian, Baltic Seas, Vologda region.

THE FISH POPULATION OF THE SMALL RIVERS OF THE UPPER DON BASIN. I. GENERAL CHARACTERISTIC AND DETERMINATIVE FACTORS

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In total 34 species in ichthyofauna of Upper Don basin small rivers are met. At the analysis of the fish population of the small rivers three main clusters from which in the first the rivers proceeding on the Oka-Don plain are presented mainly, and in two others clusters – across Central Russian upland are allocated. According to dominating species the first cluster can be characterized as roaches-Amur bitterling, and others two – bleak - Amur bitterling -
common minnow and common minnow only. It allows to assume that strength of influence of various ecological factors on specific structure of the fish population in the two areas is various.

Keywords: fish population, percentage in population, basin, Upper Don, small rivers.

THE FISH POPULATION OF THE SMALL RIVERS OF THE UPPER DON BASIN. II. THE FACTORS OPERATING IN VARIOUS OROGRAPHICAL AREAS

© 2014 y. V. P. Ivanchev, E. Yu. Ivancheva, V. S. Sarychev*, V. G. Tereshchenko**

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The analysis of features of the fish population distribution of the Central Russian upland and the Oka-Don plain small rivers under the influence of various factors of environment is carried out. All analyzed factors influence formation of the fish population of the small river on Central Russian upland in various degree significant (speed of a current, nature of a ground, bed width etc.), except flood-plain width. Speed of a current and nature of a ground have the greatest value. On the Oka-Don plain for formation of the fish population of the small river all factors are significant including flood-plain width.
Keywords: fish population, percentage in population, basin, Upper Don, small rivers.

SOME Bioecological peculiarities of water bodies with different forms of fisheries

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An estimation of some bioecological processes, connected with functioning microbial communities in water bodies of different types and various forms of fisheries (extensive, semiintensive, intensive and industrial, has been carried out. Characteristics of microbiological niches for a number of fish-farming water objects, trends of destructive processes, providing favourable water conditions for fish cultivation, have been given. On the example of sestonconsuming fish, the role of bacterioplankton and detritus in obtaining fish-farming production has been shown.
Keywords: commercial fish-farming, ecological niches of microorganisms, destruction, selfpurification of water bodies, detritus, bighead carp.

MATURATION OF MALES IN SOME SPECIES OF DEEP-WATER SNOW CRABS IN THE SAKHALIN-RURIL AREA

© 2014 y. E. R. Perveeva, S. D. Bukin

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The objects for study are Snow crabs *Chionoecetes angulatus* and *C. japonicus* inhabiting the waters of Sakhalin and Kuril Islands. The data were collected in 2000–2007. The purpose of the work was to describe particular features of maturity and dependences between chela size and carapace width during maturation. The curve parameters of chela height-carapace width dependence are calculated for males of both crab species, certainty of differences of regression parameters for mature and immature males is estimated by years for each species and between species from different sampling areas.
Keywords: Chionoecetes angulatus, Chionoecetes japonicus, allometry; terminal molt, immature and mature males, wide- and narrow-dactyl males.

The long -term dynamics of fish community species structure according to the records of experimental trawl surveys in the Curonian lagoon of the Baltic sea

© 2014 y. M. B. Alexandrova

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The long-term dynamics of fish community structure and the species composition according to the records of experimental trawl surveys which had been conducted during the period 1959– 2011 in the Curonian lagoon were analyzed. 22 species of fishes and one of cyclostomes belonging to 11 families were found in the catches composition. Bream and pike-perch form the basis of the catches during the study period. The changes in the fish community species structure related both to the influence of commercial fishing and to natural causes were observed.
Keywords: species structure, fish community, Curonian lagoon, experimental trawl survey.

THE PHYSIOLOGICAL AND BIOCHEMICAL ASPECTS OF FORMATION OF SPAWNING POPULATIONS OF ROACH IN MODERN CONDITIONS OF THE VOLGA-CASPIAN

© 2014 y. G. F. Metallov, E. N. Ponomareva, P. P. Geraskin*, A. V. Kovaleva

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As a result of long term studying of the physiological and biochemical status of roach populations in modern environmental conditions of Volga-Caspian region it was revealed that breeders has a significant shortage of lipids and protein during prewintering and spawning periods, determined the level of sexual products development, the success of spawning migration and, respectively, the commercial catches. The minimal level of fat, limiting its spawn migration, was determined as a result of studying of physiological status of breeders. The way of new data integration to the method of evaluation of total legal catch with aim of its further improvement by the specialists of catch's statistics was offered.
Keywords: roach, ecology, pollution, nutrition, physiology, commercial stock, spawning.

ILLEGAL FISHING FOR ATLANTIC SALMON *SALMO SALAR* IN THE LOWER TULOMA RESERVOIR CATCHMENT

© 2014 y. I.V. Samokhvalov, S.V. Prusov, A.V. Zubchenko

Knipovich Polar Research Institute of Marine Fisheries and Oceanography, Murmansk, 183038
Illegal fishing for Atlantic salmon *Salmo salar* in the Lower Tuloma reservoir catchment is described on the basis of the data on tagging of adult salmon. Distribution of illegal catches in the catchment and selectivity of fishing gears are estimated. Obtained data can be used as a basis for estimates of illegal catches and for development of recommendations on fisheries regulations.
Keywords: Atlantic salmon, illegal fishing, tagging, migration.

PECULIARITIES OF GOODS BREEDING THE RUSSIAN STURGEON IN POLYCULTURE WITH PLANTS-EATING FISHES IN CONDITIONS OF CARP FISH-BREEDING FARMS OF SOUTH KAZAKHSTAN

© 2014 y. N. S. Badryzlova, E.V. Fedorov, S. K. Koyshibaeva

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The database of productive potential of two- years-old russian sturgeon according to the breeding in ponds in South of Kazakhstan are presented in this article. The results of breeding the russian sturgeon in monoculture and polyculture with grass carp and silver carp are shown. The comparative price of fish-breeding and biological database of two-year-old of Russian sturgeon, which bred in polyculture with grass carp and silver carp, are given. Dynamic of temp of growth of russian sturgeon which had an age from two-years before five-years is presented. The possibility of principle of breeding the russian sturgeon in adapted ponds in polyculture together with grass carp and silver carp in conditions offish-breeding farms in South of Kazakhstan is shown.
Keywords: sturgeon fishes, russian sturgeon, potential of growth, breeding in monoculture, breeding in polyculture, adapted ponds.

Determination of the abundance of salmon by catch data of drift net

© 2014 y. A. A. Yarzhombek, A. A. Abramov

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For quantitative determination of the abundance of salmon (fishes per km^2) by data of drift net catches (fishes per one net per hover) was used a comparison with the data of trawl catches at rate of 0,5 catchability. An empirical formula of translation proposed: *abundance* (fishes per km^2) = 42 *catch* (fishes per one net per hover). It is shown, that the high abundance of salmon in July-August in the water area of the First Kuril Strait due to spawning migration and concentration of fishes in the narrow strait.
Keywords: salmon, catch, abundance, net, trawl.

HYDROACOUSTIC RESEARCHES OF DISTRIBUTION AND STOCKS OF SEAWEED AHNFELTIA TOBUCHINSKY *AHNFELTIA TOBUCHIENSIS* IN THE GREAT PETER BAY

© 2014 y. M. Yu. Kuznetsov, L. V. Giltsova, I. A. Ubarchuk, E. V. Syrovatkin

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It is shown that by means of digital echo sounder Simrad EY60 it is possible to measure with high resolution the height of algae ahnfeltia tobuchinsky layer and layer density on its backscattering ability by a method of echo integration. The regression dependence of nautical area scattering

coefficient s_A measured by echo sounder from the density of algae is defined. Estimations of spatial distribution and a biomass of ahnfeltia in various areas of its habitation in the Great Peter bay by a hydroacoustic method are received.
Keywords: algae, echo sounder, hydroacoustic method, height of layer, density, graduation, biomass of ahnfeltia.

TO A TECHNIQUE OF DEFINITION OF AGE OF THE BREAM *ABRAMIS BRAMA* L. ON VERTEBRAS

© 2014 y. A. V. German, E. A. Zabotkina

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Article is devoted to methodical aspects of definition of age of fishes. For karp fishes, in particular the bream, the age on slice device Veberov's first vertebra is offered to define. The technique of preparation of preparations, examples of reading annual rings, advantages of an offered method in comparison with existing techniques of definition on scales and body vertebras are given.
Keywords: bream, Weberian apparatus, the definition of age.

OPTIMIZATION OF PLANNED TRAWLING ALLOCATION AMONG THE STRATA AND MINIMUM SAMPLE SIZE ESTIMATION FOR RUSSIAN STURGEON (*ACIPENSER GUELDENSTAEDTII*) IN THE CASPIAN SEA (AREA OF RESPONSIBILITY OF THE RUSSIAN FEDERATION)

© 2014 y. T. I. Bulgakova, V. K. Babayan, D. A. Vasilyev, A. I. Mikhailov, I. A. Safaraliev*

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**Caspian Fisheries Research Institute, Astrakhan, 41400*

Methodological aspects of survey planning and processing with an example for the Northern Caspian Sea sturgeon (*Acipenser gueldenstaedtii*) are continued to be considering. Questions of optimal trawling allocation among the strata and minimum simple size are considered.
Keywords: stratificated survey, Russian sturgeon, the Caspian Sea, stock assessment.

Periodic ordering of technology development of natural resources

© 2014 y. B.Yu. Vorotnikov

The problem of finding common patterns in the structure of the processing technology of various natural sources of raw materials. Based on systematic process developed by the author proposed a periodic system of technological evolution of natural raw materials.
Keywords: cognitive systems, natural resources management, periodization of the evolution of technology.

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REVIEWS

BIOLOGY OF COMMERCIAL HYDROBIONTS

AQUACULTURE AND ARTIFICIAL REPRODUCTION

REPRODUCTION OF INCONNU *STENODUS LEUCICHTHYS NELMA* FROM KUBENSKOE LAKE

© 2014 y. A. A. Lyutikov

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The history of artificial cultivation of inconnu *Stenodus leucichthys nelma* from the first works in the fifties of the last century till the present days is summarized. The revue comprises data on the development of spawn incubation biotechnology, fry rearing in ponds, rearing lakes, and on industrial conditions. The data on acclimatization of inconnu from Kubenskoye lake as well as it's hybridization with other Coregonidae with the objective of commercial rearing are present.

Keywords: inconnu, reproductive history, incubation of eggs, fry rearing, industrial technology.

FEATURES OF THE SPECIES OF FISH AND FISHERIES ONDOZERO RESERVOIR (Karelia)

© 2014 y. N. S. Cherepanova*, A. P. Georgiev*,, D. E. Ivanter***

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In 1955, the last century as a result of regulation of the r. Onda was created reservoir for floating timber with seasonal adjustment. Under the new conditions associated with changes in water level, the number of changes occur in the nucleus of the fishing community, primarily by reducing the number of whitefish, grayling. This paper presents the materials describing the information about the habitat of aquatic biological resources, including fish community of one of the major water bodies of Karelia – Ondozero reservoir.

Keywords: Karelia, Ondozero reservoir, habitat, species composition of fish fishing.

GROWTH AND PUBERTY OF STERLET *ACIPENSER RUTHENUS* IN VOLZHSK AND KAMSKY REACHES OF THE KUIBYSHEV WATER RESERVOIR

© 2014 y. V. A. Kuznetsov, V.V. Kuznetsov

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Growth and sterlet puberty in Kamsky and Volzhsk reaches of the Kuibyshev water reservoir in the early 1990, 1993 and in 2006 is surveyed. It is shown that “obtuse-snout” specimen sterlet several overtake advance in growing “sharp-snout” the form a little, and the fishes who are at II fatty stage of a puberty grow faster puberal animal unit. Sterlet puberty is strongly extended in time and the lobe of the fishes who are at II fatty stage of a puberty reduce. For onservation of stock of sterlet it is required its artificial reproduction with the account different quality population frame.
Keywords: sterlet, growth, puberty, different quality, water reservoir.

THE COMPARATIVE CHARACTERISTIC MORPHOLOGICAL SIGNS OF THE SPAWNER THE CASPIAN SEA *ACIPENSER NUDIVENTRIS* , GROWN IN THE CONDITIONS OF WARM WATER CAGES , WITH INDIVIDUALS FROM NATURAL AREAL ARE PRESENT

© 2014 y. E. V. Boubounets, A. V. Zigin*

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**Russian Federal Research Institute of Fisheries and Oceanography, Moscow, 107140*
The comparison of the morphological characteristics of the spawners of the Caspian Sea *Acipenser nudiventris*, grown in the conditions of warm water cages, with individuals from natural areal are present. The estimate of the coefficient of differences, the reliability differences signs and the level of diversity of the sign on the value of the coefficient of variation are given.
The comparisons carried out between the general groups and separately between males and females.
Keywords: Caspian Sea, *A. nudiventris*, morphological signs, reliability of differences, coefficient of differences, coefficient of variation.

SUMMER CHUM SALMON ARTIFICIAL REPRODUCTIN UNDER LOW WATER TEMPERATURE CONDITIONS DURING YOLK SAC FRY DEVELOPMENT: PROSPECTS FOR REPLACEMENT OF PINK BY SUMMER CHUM SALMON AT COLDWATER SALMON HATCHERIES

© 2014 y. A. E. Lapshina[1,3], V. G. Samarskiy[1], L. A. Zhivotovsky[2,3]

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[2] *Russian Academy of Science. Vavilov Institute of General Genetics, Moscow, 119991*

[3] *Sakhalin State University, Yuzhno-Sakhalinsk, 693000*
The current paper concerns with an experiment on artificial reproduction of the summer chum salmon in Sakhalin Island’s hatcheries under low water temperature during yolk sac fry development to imitate natural conditions for the ontogeny of both summer chum and pink salmon. The goal of this work was to clear up the possibility of replacement of pink salmon by the summer chum salmon in hatcheries without ground water supply.
Keywords: summer chum salmon, pink salmon, artificial reproduction, growth rate, ontogeny.

ACCLIMATIZATION OF FISH IN THE WATERBO DIES OF VOLOG DA REGION AN D ITS RESULTS

© 2014 y. A. F. Konovalov

Vologda laboratory of State Research Institute on Lakes and Rivers Fisheries, Vologda, 160012
Events of fish acclimatization in the Vologda region were described in the article. The main results of acclimatization works were analyzed. Recommendations for commercial cultivation and introduction of fish in the reservoirs of the Vologda region were proposed.
Keywords: acclimatization and transplantation of fish, introduction, naturalization, commercial fish culture, cultivation of fish, Vologda region.

USING SYSTEMS FOR REMOTE SENSING OF THE EARTH FOR FISHERIES MANAGEMENT ARGENTINE SQUID

© 2014 y. T. B. Barkanova, M. K. Glubokovsky

Russian Federal Research Institute of Fisheries and Oceanography, Moscow, 107140
Rapidly developing system of Earth remote sensing, providing a high degree of frequency and precision of measurements of the basic hydrobiological parameters of the World ocean waters: the

temperature of the ocean surface, the color of water, salinity, direction and speed of currents, ocean surface, today are successfully playing the role of technical means of commercial fishing exploration. At work as for example of the South-West Atlantic region, were considered the possibilities of using of real-time and historical satellite information on the variability of the temperature conditions of the spatial-temporal distribution of the fields of phytoplankton, the main currents of the district, with operational fisheries management Argentine squid *Illex argentinus* and estimate their influence on the biological productivity of the fishing area.
Keywords: Satellite information, technical means of commercial fishing exploration, fisheries management, sea surface temperature (SST), the dynamics of the fields of phytoplankton, South-West Atlantic, fishing for squid *Illex argentines.*

MORPHOLOGICAL CHANGES IN ROACH *RUTILUS RUTILUS* OF THE SARATOV RESERVOIR

© 2014 y. A. K. Mineev

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The materials of years of research (1995–2011). External morphological disorders, diseases of internal organs and tissues, variations in some hematological parameters in roach *Rutilus rutilus* – one of the most common fish species Saratov Reservoir. Shows a direct correlation of the detected malformations and abnormalities in roach of different age groups (from the early larval stages to adult animals) on the level of human influence on the ecosystem of the studied reservoir.
Keywords: roach, morphological abnormalities, diseases of blood cells, hematological parameters, pathology of the internal organs.

METHODS FOR ESTIMATING THE FISHERIES DATA ACCURACY BASED ON WHELK FISHERY STATISTI CAL ANALISIS

© 2014 y. A. G. Vasilyev

Magadan Research Institute for Fisheries and Oceanography, Magadan, 685000

Statistical analysis of the fisheries data on whelk is presented in the article. It is suggested that the catches comply with the probability distributions. Some types of probability distributions of the catches are considered. New methods of evaluating the accuracy of the fisheries data are offered.
Keywords: invertebrates, Buccinum, fisheries, traps, statistical analysis, probability distributions of catches.

FISHING IN ALASKA IN THE PERIOD OF RUSSIAN AMERICA

© 2014 y. A. V. Grinev

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In this article for the first time in the Russian historiography are researched the problems of the development of fishing in Alaska during the Period of Russian America.
Keywords: fishing, meanings and methods of the fishing, natives of Alaska, Russian America, Russian-American Company.

STATE OF MARITIME SAFETY AN D PROSPECTS FOR THE INTRODUCTION AN D DEVELOPMENT OF AUTOMATE D SYSTEMS TO ENSURE THE SAFETY OF NAVIGATION IN THE KAMCHATKA REGION

© 2014 y. A. G. Korovin

Federal State Institution ≪Petropavlovsk-Kamchatskiy Port Administration≫, 683000

This article describes the rationale for the introduction of an automated system for ensuring the safety of navigation in the port of Petropavlovsk-Kamchatsky, the author proposed a phased deployment of the system and identified the prospects for the development of an automated system to ensure safety of navigation.
Keywords: vessel traffic control system (VTCS); global maritime system distress and safety system (GMDSS); radio navigation safety systems; – automatic identification systems (AIS); differential mode system (DGPS).

THE COMPARATIVE ANALYSIS OF SOME INDICATORS OF THE IMMUNOBIOCHEMICAL STATUS OF IRIDESCENT TROUT *PARA SALMO MIKYSS* IRIDEUS FROM FISH-BREEDING ECONOMY OF THE CAUCASIAN REGION

Research humoral factors of immunity and intensity of oxidising processes at iridescent trout *Parasalmo mykiss irideus* from fish farms the Caucasian region is carried out. The established decrease in indicators of immunity and change of an oxidation-reduction homeostasis in an organism of the fishes who have been grown up in the Chernorechensky trout economy, can lead to easing of their adaptable potential, development of oxidising stress, survival rate decrease.
Keywords: fish, humoral immunity, lipid metabolism.

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CONTENTS

CHANGE OF HEMOLYMPH PARAMETERS IN BLUE KING CRAB

PARALITHODES PLATIP US DUE TO THE STRESS CAUSED BY FISHING USING CRAB POTS

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Changes of biochemical parameters of the hemolymph in blue king crab *P. platypus* exposed to adverse factors associated with pot fishing were studied. Changes in hemocyanin (Hc) concentration and ionic composition of hemolymph were observed in crabs which were repeatedly lifted out of the water in pots. The observed changes were dependent on the molt stage of crabs. The relationship between changes of hemolymph parameters and viability of animals in experiments was analyzed. Based on the obtained data mechanisms of adaptation of blue king crab to the adverse effects of fishing with pots were proposed.

Keywords: blue king crab, crab pots, impact of fishing, hemolymph, hemocyanin.

COMPARISON OF MORPHOMETRIC PARAMETERS OF GRASS SHRIMP *PANDALUS LATIROSTRIS* RATHBUN FROM THE BUSSE LAGOON AND EASTERN ANIVA BAY COAST (EASTERN SAKHALIN)

c 2014 y. I. Yu. Panyaeva

Environmental Company of Sakhalin, Ltd., Yuzhno-Sakhalinsk, 6930007

In this article relate results of researches of morphometric descriptions grass shrimp in lag. Busse and coastal zone of Aniva bay. It was realize in process of researches comparative analysis of shrimps of both areas. The analysis of has shown that in many cases there are reliable differences in body proportions between the same size groups from these two regions.

Keyworks: grass shrimp**,** Busse lagoon, morphometric parameters, maturity of females, allometry of grows, pleopods.

ECOLOGY AND FISHING OF ARCTIC CISCO *COREGONUS AUTUMNALIS* (SALMONIFORMES, COREGONIDAE) OF THE INDIGIRKA RIVER

c 2014 y. A. F. Kirillov

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Peculiarities of distribution, length and age structure, feeding, parasital level, hybrids with nelma *Stenodus leucichthys nelma* lake herring *Coregonus sardinella* fishing of Arctic cisco *Coregonus autumnalis* in the Indigirka River are reviewed.

Keywords: *Coregonus autumnalis*, Indigirka River, growth, fecundity, feeding, parasites, hybrids, fishing.

RECENT DATA ON *RUDITAPES PHILIPPINAR UM* (BIVALVIA: VENERIDAE) BIOLOGY IN AMUR BAY

c 2014 y. S. E. Leskova, I. V. Matrosova, I. G. Rybnikova

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This article provides data on the size and age pattern of the habitations, quantity characteristics of linear growth and biomass growth and reproductive cycle features of *Ruditapes philippinarium* in Amur Bay. The data on histological maker and cell composition of investigated mollusks' reproductive glands are shown to update the information on reproductive biology of *Ruditapes philippinarium*.

Keywords: structure of population, growth, gonads, reproductive cycle, bivalve mollusks, *Ruditapes philippinarium*.

THE RESULTS OF SURVEYS ON fishery water bodies OF CENTRAL RUSSIA

c 2014 y. A. D. Bykov, S. Yu. Brazhnik

Federal Research Institute of Fishery and Oceanography, Moscow,107140

The paper provides an overview of the results of surveys on fishery water bodies of Moscow, Smolensk, Ryazan, Vladimir, Kaluga, Kursk, Tula, Orel, Bryansk regions, and Moscow from 2007 till 2013. It describes the taxonomic composition of ichthyofauna, fish stock condition and fishery in these water bodies. The paper shows their fishery value and ways of their rational exploitation.

Keywords: water bodies, surveys, ichthyofauna, fish stock condition, catch, fishery value.

FEATURE ICHTHYOFAUNA AND HABITAT CONDITIONS OF RESERVOIRS KUITO (KARELIA) IN REGULATION OF THE FLOW

c2014 y. N. S. Cherepanova[1], A. P. Georgiev[1, 2]

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Since the regulation of the Middle and Lower Lakes Kuito (1956), the relative importance of commercial catches of the main commercial families (Cyprinidae, Coregonidae) is quite stable, although in the 1980–s grew share herewith Cyprinidae and a few dropped – Coregonidae (especially whitefish). The article presents data that characterize the habitat of aquatic organisms, materials on commercial fish fauna reservoirs studied and analyzed, identified changes in the structural organization ichthyocenosis by regulation lakes. Analysis
of the current situation in the fisheries complex showed that currently the reservoir fishery resources are used irrationally.

Keywords: Karelia, Kuito, habitat, species composition of fish fishing.

SPECIFIC FEATURES OF SEASONAL VARIABILITY OF HYDROLOGICAL AND HYDROCHEMICAL CHARACTERISTICS OF DESNOGORSK RESERVOIR

c 2014 y. S. A. Lapin, I. A. Gangnus, N. M. Zozulya

Russian Federal Research Institute of Fisheries and Oceanography, Moscow, 107140

Some specific features of changes of hydrological and hydrochemical characteristics of the Desnogorsk reservoir in the region of Smolensk nuclear station influence were examined. Analysis has been based on data from three complex hydrological and hydrochemical surveys of the Desnogorsk reservoir during different seasons from 2012–2013.

Keywords: hydrology, hydrochemistry, reservoir, nutrients, cooling pond.

MONITORING OF PHYTOPLANKTON IN THE AREA OF A SEA FARM IN REEFOVAYA BAY (PETER THE GREAT BAY , SEA OF JAPAN)

c 2014 y. O. G. Shevchenko[1, 2], A. A. Ponomareva [2], S. I. Maslennikov[1]

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The qualitative and quantitative characteristics of phytoplankton in the area of mariculture farm in Riphovaya Bay (Sea of Japan) were study from October 2011 to September 2012. The numbers of microalgae ranged from 1,2 thousand cells/L to 2,9 million cells/L and biomass were from 2,0 mg/m$_3$ to 7,6 g/m$_3$. The peak of numbers was caused by mass development of *Skeletonema costatum* in October, the maximum biomass was observed in winter, dominated by *Thalassiosira nordenskioeldii*. There are seven potentially toxic species of microalgae were recorded.

Keywords: phytoplankton, mariculture, toxic species, Reefovaya Bay.

THE INFLUENCE OF HYDRODYNAMIC CONDITIONS ON FISH DISTRIBUTION IN CHEBOKSARY RESERVOIR

c 2014 y. Yu.V. Gerasimov, S. A. Poddubny, M. I. Malin, A. I. Tsvetkov

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Fish spatial distribution and hydrodynamic processes in Cheboksary reservoir are studied. High productivity zones forming in the central part of the reservoir is observed. The relationship of spatial distribution of fish in immediate proximity to the hydroelectric power plant and its operating schedule is showed. Dynamics of fish stock in the reservoir over the period of its existence is analyzed.

Keywords: fish fry, spatial distribution, current, downstream migration, Cheboksary reservoir.

AGE-RELATED ALTERATIONS ANTIOXIDANT ENZYME REACTIONS IN SCALLOPS *MIZUHOPECTEN YESSOENSIS* IN RESPONSE TO OXIDATIVE STRESS

c 2014 y. N. N. Belcheva, Yu.V. Koudryashova, A. A. Istomina, T. L. Chizhova

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We have identified biochemical parameters: superoxide dismutase, catalase, glutathione reductase and the content of malondialdehyde in the gills of scallop *Mizuhopecten yessoensis* 1, 2, 3 years and

their changes after exposure to cadmium (300 mg/l) for 4 days. The results have demonstrated the relationship between the age of mollusks and resistance to oxidative stress.
Keywords: scallop *Mizuhopecten yessoensis*, age, oxidative stress, cadmium.

ANALYTICAL DETERMINATION OF THE CENTRE MASSES POSITION V-FIGURATIVE OF THE TRAWL DOORS

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The analytical methods of the determination of the position of the center of the masses V-figurative trawl doors with screens in the form segment circular cone are stated, allowing by means of program CM-STFS to optimize functioning trawling fishing systems with this type of the screens.
Keywords: center of the masses, V-figurative, trawl door, segment of circular cone, analytical methods.

ASSESSMENT OF FISHING CAPACITY OF ANTARCTIC TOOTHFISH *DISSOSTICHUS MAWSONI*, THE WEDDELL SEA BASED ON THE RESULTS OF LONGLINE SURVEY 2013

c 2014 y. A. F. Petrov, K. V. Shust, I. I. Gordeev

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Five-year longline survey phase 1 on Antarctic toothfish in the Weddell Sea was carried out in 2013. Eight longline sets were set by Russian vessel ≪Yantar 35≫ in the area of more than 10 thousand sq. km at 74 degree south latitude in the eastern Weddell Sea from February 25 to March 3, 2013. A total of 59,5 tons of toothfish *Dissostichus mawsoni* and 2 tons of by-catch fish species: *Macrourus whitsoni, Chinobathyschus dewitti, Antimora rostrata, Muraenolepsis* spp. were caught. As a result of the survey a stock of Antarctic toothfish of 428
thousand tones was determined.
Keywords: Antarctic toothfish, the Weddell Sea, longline sets, commercial fish stock.

COMPARATIVE CHARACTERISTICS OF SOME IMMUNOBIOCHEMICAL INDICATORS OF THE BLACK SEA SALMON *SALMO TRUTTA LABRAX* JUVENILES FROM NATURAL AND INDUSTRIAL CONDITIONS

c 2014 y. N. I. Silkina, T. A. Suvorova

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The results of a comparative analysis of immunobiochemical status of juvenile Black Sea salmon, grown in factory conditions and caught in nature, is done. It is shown that the parameters of humoral immunity, the ratio of the lipid components and the balance of the processes prooxidants: antioxidants in the liver river fish, give evidence for good viability of let out the factory juveniles, which able to replenish the natural population of the Black Sea salmon.
Keywords: Black Sea salmon, humoral immunity, lipid metabolism.

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GOSNIORKH. CENTENARY ANNIVERSARY ! HISTORICAL MILESTONES AND IMPORTANT DIRECTIONS OF RESEARCH GOSNIORKH TOWARDS CENTENNIAL

© 2014 y. A. S. Pechnikov, A. A. Lukin, A. P. Pedchenko

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The paper presents the stages and important directions of scientific research GosNIORKh since the founding of the Institute. The contribution of specialists and scientists of the Institute in the development of the national aquaculture and fisheries in inland waters are showed. The priority tasks of the Institute in accordance with the strategy of development of the national fishery in the coming decades are designated.

Keywords: fisheries research, activities, inland waters, Gulf of Finland, fishing, aquaculture, aquatic biological resources.

FISHERY AND STOCK DYNAMICS OF WALLEYE POLLOCK *THERAGRA CHACLOCGAMMA* : WHETHER «TURBULENCE» IS POSSIBLE?

© 2014 y. O. A. Bulatov

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Walleye pollock is the second most extensively fished species in the world. The major fishing grounds are located in the Bering and Okhotsk Seas. Large-scale fishery starting in the 1960s and continues to date with average annual landings over this 50-year period of 2.5 million tons. Yet over this period catches were characterized by considerable variability, which makes fishery management activities difficult. Existing data suggest a close relationship between
PDO index and the fishable biomass in 1978–2013, which allows quantitative estimates of future trends in the biomass and consequently annual catch of walleye pollock. Expected cooling of Northern Pacific will increase the biomass in Sea of Japan and decrease it in Bering Sea and Sea of Okhotsk.

Keywords: walleye pollock, biomass, fishery, temperature, climate.

CURRENT STATUS OF COMMERCIAL BIOLOGICAL RESOURCES IN THE NORTH-EAST ATLANTIC AND THE BARENTS SEA

© 2014 y. S. V. Bakanev, K. V. Drevetnyak, A. I. Krysov, P. A. Murashko, A. A. Russkikh, D. V. Prozorkevich, O. V. Smirnov, N. G. Ushakov, E. A. Shamray

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The paper provides information on the state of stocks of essential biological resources in the North-East Atlantic and adjacent waters of the Barents Sea. The review describes stocks' dynamics, characteristics of distribution and commercial catch of fish and invertebrates that are available for the Russian fishing fleet.

Keywords: North-East Atlantic, Barents Sea, biological resources, fisheries, stocks' status, distribution.

HABITATS AND FISHERIES RESOURCES SEGOZERO RESERVOIR (KARELIA)

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In 1957, r. Lower Vig (White Sea basin) was created for multipurpose reservoir compensating flow regulation in the alignment Ondskaya GES The article presents data that characterize the habitat of aquatic organisms, materials for commercial fish fauna Segozero reservoir, identified changes in the structural organization of the fish community as a result of the regulation of the lakes. Under the new conditions associated with regular water level fluctuations, there were
changes in the fish community, primarily reduction of valuable fish species (family Salmonidae and Coregonidae).

Keywords: Karelia, Segozero reservoir, habitat, species composition of fish fishing.

INFLUENCE OF CLIMATIC FACTORS ON THE JUVENILE RED KING CRAB IN THE COASTAL BARENTS SEA

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The aim of this study was to estimate the influence of climatic factors (temperature anomalies and parameters of the global atmospheric circulation winter North Atlantic oscillation indices, NAO) on the abundance of juvenile red king crab in the coastal waters of the Barents Sea. Age group 0–2 year-old crabs accounted for 5 to 100% of the total abundance. Its stock increased with the mean water temperature. The stock of 3–5 year-old crabs decreased with
increase of water temperature (with a shift of 1 year ago) and the NAO index (with a shift of 2 year ago).

Keywords: red king crab, Barents Sea, Dalnezelenetskaya Bay, climate.

THE DYNAMICS OF COMMERCIAL CATCHES AND THE CURRENT STATE OF ROACH *RUTILUS RUTILUS* IN THE ZAPOROZHIAN RESERVOIR

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The characteristic of the commercial catches of fish in the Zaporozhian Reservoir was given. Provides information on the current status and the fishing stock of roach. Linear age-specific of roach, fecundity of fish and values of natural replenishment was given. Calculated the volume of allowable catch roach in 2014.

Keywords: roach, the Zaporozhian Reservoir, dynamics of commercial catches, the fishing stock, limit of catches.

STUDY OF THE RED SNOW CRAB *CHIONOECETES JAPONICUS* (DECAPODA , MAJIDAE) IN THE SEA OF JAPAN . I. DEVELOPMENT OF ALGORITHM OF DENSITY INDEXES CALCULATION FOR LONG -TERM DATA COMPARISON

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Methodology which provides unification CPUE data collected in 1992–2010 and computed by different methods is worked out for red snow crab *Chionoecetes japonicus* population in the Sea of Japan. If empiric data are absent the density index ($ИП_р$, crabs per trap) of commercial sized males may be calculated from commercial catches ($КУ$, kg per trap) by equation: $ИП_р = 0{,}04 \times (КУ)_2 + 0{,}891 \times (КУ)$. Dependence between empiric ($ИП_э$) and calculated ($ИП_р$) values of the density index is described by equation $ИП_{р'} = 0{,}893 \times ИП_э$
+ 0,514. The density index of other groups in the sample may be restored by its size and sex structure. If the range of trap soak varies from 2 to 15 days it does not affect significantly on the density index.

Keywords: *Chionoecetes japonicus*, catches per effort, CPUE, density index, trap soak, Sea of Japan.