

**QUANTITATIVE ANALYSIS OF THE ABUNDANCE OF BENTIC AND PELAGIC  
MACROFAUNA IN THE FAR EAST SEAS AND ADJACENT WATERS  
OF THE Pacific OCEAN**

© 2016 y. V. P. Shuntov, I. V. Volvenko

*Pacific Research Fisheries Center, Vladivostok, 690091*

Based on long-term data (1977–2010), which were collected in complex expeditions of TINRO and generalized in databases, the various marine and oceanic areas of the Far Eastern Russian waters are ranked according to the biomass and density of macrofauna concentration in total as well as according to the biomass and density of fish and squid. Average longterm nekton biomass (mln t) and the density of nekton concentrations (t/km<sup>2</sup>) in the layer 0–1000 m were evaluated respectively as: in the ocean waters of the Kuril Islands – 27.0 and 24.0, in the Okhotsk Sea – 32.0 and 21.0, in the Bering Sea – 11.2 and 16.0, in the ocean waters of Kamchatka – 7.2 and 14.0, in the Sea of Japan – 3.7 and 9.0. In the benthic (to a depth of 2000 m), these figures were estimated respectively as: in the ocean waters of the Kuril Islands, – 2.78 and 27.1, in the ocean waters of Kamchatka – 3.74 and 25.7, in the Bering Sea – 8.19 and 24.5, in the Sea of Okhotsk – 22.54 and 16.5, in the Sea of Japan – 1.38 and 11.7. Fishes and squids dominated in the pelagic macrofauna. In the benthic macrofauna weight share (%) of fish and squid, respectively, were as follows: in the Bering Sea – 55.4 and 1.5%, in the Okhotsk Sea – 60.1 and 1.3%, in the Sea of Japan – 52.4 and 14.2% in the ocean waters of Kamchatka – 32.0 and 4.3% in the ocean waters of the Kuril Islands – 63.0 and 33.1%. The influence of bottom topography, water circulation and hydro-chemical characteristics on the quantitative distribution of macrofauna are discussed.

*Keywords:* Far waters, pelagic macrofauna, benthic macrofauna, bottom topography, fishes, invertebrates, biomass, density concentrations.

**FISHING FOR STURGEONS IN THE RIVERS OF THE VOLOGDA REGION  
IN THE XVI–XX CENTURIES**

© 2016 y. A. F. Konovalov, F. Ya. Konovalov

*Vologda laboratory of State Research Institute on Lakes and Rivers Fisheries,  
Vologda, 160012*

Essay on the history of sturgeons fishing in the XVI–XX c. in rivers located on the present territory of the Vologda region is described in the article. The main ways of sturgeons fishing which have been applied in the basins of the Northern Dvina and Sheksna are defined. Catches of sturgeons in the Sheksna River evaluated in XVI–XX c. Reducing the commercial catches of sturgeons correlated with long-term decrease of abundance populations. Sturgeons fishing in the rivers of the Vologda region had been of particular importance for the delivery of fish to

the capital of Russia.

*Keywords:* fishing ways and gears, sturgeons, catch dynamics, Vologda region.

## **COMPREHENSIVE ASSESSMENT OF THE ECOLOGICAL STATUS OF THE KIZILTASHSKY ESTUARIES IN 2011**

© 2016 y. **M. V. Medyankina, T. A. Samoylova, E. S. Dmitrieva, O. V. Sergeeva,  
A. M. Khramtsova, K.A Kuzmina, A. V. Kashirin, N. A. Rudakova**

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

The paper summarizes the results of chemical, eco-toxicological and hydrobiological investigation of the Kiziltashsky estuaries, made in 2011 in the framework of an integrated environmental monitoring of the Black Sea coastal ecosystems. The composition and structure of the phytoplankton and zooplankton the Kiziltashsky estuaries are subject to significant seasonal variations. The high abundance and biomass of benthic forms were mentioned at a relatively low species diversity. The level of the pollutants in the different components of the ecosystem Kiziltashsky estuaries are generally consistent with fisheries and environmental protection standards. These definitions can be taken as a baseline for the exploration area, they are within the natural environmental fluctuations. The results can be used for planning of ecological monitoring with increasing anthropogenic load on the investigated ecosystem.

*Keywords:* Kiziltashsky estuaries, coastal ecosystems, ecological monitoring.

## **CONDITIONS AND PROSPECTS OF DEVELOPMENT OF THE FISHERY COMPLEX OF THE REPUBLIC OF KARELIA**

© 2016 y. **S. V. Tishkov, V. V. Karginova, Yu.V. Saveliev, A. P. Shcherbak**

*Institute of Economics Karelian Research Centre of RAS, Petrozavodsk, 185030*

On the basis of statistical and analytical data obtained during the preparation of the strategy of creation and development of the fishery cluster, the analysis of the condition of the fishery complex of the Republic of Karelia was conducted. It is revealed that the fishing industry is one of the sectors of specialization in the Republic of Karelia. The region has the necessary preconditions for the creation of the fishery cluster. In the field of the fish farming in Karelia 56 farms specializes in the cultivation of commercial products and fish stocking material, as well as in primary fish processing. In general, the fishing industry of the Republic of Karelia has 219 organizations, which employs more than 2.5 thousand people (0.8% of all employees). These enterprises make up 1.5% of GRP of the Republic of Karelia, or 2.5 billion rubles. The volume of growing commodity trout and the fish stocking material has increased by 60 folds from 1993 to 2014 and according to the results of 2014 amounted to 22.4 thousand tons.

*Keywords:* fishing industry, development strategy, the White Sea, the key issues.

**ON DIFFERENTIATION OF *SEBASTES MENTELLA* STOCKS  
IN THE ATLANTIC AND ARCTIC OCEANS**

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

The paper considers the results of estimation of scientific validity of the current differentiation of *Sebastes mentella* stocks in the Atlantic and Arctic Oceans. It has been established that differentiation of most redfish stocks occurred with account of interstate borders, fishing division, and history of fishery development but without sufficient scientific justification. On the basis of population structure of the species, the recommendations regarding stocks differentiation and management measures on redfish fishery were developed.

*Keywords:* redfish, stocks differentiation, population structure, fishery.

**ARCTIC COD *BOREOGADUS SAIDA* (GADIFORMES, GADIDAE)  
AS A KEY SPECIES AND POTENTIAL OBJECT OF FISHERY  
IN THE KARA SEA**

© 2016 y. N. P. Antonov, V. V. Kuznetsov, E. N. Kuznetsova, V. A. Tatarnikov,  
S. V. Goncharov, L. V. Mitenkova, M. S. Zhidik\*

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

*\*The Limited Liability Company «Krasnoyarskgazpromneftegazproekt», Krasnoyarsk, 66021*

In the waters of 39 thousand sq. Km in the south-western part of the Kara Sea, the total stock of Arctic cod according to trawl and acoustic surveys was about 200 thousand tons. Arctic cod is more than 97% of the biomass of all the fish so that it is the only potential target species for fishing in the studied area. With a large variety of species benthophagous a key role in the ecosystem belongs to actively consuming plankton euryphages – Arctic cod. Wide range of size and age composition of the fish in the trawl catches indicates the presence of selfreproducing population.

*Keywords:* Kara Sea, trawl survey, acoustic survey, Arctic cod, *Boreogadus saida*, length, weight, abundance, distribution. biomass.

**INFLUENCE OF FISHERY ON AVERAGE AGE OF THE ARCTIC CISCO'S  
*COREGONUS AUTUMNALIS* SPAWNING stock OF YENISEI RIVER**

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*Scientific Research Institute of Ecology of Fishery Reservoirs, Krasnoyarsk, 660097*

The object for study is a current state of the arctic cisco's spawning part population in the Yenisei river. The article presents features of area and values of the main biological characteristic of *Coregonus autumnnalis*. There are: data of the size-age pattern, fecundity

and growth equation data. The dynamics of the average age and fishing of spawning part population *Coregonus autumnalis* over 20 years past are also presented. The possible cause of the middle ages changes are demonstrated. The model of the dynamics of arctic cisco flock relating to influence of fishing for the middle ages of the spawning part population are offered.  
*Keywords:* *Coregonus autumnalis*, age, length, mass, fecundity, fishing mortality, natural mortality, growth equation, fishing, Yenisei river.

## **PARTICULARITY OF SOME COMMERCIAL FISH REPRODUCTION IN SMALL RIVERS OF THE VOLGA REGION**

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*Bioresources Research Laboratory of Freshwater Bodies (the Penza oblast and Republic of  
Mordovia)  
of the Krasnodar Branch of Russian Federal Research Institute of Fisheries and Oceanography,  
Penza, 440600*

As a result, fisheries research on the Insar River in the Republic of Mordovia investigated seasonal dynamics of fish fry. Found that the low water temperatures in the river the active stage of yearlings fishing and massive fish species observed since mid-August to mid-September, ie, much later than in the major fisheries waters. Therefore, conservation measures to ensure the reproduction of fish fauna in small rivers with a predominance of spring power must be exercised in later or other terms.

*Keywords:* kedgerree, water temperature, daily seasonal dynamics, dynamics, small rivers, Insar River.

## **OPTIMIZATION OF THE TERMS OF A SPRING FISHERY BAN IN MIDDLE VOLGA RESERVOIRS ON THE EXAMPLE OF THE KUIBYSHEV RESERVOIR**

© 2016 y. R. G. Tairov, F. M. Shakirova, O. K. Anokhina

*Tatarstan Department of State Research Institute of Lake and River Fisheries, Kazan, 420111*

It is analyzed the natural reproduction of fish, formation of stocks and catches of the small and large Chastikov in the Kuibyshev reservoir. It is noted that the organization of good housekeeping in the reservoir, reducing the ban period on industrial fishing from 60 to 40 days and the optimal development of the small Chastikov would help to increase the catch of fish on the pond by 25–30% and bringing it up to 10 thousand tons or more.

*Keywords:* Kuibyshev reservoir, small chastik, natural spawning, the number of fish, ban periods, fishing.

## **METHOD OF DETERMINATION OF WIDTH OF THE CARAPACE OF CRABS ON TO CATEGORIES OF CRAB LEGS SETS**

© 2016 y. A. G. Novosadov, E. N. Kharenko, A. V. Presnyakov

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

The alternative method of revealing of cases using for crabs production of not catch size are discuss. For this purpose used goods distribution on weight categories. At the basis of the offer division lay are boiled – frozen crab extremities on mass categories and increase in a share of categories of small size in case of use of crabs with carapace width less trade.

*Keywords:* Far East crabs, northern crabs, Barents Sea, Okhotsk Sea, Bering sea, crabcatching, crab legs, Rules of Fishery, measure of adjustment.

## **ALTERNATIVE WAY IN DEVELOPMENT OF NATIONAL FISHERIES**

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

A State that is in possession of rich natural resources has unique potential of successful implementation of economic and social programs. However, the important prerequisite for this is prevalence of public national interests over individual private ones. A vertically integrated partnership of the State and private enterprises may present the most efficient model of the State involvement to utilize such resources to its best usage.

*Keywords:* natural resources, public benefit, exploitation of natural resources.