Abstracts

Compensation for damages to aquatic biological resources in the Arctic zone of the Russian Federation on the example of the Northern fishery basin

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Improvement of current mechanism of compensation for damages to aquatic biological resources is discussed. The specific directions of compensatory measures in the form of whitefish breeding as well as the areas of scientific research are proposed.

Keywords: *aquatic biological resources, damage, compensatory measures, fish breeding, fisheries research.*

Demographic development of the regions of the Arctic zone of the Russian Federation in 2010—2014

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To manage the social and economic development of the Russian Arctic, it is necessary to know the characteristics of demographic structure of the population living in the area. The issues of dynamics of total population, demographic structure, the general fertility and mortality rates, and changes in the ratio of urban and rural population from 2010 to 2015 are addressed in the article. The proposed findings are of both theoretical and practical importance and can be used in the practice of public policy of development in the Arctic.

Keywords: *AZRF, AZRF population, vital population dynamics.*

Climate dependence of biota in the north of the Tyumen Region (the quantitative aspect)

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The quantitative patterns of distribution and hierarchy of biotic indices in the north of the Tyumen Region are studied. The nature of the zonal distribution is determined. The formulas of climate dependence of biota are found. The effect of warming on the biota of the region is assessed.

Keywords: *the north of the Tyumen Region, climate, indices of dryness and heat, biota, taxon, warming.*

Experience of using the thermal profiling drifters to study the Arctic region of the Ocean

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The results of development of autonomous thermal profiling drifters to study the polar regions of the Ocean are given. The conclusion on possibility to establish a reliable and efficient system for monitoring of the polar regions using the drifters are made on the basis of data analysis of long-term field experiments.

Keywords: *drifter, temperature profile, upper layer of ocean, arctic monitoring.*

Search Model of SEDEX-MVT deposits in the Arctic zone

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A general geological prospecting model of lead-zinc and pyrite-lead-zinc deposits in carbonate and clastic-carbonate complexes is considered, the prospects of increasing the mineral resource base of lead and zinc of the Arctic zone are shown. Along with well-known ideas about connection of deposit formation at early stages with paleogeodynamic conditions of formation of ore-bearing formations, their divergence depending on the combination of subplatform, rift and island environment of fluid regime is shown.

Keywords: *Arctic zone, свинцово-цинковые месторождения, SEDEX, MVT, search model, forecast.*

Hydrocarbon potential of Riphean-Lower Cretaceous complexes of the Laptev Sea Region

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The features of the structure and oil and gas potential of Riphean-Lower Cretaceous complexes of the Laptev Sea region are analyzed. Forecast of spread, quality and catagenetic zoning of oil and gas matrix strata is given, potential oil and gas fields of large structural zones are considered.

Keywords: *edge depression of the Siberian craton, the Novosibirsk Islands, the Laptev Sea shelf, oil and gas matrix strata, structurally catagenetic schemes, oil and gas fields.*

Forgotten fossil resource in the Russian Arctic — mammoth ivory

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The problem of the status of fossil mammoth ivory, which is the unique natural resource of biogenic origin, is discussed, as well as legal aspects of development of ivory resources. The leading role of the Northern Yakutsk ivory province in general resource and mining balance of the arctic ivory regions is emphasized. The prospects of increasing of its resources by gravel deposits of new insufficiently known morphogenetic types.

Keywords: *the Arctic, the Republic of Sakha (Yakutia), mineral resource, fossil mammoth ivory, placer, permafrost, the Northern Yakutsk ivory province, reserves and resources, the legal regulation, subsoil use.*

Nuclear icebreakers and development of the Arctic shelf

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The current state and prospects of nuclear icebreakers for development of the Arctic shelf are investigate;, their role is defined. The stages of development of stationary offshore structures are considered. Some technological and design solutions for development of the Arctic shelf are presented, such as underwater oil shipping terminal and marine ice-resistant gravitational terminal. A forecast of further work on development of the Arctic shelf is given.

Keywords: *Arctic nuclear icebreaker fleet of Russia, nuclear icebreakers, development of the Arctic shelf, icebreaking ships, diesel-electric icebreakers, ice-resistant platforms and terminals.*

The possibility to use the air-bearing vehicles under the conditions of the Arctic and the Far North

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The conditions for conservation of soil and ground cover of tundra plants in the operation of vehicles in the Arctic and the Far North during thawing of active layer is discussed. The possibility to use the innovative types of air-bearing vehicles reducing the load to ensure ecological compatibility for preserving soil and vegetation is analyzed. It is proposed to create a route for air-bearing vehicles with artificial surfacing to operate during the thawing of permafrost active layer and a guide road bed for air-bearing trains. Integrated use of innovative air-bearing transport allows creating the transport systems for the Arctic and the Far North, and defining the requirements for technical characteristics of innovative types of vehicles.

Keywords: *the Far North, The Arctic, land cover, the active thawing layer, permafrost, innovative air-bearing transport, aircraft with air-bearing landing gear, hovercraft, air-bearing vehicles, air-bearing trains, artificial road bed.*

The directions of development of forces and resources for search and rescue support of maritime activities in the Arctic

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The key areas of development of search and rescue forces and resources to ensure Russia's maritime activity in the Arctic are considered as a part of integrated safety system.

Keywords: *search and rescue equipment, marine activities, integrated search and rescue system, life-saving evacuation apparatus, life-saving evacuation system, unification, standardization.*

Methodology of justification of mechanization tools system for deployment of emergency rescue teams in the Arctic zone of the Russian Federation

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A scientific-methodological apparatus that allows justifying the mechanization tools systems for deployment of emergency rescue teams, including special conditions of operations, is suggested.

Keywords: *deployment of emergency rescue teams, emergency operations, mechanization tools, criterion of efficiency.*