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Журнал освещает фундаментальные исследования и результаты прикладных работ по проблемам аридных экосистем и борьбы с антропогенным опустыниванием в региональном и глобальном масштабах. Издается с 1995 года по решению Бюро Отделения общей биологии Российской академии наук.

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ABSTRACTS

THE ARID AREA OF THE WORLD AND THEIR CHANGES IN CONDITIONS OF MODERN CLIMATIC WARMING

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Abstract.The evaluation of changes that take place in dynamic of arid lands and desertification processes with deflation degree of climatic factor influence on land aridisation was carried out. The total land area and area of arid lands by separate mainland, including the territory of Dagestan and the Southern regions of Russia are characterized for the first time. It was shown that the problem of arid lands and desertification has both scientific and social-economic meanings. In different arid and sub-arid zones the origin and dynamic properties depend on regional-wide conditions: in warm-temperate and sub-arid conditions the processes of desertification are manifested with the leading role of anthropogenic factor, and in tropic and subtropics zones under the influence of climatic factor.

Key words: diversity, arid zones, alkaline reserve, tropic zone, stock breeding, agriculture, vegetation, erosion, desertification.

THE SPATIAL ORGANIZATION AND DIVERSITY OF EAST MONGOLIA STEPPES

© 2011. G.N. Ogureeva*, I.M. Miklyaeva*, M.V. Bocharnikov*, M.V. Dudov*,
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Abstract.Survey of steppe ecosystems of East Mongolia, including the territory of the East Steppe Stationary Tumèn-tsogt (in the Sukhebaator District), held in 2008 under the Mongolian ecosystem monitoring. The mapping as an important part of monitoring enables you to identify the qualitative and quantitative changes in ecosystem components and show the spatial distribution and orientation of the main natural and anthropogenic processes. Large scale mapping of vegetation on the territory of the research station was held for the third time around with a 20-year interval. The map of current vegetation (1: 200 000) shows the present-day coenotic diversity of nature steppe communities, including 29 groups of associations related to 18 formations; 4 group associations represent the petrophytic steppe variants. Main types of heterogeneous vegetation structure characteristic for the different types of hummocky topographies also are reflected on the map.

Key words: vegetation map, biodiversity, vegetation structure, steppe ecosystem.

TAXONOMIC DIVERSITY OF INSECTS OF THE RELIC STEPPES IN THE MIDDLE LENA RIVER VALLEY (CENTRAL YAKUTIA)

© 2011. A.K. Bagachanova, N.N. Vinokurov, T.G. Evdokarova, Yu.V. Ermakova, S.N. Nogovitsyna, A.A. Popov

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Abstract. Data on insects of steppes in Central Yakutia preserved in the relic state since Late Pleistocene. Orthoptera, Homoptera, Heteroptera, Coleoptera and Diptera taken as an example illustrate that these steppes are inhabited by species, besides meadow and meadow-steppe ones, belonging to an extrazonal steppe fauna-genetic complex comprising 5 elements: Euroasian, Dauria-Mongolian, Sic-Black Sea-Kazakhstanish, desert-steppe and mountain-Central-Asiatic. Disjunctive areas are characteristic for these species.

Key words: insects, Orthoptera, Homoptera, Heteroptera, Coleoptera, Diptera, fauna, steppe, Central Yakutia, Siberia.

SPECIFIC FEATURES OF MICROSPATIAL DISTRIBUTION OF SOIL TESTATE AMOEBAE IN THE FORESTS OF MIDDLE VOLGA TERRITORY¹

© 2011. Yu.A. Mazei, Yu.V. Blinokhvatova, E.A. Embulaeva

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Abstract. Microspatial distribution of soil testate amoebae was studied in 12 oak forests and 7 pine forests in the Middle Volga Territory. 25 species were detected in oak forests, and 36 – in pine forests. Species richness, species diversity, evenness, spatial heterogeneity, composition of dominant species set within the undercrown spaces in oak forests and within different type microhabitats in pine forests are not changed significantly. From stem to marginal zones of the oak undercrown protozoan abundance are decreased, life forms and subdominants ratios changed. In litter of pine forests lobose amoebae with xenosome shells predominate, whereas in moss and lichen patches filose rhizopods with idiosome shells are more abundant. Patterns of microspatial community heterogeneity of testate amoebae are resulted not by ecological peculiarities of concrete species but by reaction of the total community to the microspatial heterogeneity of the habitat. As a result in different ecosystems the same species can realize different ecological preferences.

Key words: testate amoebae, forest-steppe, community structure, microhabitat structure, microspatial distribution, soil nanofauna.

SOIL POLLUTION WITH HEAVY METALS OF GOLD- AND COPPER MINING INDUSTRIES IN SOUTHERN AFRICA

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Abstract. Waste products of the mining industry are very important factors in the field of environmental pollution, soil pollution particularly. In the following case studies soil pollution with heavy metals in the surroundings of tailings dumps from gold- and copper mining industries, was investigated. In order to enhance knowledge about mine dumps and to provide relevant institutions in the region with identification methods, a GIS approach has been developed. The results of the studies made it possible to identify such surface soils of tailings dumps as had been severely polluted by heavy metals. This is demonstrated in two study areas in the SADC region.

Key words: soil pollution, gold mining, copper mining, South Africa, Zambia, tailings dumps, heavy metals.

TRANSFORMATION OF SOIL-VEGETATION COVER IN THE PLACES OF FALL OF THE BOOSTERS' FIRST STAGES

© 2011. P.P. Krechetov*, V.V. Neronov, T.V. Koroleva*, O.V. Chernitsova***

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Abstract. In the places of fall of the boosters' first stages in desert landscapes of Central Kazakhstan mechanical transformation of soil-vegetation cover occurs. The area of mechanical transformations considerably exceeds the area of chemical pollution by the components of rocket fuels.

Violations of soil cover are most significant in the places of fall of cruise engines. When cruise engine hits the earth surface, a crater forms. The area of craters is usually about 40-80 m². Motor transport which is used when cleaning territory of the place of fall from the remnants of the stage also intensively affects soil cover. The impact of the boosters' stage fall and the following evacuation of the remnants appears in the local increasing of soil solidity. The rate of increasing of soil solidity varies in different landscapes. Craters in the places of fall of cruise engines are characterized by the decreasing of thickness of soil profile.

Vegetation of impact zones reacts most considerably on impulse percussive-thermal impact when shot and destruction of booster's stage occurs. The result of that impact is complete or partial loss of phytocenosis in the radius of 50-150 m from the crater's center depending on the relief. Restoration of plant associations in the places of fall of remnants is associated with the development of pioneer species on mechanically violated sites, which is accompanied by the decreasing of total projective cover, height of grass stand and ground phytomass' reserves with the following evolution of microfocal seral processes.

Field observations in one the impact zones revealed that mechanical violations in the places of fall of boosters' remnants were local, and the percentage of the areas of the territories that had been impacted by the physical degradation during the whole period of exploitation of the zone was 0,5% of the total area under the most unfavorable assessments. For complete recovery of soil-vegetation cover in the places of fall of the boosters' first stages the period of no less than 15-20 years is necessary. That period can be reduced by the implementation of restoration (reclaiming and revegetation), adopted to desert ecosystems.

Key words: space-rocket activity, anthropogenic factors, transformation, soils, vegetation, desert ecosystems.

**PROTECTION OF BIOLOGICAL AND LANDSCAPE DIVERSITY IN
MONGOLIA AND PERSPECTIVES OF COOPERATION OF STRICTLY
PROTECTED NATURAL AREAS OF MONGOLIA AND RUSSIA
(on results of the International conference “Ecological consequences of
biosphere processes in the ecotone zone of Southern Siberia and Central Asia”)**

© 2011. V.M. Neronov

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Abstract. In Ulan-Bator during 6-8 September 2010 there was convened the International conference “Ecological consequences of biosphere processes in the ecotone zone of Southern Siberia and Central Asia” dedicated to the 40th anniversary of the Joint Russian-Mongolian Complex Biological Expedition organized by Russian and Mongolian Academies of Sciences. Briefly main results of long-term researches of this largest in the World expedition conducted during the past years are given. In the Conference Program there was included a special section on “The present state of natural protected areas network and prospects of its development” at which there were presented 11 papers and adopted practical recommendations for improving biodiversity conservation, organizing ecological monitoring and ensuring sustainable development for implementing in Mongolia and Russia and on the international level.

Key words: Mongolia, Russia, protected natural areas, recommendations for strengthening cooperation.