ABSTRACTS

Academician RAS Matishov G.G., Stakheev V.V. **10 years of SSC RAS Research Field Station "Manych": results and prospects of activities** // Studies of the Southern Scientific Centre of the Russian Academy of Sciences. Editor-in-Chief Acad. G.G. Matishov. Issue VII (2018): Natural and Anthropogenic Factors in the Transformation of Ecosystem of the Western Manych. Scientific Editor Dr (Geography) S.V. Berdnikov. Rostov-on-Don: SSC RAS Publishers. P. 9–15. (In Russian).

Abstract. SSC RAS Research Field Station *"*Manych*"* started its operation in the Lake Manych-Gudilo Valley on the 20th of February 2008. The paper describes the main activities of the scientists at the research station. The main scientific results obtained by the specialists of the Southern Scientific Centre of the Russian Academy of Sciences in the Western Manych Valley are presented.

Keywords: Kuma-Manych Depression, SSC RAS Research Field Station "Manych", Lake Manych-Gudilo, ecosystem research.

Minoransky V.A., Dan'kov V.I., Tolcheeva S.V., Malinovskaya Yu.V. **Coordinating and integrating environmental protection activities of the Wildlife of the Steppe Association in the West Manych Valley** // Studies of the Southern Scientific Centre of the Russian Academy of Sciences. Editor-in-Chief Acad. G.G. Matishov. Issue VII (2018): Natural and Anthropogenic Factors in the Transformation of Ecosystem of the Western Manych. Scientific Editor Dr (Geography) S.V. Berdnikov. Rostov-on-Don: SSC RAS Publishers. P. 16–37. (In Russian).

Abstract. Established at the turn of the 21st century a state-private structure – the Wildlife of the Steppe Association – unites the activities of various bodies to conserve the Rostov Region bioresources. The article describes the issues of its organization, participation in the biodiversity conservation of the Rostovsky Natural Reserve and Manych Valley and the solution of ecological problems of the steppe zone.

Keywords: steppes, Wildlife of the Steppe Association, nature conservation, biodiversity restoration, environmental education.

Kleshchenkov A.V., Soier V.G., Aleshina E.G., Grigorenko K.S., Milutka M.S., Oleinikov E.P., Bulysheva N.I., Sushko K.S. **Hydrometeorological and hydrological – hydrochemical situation in the eastern part of the Proletarsky Water Storage Reservoir and water bodies of the Manych Valley in the current period** // Studies of the Southern Scientific Centre of the Russian Academy of

Sciences. Editor-in-Chief Acad. G.G. Matishov. Issue VII (2018): Natural and Anthropogenic Factors in the Transformation of Ecosystem of the Western Manych. Scientific Editor Dr (Geography) S.V. Berdnikov. Rostov-on-Don: SSC RAS Publishers. P. 38–56. (In Russian).

Abstract. The article presents the results of hydrological and hydrochemical studies conducted in the eastern part of the Proletarsky Water Storage Reservoir and a number of ponds and lakes in its vicinity. The interannual variability of distribution of temperature and precipitation in the Manych Valley is described. Data on the ionic composition and mineralization of water of the studied water bodies are given, the change in these parameters is estimated by years and seasons. Regularities of formation and thermohaline characteristics of the salinity gradient zone from the deep-water part of Lake Manych-Gudilo to Baranikovskaya Dam are considered.

Keywords: Manych-Gudilo, Proletarsky Water Storage Reservoir, river flow, mineralization, ionic composition.

Sayapin V.V., Soier V.G., Milutka M.S., Kleshchenkov A.V. **Production-destruction processes and the transformation of organic matter in the plankton community of the Manych-Gudilo Lake //** Studies of the Southern Scientific Centre of the Russian Academy of Sciences. Editor-in-Chief Acad. G.G. Matishov. Issue VII (2018): Natural and Anthropogenic Factors in the Transformation of Ecosystem of the Western Manych. Scientific Editor Dr (Geography) S.V. Berdnikov. Rostov-on-Don: SSC RAS Publishers. P. 57–68. (In Russian).

Abstract. The results of the study of the primary production and destruction processes in the plankton community of Lake Manych-Gudilo in 2014–2018 are presented. Quantitative parameters of the primary production and destruction are given and compared to the analogous characteristics of water bodies existing under similar climatic conditions. Comparison of production and destruction processes with the accumulation of organic substances recorded by carbon is carried out. It has been ascertained that the increased mineralization of the studied water bodies causes a significantly reduced activity of bacterial destruction of the organic matter generated in the water column, which leads to its accumulation.

Keywords: Lake Manych-Gudilo, plankton community, gross primary production, net primary production, destruction, organic carbon.

Kovaleva G.V. **Diatoms flora of the Ust-Manych Water Storage Reservoir (Shakhayevsky and Zapadensky Limans)** // Studies of the Southern Scientific Centre of the Russian Academy of Sciences. Editor-in-Chief Acad. G.G. Matishov. Issue VII (2018): Natural and Anthropogenic Factors in the Transformation of Ecosystem of the Western Manych. Scientific Editor Dr (Geography) S.V. Berdnikov. Rostov-on-Don: SSC RAS Publishers. P. 69–103. (In Russian).

Abstract. The article presents new data on the diatom flora of the Shakhayevsky and Zapadensky Limans (estuaries). During the study of the material, 75 taxa were identified (a rank below the genus). The greatest species diversity is characteristic for the genera Navicula (12 species), Amphora (5), Cocconeis (5), Cymbella (4), Epithemia (4), Rhopalodia (4), Tryblionella (4). In addition to species diversity, the article discusses the problem of the similarity of the algal flora of this region with the one of the limans of the Eastern Sea of Azov Region. The results of comparison of these geographically distant water bodies showed similarities between the benthic and epiphytic diatoms of the Akhtarsk and Beysug Limans (estuaries on the eastern coast of the Sea of Azov, the Kuban River basin) and the flora of the Ust-Manych Water Storage Reservoir (which includes the Shakhayevsky and Zapadensky Limans). This fact is probably due to a common geological history and, consequently, the similar origin of the flora of these water bodies. This is indicated by the findings of species registered in the Azov-Black Sea basin [Kovaleva, 2006a] only in the Akhtarsk, Beysug, as well as in the Shakhayevsky and Zapadensky Limans (*Hippodonta hungarica, Amphora twenteana, Navicula cryptotenelloides, Paraplaconeis placentula, Navicula trivialis, Diploneis suborbicularis*). The presence in the flora of water bodies of the Kuma-Manych Depression of diatoms of marine origin (Berkeleya rutilans, Diploneis suborbicularis, Navicula pontica, Bacillaria paxillifera), the origin of which remains debated, is indicated for the first time.

Keywords: diatom algae, diatoms flora, Shakhayevsky Liman, Zapadensky Liman, Ust-Manych Water Storage Reservoir, Akhtarsk Liman, Beysug Liman.

Glushchenko G.Yu., Luzhnyak O.L. **Transformation of phytoplankton of Lake Manych-Gudilo under the conditions of hydrological and hydrochemical changes** // Studies of the Southern Scientific Centre of the Russian Academy of Sciences. Editor-in-Chief Acad. G.G. Matishov. Issue VII (2018): Natural and Anthropogenic Factors in the Transformation of Ecosystem of the Western Manych. Scientific Editor Dr (Geography) S.V. Berdnikov. Rostov-on-Don: SSC RAS Publishers. P. 104–113. (In Russian).

Abstract. The paper analyzes the literature sources and summarizes the authors' own research materials on the phytoplankton of Lake Manych-Gudilo under the conditions of changes in the hydrological and hydrochemical regime. The study was carried out using standard techniques and traditional manuals. Algocenosis of the water body for the entire research period (since the 1940s) has undergone a number of transformations. 126 species of algae has been previously registered in the Proletarsky Water Storage Reservoir. In the current period, the results of the study revealed 63 species of 8 divisions, of which freshwater green algae remain dominant by the number of species, and less developed are diatoms, dinophytic algae, and cyanoprokaryotes. The study also indicated a periodical development of algae of marine origin against the background of progressive salinization of the lake.

Keywords: phytoplankton, algae, Proletarsky Water Storage Reservoir, hyperhaline Lake Manych-Gudilo, salinization of a water body.

Kreneva K.V. **Microzooplankton community of the water bodies of Lake Manych-Gudilo basin under the conditions of strong spring flood** // Studies of the Southern Scientific Centre of the Russian Academy of Sciences. Editor-in-Chief Acad. G.G. Matishov. Issue VII (2018): Natural and Anthropogenic Factors in the Transformation of Ecosystem of the Western Manych. Scientific Editor Dr (Geography) S.V. Berdnikov. Rostov-on-Don: SSC RAS Publishers. P. 114–117. (In Russian).

Abstract. The water level increase in the reservoirs of Lake Manych-Gudilo basin due to the flood led to the changes in the dominant complex of ciliatocenosis species in spring and affected the quantitative and qualitative composition of the summer ciliatocenosis. In hypersaline lakes, the species diversity increased by an order. Based on the data from the studied water bodies of Lake Manych-Gudilo basin, the expansion of geographic range of tintinnid invasive species *Eutintinnus lususundae* Entz, 1885 was registered.

Keywords: Manych-Gudilo, ciliates, hypersaline water bodies, biodiversity, invasions.

Svistunova L.D. **Rotifers of small mineralized rivers of the West Manych River basin //** Studies of the Southern Scientific Centre of the Russian Academy of Sciences. Editor-in-Chief Acad. G.G. Matishov. Issue VII (2018): Natural and Anthropogenic Factors in the Transformation of Ecosystem of the Western Manych. Scientific Editor Dr (Geography) S.V. Berdnikov. Rostov-on-Don: SSC RAS Publishers. P. 118–129. (In Russian).

Abstract. The data of long-term studies (2004–2016) on rotifers of 14 small rivers with mineralization of 1.8–82.0 g/l in the West Manych River basin are presented. It is shown that rotifers' biocenosis begins to change noticeably at the mineralization boundary of 10–13 g/l. The fauna of rotifers of the studied rivers is characterized by low species diversity and pronounced monodominance of two or three species.

Keywords: mineralization, rotifers, small rivers, West Manych River basin.

Bulysheva N.I., Savikin A.I., Syomin V.L., Shokhin I.V. **Benthic communities of Lake Manych-Gudilo: species composition, quantitative structure and formation factors** // Studies of the Southern Scientific Centre of the Russian Academy of Sciences. Editor-in-Chief Acad. G.G. Matishov. Issue VII (2018): Natural and Anthropogenic Factors in the Transformation of Ecosystem of the Western Manych. Scientific Editor Dr (Geography) S.V. Berdnikov. Rostov-on-Don: SSC RAS Publishers. P. 130–137. (In Russian).

Abstract. The specific features of seasonal distribution, taxonomic structure, and quantitative indicators of zoobenthos in hyperhaline Lake Manych-Gudilo are described. The species composition of macrozoobenthos was depleted with the salinity increase while

maintaining quantitative indicators (biomass, abundance) at the rather high level. A pattern of events that resulted in the change of the dominant entomocomplexes in benthic communities is presented. The larvae of predaceous water beetles predominated from August 2008 to February 2011. The larvae of chironomids of genus *Baeotendipes*, which constituted up to 70 % of the total biomass at coastal stations in August 2008, were absent in samples of 2009 and 2010. This change in the bottom communities' structure is a result of influence of both biotic (elimination by predators) and abiotic factors (the increase of mineralization and growth of areas contaminated with hydrogen sulfide). Nevertheless, in April 2011 solitary specimens of chironomids were recorded again at coastal stations. The short-term decrease in mineralization observed in July 2017 led to a decrease in quantitative and qualitative indicators of macrozoobenthos.

Keywords: zoobenthos, entomocomplexes, succession, Chironomidae, Manych-Gudilo, hyperhaline lake.

Iljina L.P., Sushko K.S. **Specific features of formation, composition, and properties of dry-steppe saline soil complexes of the Manych Valley** // Studies of the Southern Scientific Centre of the Russian Academy of Sciences. Editor-in-Chief Acad. G.G. Matishov. Issue VII (2018): Natural and Anthropogenic Factors in the Transformation of Ecosystem of the Western Manych. Scientific Editor Dr (Geography) S.V. Berdnikov. Rostov-on-Don: SSC RAS Publishers. P. 138–150. (In Russian).

Abstract. The results of the study of dry-steppe saline soil complexes of the Manych Valley are presented. The morphological and genetic characteristics are given, the physical and chemical parameters (humus, composition of soil absorbing complex, particle size distribution, degree and type (chemical properties) of soil salinification) are determined. On the basis of implemented long-term research, the main reasons for the formation of saline soil complexes have been identified and a map of their distribution has been developed with the location of alkali-saline soils distribution areas.

Keywords: dry-steppe saline soil complexes, morphological and genetic characteristics of soils, physical and chemical parameters of soils, GIS technologies, distribution map of areas with saline soils.

Nemtseva L.D., Bespalova L.A., Golubeva E.I., Mikhailov S.I. **Assessment of the status of vegetation cover of dry steppe landscapes under the conditions of cattle grazing applying the methods of remote sensing of the Earth** // Studies of the Southern Scientific Centre of the Russian Academy of Sciences. Editor-in-Chief Acad. G.G. Matishov. Issue VII (2018): Natural and Anthropogenic Factors in the Transformation of Ecosystem of the Western Manych. Scientific Editor Dr (Geography) S.V. Berdnikov. Rostov-on-Don: SSC RAS Publishers. P. 151–164. (In Russian).

Abstract. The results of the study on the state of the plant cover of dry steppe landscapes in grazing conditions based on remote sensing methods in combination with field research methods are presented. Linear empirical dependencies between the values of green phytomass and normalized difference vegetation index (NDVI) have been obtained. The interrelation between the reserves of green phytomass obtained from data of remote sensing of the Earth and natural and climatic conditions has been established. A pasture digression map has been built applying modern methods of landscape mapping.

Keywords: vegetation cover, remote sensing of the Earth, vegetation index, phytomass, pasture degradation.

Shmatko V.Yu., Iljina L.P. **On the fauna of soil nematodes of virgin and anthropogenically disturbed dry-steppe landscapes of the Manych Valley** // Studies of the Southern Scientific Centre of the Russian Academy of Sciences. Editor-in-Chief Acad. G.G. Matishov. Issue VII (2018): Natural and Anthropogenic Factors in the Transformation of Ecosystem of the Western Manych. Scientific Editor Dr (Geography) S.V. Berdnikov. Rostov-on-Don: SSC RAS Publishers. P. 165–175. (In Russian).

Abstract. A comparison of the species diversity and ecology of soil nematodes in virgin and anthropogenically disturbed dry-steppe landscapes of the Manych Valley has been carried out. Ecological and faunistic similarity of communities of soil nematodes for dry-steppe soils was established similar to the soil-formation processes occurring in them. It was revealed that the abundance and species diversity of soil nematodes depends on the time of soil sampling, as well as the state of soil and vegetation cover, and, at the same time, the specific features of structure of the fauna are determined by a high abundance index, rich species diversity, as well as the character of occurrence and dominance of certain species.

Keywords: soil nematodes, biodiversity, ecological and trophic community structure, dry-steppe landscapes, grazing load.

Rebriev Yu.A. **Mycobiota of the State Nature Reserve "Rostovsky" and adjacent territories** // Studies of the Southern Scientific Centre of the Russian Academy of Sciences. Editor-in-Chief Acad. G.G. Matishov. Issue VII (2018): Natural and Anthropogenic Factors in the Transformation of Ecosystem of the Western Manych. Scientific Editor Dr (Geography) S.V. Berdnikov. Rostov-on-Don: SSC RAS Publishers. P. 176–188. (In Russian).

Abstract. The data on 120 species and intra-species taxa of macromycetes of the Rostovsky Nature Reserve and adjacent areas are given in the form of an annotated check-list. The biggest groups in the trophic structure are saprotrophs in humus and dung (coprotrophs). The presence of xylotrophic species and parasites of woody plants in the studied mycobiota is conditioned both by the presence of artificial plantations and natural tree and shrub vegetation. 10 species of macromycetes registered in the nature reserve are

in the Red Book of Rostov Region, with 2 species (*Amanita vittadinii* and *Leucopaxillus lepistoides*) being included into the Red Book of the Russian Federation.

Keywords: fungi, mycobiota, ascomycetes, basidiomycetes, biodiversity, steppes, grasslands, arid territories, Red Lists, rare species.

Yermolaev A.I., Rybtsova V.V. **On breeding ecology of common kestrel (*Falco tinnunculus*) in the Manych Valley** // Studies of the Southern Scientific Centre of the Russian Academy of Sciences. Editor-in-Chief Acad. G.G. Matishov. Issue VII (2018): Natural and Anthropogenic Factors in the Transformation of Ecosystem of the Western Manych. Scientific Editor Dr (Geography) S.V. Berdnikov. Rostov-on-Don: SSC RAS Publishers. P. 189–191. (In Russian).

Abstract. The breeding ecology of common kestrel (*Falco tinnunculus*) nesting in the colonial settlements of rook (*Corvus frugilegus*) located in the steppe ecosystems of the Manych Valley (Rostov Region, Russia) was studied. The characteristics of sizes of the nesting trees and the location of nests on them, which were chosen by common kestrel for breeding, are given.

Keywords: common kestrel (*Falco tinnunculus*), nesting trees, reproductive period.

Savitsky R.M. **Current status of birds' populations of the valley of Lake Manych-Gudilo and adjacent areas** // Studies of the Southern Scientific Centre of the Russian Academy of Sciences. Editor-in-Chief Acad. G.G. Matishov. Issue VII (2018): Natural and Anthropogenic Factors in the Transformation of Ecosystem of the Western Manych. Scientific Editor Dr (Geography) S.V. Berdnikov. Rostov-on-Don: SSC RAS Publishers. P. 192–227. (In Russian).

Abstract. The species diversity of birds of the Kuma-Manych Depression was studied during 1996–2018 based on the results of route surveys and trappings in spider nets. New and rare for the territory bird species have been registered, and the status, terms of migration and character of stay have been determined.

Keywords: birds, diversity, avifauna, migrations, Kuma-Manych Depression.

Kaz'min V.D., Eremenko E.A., Blokhina T.V., Stakheev V.V. **Small animals in the diet and dynamics of the ration of the red fox during the reproductive period in the steppe ecosystems on the Island of Vodnyi in Lake Manych-Gudilo** // Studies of the Southern Scientific Centre of the Russian Academy of Sciences. Editor-in-Chief Acad. G.G. Matishov. Issue VII (2018): Natural and Anthropogenic Factors in the Transformation of Ecosystem of the Western Manych. Scientific Editor Dr (Geography) S.V. Berdnikov. Rostov-on-Don: SSC RAS Publishers. P. 228–242. (In Russian).

Abstract. The diversity increase trends (from 5 to 26 species of animals) were revealed in the ration of common fox in the steppe ecosystems of the Island of Vodnyi in Lake Manych-Gudilo from May to September 2017: 1 – mammal, 1 – bird, 1 – reptile, 23 – invertebrates. Long-term brood holes of foxes are located near the optimal habitats of small animals. The rate of catch (activity) of social voles in the Barber pitfall traps in such areas ranges from 1.1 to 1.3 (regular year) up to 3.3 and 6.4 species (in the years of mass reproduction), of sand lizards – 0.2–0.3 specimens; the dynamics of wet weight of invertebrates in the catches – 195–397 grams. The main share of invertebrates in the diet of fox falls on Scarabaeidae (25–42 %): *Protaetia ungarica*, *Pentodon idiota*, *Copris lunaris*.

Keywords: steppe ecosystems, Island of Vodnyi in Lake Manych-Gudilo, reproductive performance of red fox, dynamics of diet, social vole (Microtus socialis), lizard, invertebrate animals.

Titov V.V., Tesakov A.S., Syromyatnikova E.V. **Early pliocene vertebrate fauna from the Manych River Valley (Orlovskiy District, Rostov Region)** // Studies of the Southern Scientific Centre of the Russian Academy of Sciences. Editor-in-Chief Acad. G.G. Matishov. Issue VII (2018): Natural and Anthropogenic Factors in the Transformation of Ecosystem of the Western Manych. Scientific Editor Dr (Geography) S.V. Berdnikov. Rostov-on-Don: SSC RAS Publishers. P. 243–246. (In Russian).

Abstract. A systematic study of the Ruscinian locality Nizhnevodianoy in the Southern Ergeni Uplands allowed expanding significantly the fauna's list characterizing the Early Pliocene development stage of the region's biocenoses. The association is represented by a number of forms of amphibians, reptiles, birds, small and large mammals. From here comes the most western finding of the rhinoceros *Sinotherium lagrelii*, previously known only from the territory of Asia.

Keywords: paleogeography, paleoecology, Early Pliocene, stratigraphy, fauna.