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## **THE WETLAND MONITORING FOR SUSTAINABILITY OF ROZTOCHIA**

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The monitoring of unique Roztochia ecosystems has a strategic meaning for prediction the effects of man-made landscapes influences, biodiversity and stability of microclimate not only for cross-border Ukrainian-Polish territories, but for the whole Central Europe. Biosphere Reserve (BR) Roztochia is created for the practical strategic realization of sustainable development, preservation of biological and landscape diversity, natural, cultural and historical heritage, carrying out of widespread scientific researches, formation on the basis of European standards of high ecological culture population. It is forming on the basis of existing environmental Poland and Ukraine territories.

Relevance of researches is determined by fundamentally new requirements to efficiency, reliability and completeness of information, which is needed for sustainable development of territories, balanced ecologically safe management of Roztochia ecosystems. The adoption of effective management decisions is based on the use of geographic information systems (GIS), which provide a complex interpretation of monitoring data, its operational update and analysis.

The purpose is to provide informative sustainable development of the water-economic complex, technologies elaboration preservation and renovation of biodiversity waterborne ecosystems of Roztochia.

The task is to determine the establishment of the interrelations of semantic data about elements of the hydrological Roztochia network of natural and man-made origin.

The research methods are based on geoinformation technologies, software complexes and tools for analysis of geospatial objects. Synthesis of ecological-cartographic models is realized by GIS-technologies of MapInfo Professional.

Research analysis on hydro-ecological monitoring Roztochia problems, testifies about application insufficiency of informational-analytical methods and technologies. Deepened and detailed, but fragmentary and discrete landscape researches are not integrated in spatiotemporal, geo-distributed databases system.

The main material rendering and justification of obtained results are relate to complex using of informational-analytical technologies and monitoring instrumental ways of soil, forest growth and hydrogeological Roztochia conditions. The inventory of natural resources, based on integrated monitoring data, forms the basic informational level for assessing the state and dynamics of changes in ecosystems as a result of the introduction of environmental protection regime, economic and recreational activities.

Roztochia is one of the most interesting physical and geographical regions of Eastern Europe, comparatively, it is narrow hillhorn mountain range (width 12-32 km long, about 180 km) in the west of Ukraine and south-eastern Poland [3]. Roztochia is divided into three parts:

Western, Central (located within Poland) and East (Ukrainian Roztochia). Within Ukraine, Roztochia rises above the adjoining plains - Nadsianska lowland (in the southwest) and Nadbuganska basin (in the northeast). In the north of Poland it connects with the Kholm and Lublin highlands.

The main European watershed between the Black Sea and the Baltic Sea passes through the southeast of Roztochia. Waters from the southwestern slopes of Roztochia flowing up to the Xiang river with tributaries - the Shklo river, Cherry, Lyubachivka and Tanva; from the north-east to the Vepr and the Western Bug rivers by the Poltva, Rata, Solokiya and Guchva rivers; in the south of the Vereshchitsia river flows to the Dniester River. The river valleys are wide, mostly swampy, where complexes of ponds are created.

Roztochia Hydrological network is characterized by relatively high river network density of plain rivers and reclamation channels, a small number of lakes and a large number of artificial reservoirs of various functional purposes, small areas of mires.

To impermeable reservoirs belong oligo-mesotrophic reservoirs, natural eutrophic lakes, natural degenerate lakes and ponds. Coenosis of the largest in size environmental eutrophic lakes are widespread in ephemeral reservoir with slow or absent flow - in canals, ponds, former quarries, lakes, old reservoirs, confined to muddy, as well as sandy or peaty sediments rich in nutrients with a powerful layer of sapropel.

Oozy water beaches with greenery on the disturbed, sodded areas with variable humectation mode take place sporadically, within small areas of muddy shores, running waters or old reservoirs, streams, channels, dikes on pastures. Reservoirs ecological safety is ensured by the stability of the hydrological regime, the efficiency of fisheries management, regulation of recreation, pollution prevention and eutrophication.

Results of the research, are worked out algorithms, methods and techniques of ecological monitoring, presented in the form of thematic GIS-model "Hydrological Roztochia Network". It was synthesized ecological cartographic models of hydrological network, road network, anthropogenization of Roztochia soils by geoinformational tools. Geoinformation technologies by combining thematic layers and methods of buffering, zoning, partitioning and merging objects, spatial and attribute classifications established ecological cartographic model hydrological network, with a hierarchical structure of the legend. It was developed informational analytical monitoring technologies of natural man-made landscapes, surface waters for informational solution support according to protection and ecological safety of the Rostochia.

Conclusions and perspectives of further researches consists in practical using of developed model monitoring of hydrological network in infrastructural and investment strategy of Roztochia sustainability. The high biodiversity of wetlands, the scientific recreational and tourist value of the territory of, determine the necessary to identify ecological capacitive information and indication parameters of ecosystem state for optimizing methods and means of their protection, conservation, sustainable use, sustainable development of its territories. The main priorities of sustainable development are socio-economic progress - changes in infrastructure, improvement of water supply and sewerage systems of settlements, introduction of environmentally friendly agrotechnologies, forestry as close as possible to the nature.