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MONOGRAPH

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**MONITORING OBJECTS OF NATURE RESERVE FUND
COASTAL REGION: INFORMATION AND ANALYTICAL
SUPPLYING LAND**

MONOGRAPH

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Issues related to the formation of modern tools for the formation and use of information and analytical monitoring in the context of environmental land use, taking into account the peculiarities of the nature reserve fund, areas of regional development and interaction of stakeholders. The modern tools of mathematical modeling and geospatial analysis are used in the work. The monograph can be used for students, graduate students, scientists, teachers, professionals interacting in the field of land relations, environmental security, territorial development, the use of modern tools of geographic information systems.

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Розглядаються питання щодо формування сучасного інструментарію формування та використання інформаційно-аналітичного забезпечення моніторингу в контексті природоохоронного землекористування з урахуванням особливостей формування природно-заповідного фонду, територій регіонального розвитку та взаємодії зацікавлених сторін. У роботі використовуються сучасні засоби математичного моделювання та геопросторового аналізу. Монографія може бути використана студентами, аспірантами, науковцями, викладачами, фахівцями, які взаємодіють у сфері земельних відносин, екологічної безпеки, розвитку територій, використання сучасних засобів геоінформаційних систем.

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LIST OF CONDITIONAL ABBREVIATIONS

GPS	Global positioning systems
GNS	Geodetic navigation systems
VU	Land use
SP	Space pictures
MM	Monitoring maps
NRF lands	Lands of nature reserve fund and other nature protection purpose
AEF	Aerial photographs
BFP	Budget funding programs
Remote sensing	Remote sensing of the Earth
NRF	Nature reserve fund
MM	Mathematical modeling
NTC	Natural-territorial complexes
CRED	Coefficient of realization of ecological danger
EN	Eco network
DBMS	Database management system
GM	Geoinformation map
RL	Regional level
CDB	Cartographic database
RTM	Real time mode

INTRODUCTION

In modern conditions, the formation of land use, their protection and rational use is of particular importance. In recent years, the influence of anthropogenic factors on all natural processes, including land resources, is growing. In this context, it is necessary to point out the irrational use of land, which leads to their degradation, which is caused by excessive plowing, limited use of organic and mineral fertilizers, insufficient protection of soils by agroforestry and poor quality of soil use, reduced use of coastal areas, growing environmental problems related to the marine environment. Rational use and protection of coastal lands is a scientifically sound process that takes into account the natural properties of the land for its intended purpose in compliance with the directions of their protection. To solve the presented problems it is proposed to monitor the use of lands of coastal regions on the basis of formation and use of information-analytical and geoinformation support.

At the present stage, the tasks of land development of the objects of the nature reserve fund of the coastal regions have not been solved, the system of information-analytical and geo-information support of their definition has not been built, which reduces the level of efficiency of use. In such conditions, there is a need to monitor the land use of nature reserves of coastal regions on the basis of information and analytical support, using the tools of geographic information systems. Thus, the topic of the work is relevant and timely.

The purpose of the study is to develop theoretical and methodological provisions and practical aspects for the formation of information-analytical and geo-information support for monitoring the use of land objects of the nature reserve fund of coastal regions. To achieve this goal, the following tasks are solved:

- to identify trends in the formation and use of land objects of nature reserves;
 - to substantiate the theoretical meaning of the concept "monitoring of lands of nature reserves of coastal regions";
 - to propose an approach to assessing the level of land use of nature reserves;
- to form information-analytical and normative support of monitoring of land use of

objects of nature reserve fund of coastal regions;

- to develop diagnostic-analytical system of factors of formation of monitoring of land use of objects of nature reserve fund of coastal regions; to propose a method for assessing the level of land use of nature reserves of coastal regions,

- to confirm the completeness and reliability of the links between the integrated indicator of the level of land use of the nature reserve fund of coastal regions and relevant factors based on the application of the method of neural networks;

- to develop scientifically substantiated recommendations on development of monitoring of land use of objects of nature reserve fund of coastal regions.

The object of study - a set of interrelated processes that affect the use of land objects of the nature reserve fund of coastal regions.

The subject of research - theoretical and methodological provisions for the formation of land use monitoring of nature reserves of coastal regions.

Theoretical and methodological basis of general scientific methods: systematization, comparison, dialectical development of systems, methodology normative-legal, information-analytical, geoinformation support of land use monitoring of objects of nature reserve fund of coastal regions.

To obtain the results of the research special methods are used: structural-substantive analysis ensuring monitoring of land use of objects of the nature reserve fund of coastal regions; analytical and methods of expert analysis - to determine the level of land use of nature reserves of coastal regions; analysis of hierarchies - to determine the weights that characterize the mutual influence of land use indicators of the nature reserve fund of coastal regions; mathematical modeling - for the development of models that determine the impact of systemic factors on the integrated indicator of the level of land use of the objects of the nature reserve fund of coastal regions; neural networks - to confirm the completeness and reliability of the results of mathematical modeling; of geoinformation analysis - to develop a geoinformation monitoring map of land use of nature reserves of coastal regions.

The practical significance of the results is that the theoretical results and methodological provisions are brought to the level of specific proposals and methodological developments to increase the level use of lands of objects of nature reserve fund of coastal regions.

The practical significance of the work is determined by:

1. Formed factors for assessing the level of land use of the objects of the nature reserve fund of coastal regions for the development of information-analytical and geoinformation support for making informed decisions.
2. The proposed method of integrated assessment of the level of land use of the objects of the nature reserve fund of coastal regions for the formation of the quantitative basis of information-analytical and geo-information support of monitoring.
3. Developed geoinformation monitoring maps for the formation of a system for monitoring the use of land objects of the nature reserve fund of coastal regions.
4. Areas of application of mathematical and neural modeling to establish relationships between factors of land use of nature reserves and identify their changes in the forecast period.

The scientific value of the study lies in the developed theoretical and methodological provisions for the formation and application of information - analytical and geoinformation support of monitoring of land use of objects of nature reserve fund of coastal regions.

The monograph consists of an introduction, five chapters, conclusions, a list of used sources, appendices, which address issues related to the definition of information-analytical and geo-information support for monitoring land use of nature reserves of coastal regions, identified areas its application, presents tools for its evaluation and application, development of scientifically sound recommendations for improving the efficiency of land use of nature reserves of coastal regions and identified the impact on this process of stakeholders.