Abstract No : 120

Coastal management tools and instruments, databases

Assessing Sustainable Development Of The Coastal Zone. Gis Approach

Olga Arkhipova [(1)]

(1) IAZ SSC RAS, 344006 Rostovon-Don, Russia
Telephone: +78632509805 Email: arkhipova@ssc-ras.ru

The coastal ecosystems of the Azov and Black seas are the objects of this study. The goals of this research are the identification of the ways of stabilization of the ecological situation, the development of the approaches and recommendations for sustainable development of the coastal areas and determining the optimal recreation capacity of the coastal ecosystems. This research is aimed on identification of the recreational capacity, identification of the factors of socio-ecological sensitivity of the zones of high recreational load and the evaluation of the sustainable development of the coastal ecosystems of the southern seas. The research is based on the use of geoinformation approach to the development of systems for the monitoring of the socio-ecological condition in the recreational zone and assessing the impact of the increase of the recreational capacity of the resorts on the identified factors. At the same time an interdisciplinary approach was adopted as a methodological framework. Basic research: - Development of a methodological framework for the assessment of recreational capacity and permissible load on the coastal ecosystem of the Southern seas. - Development of an integrated system of evaluation of sustainable the development of the coastal ecosystems of the southern seas with the increase of the recreational load, including a system of evaluation of the current state of coastal ecosystems, complex mathematical models for the assessment of the sustainability of the development of recreational coastal zones, determination of optimal recreation capacity without the degradation of coastal ecosystems. - Application of the developed system to the task of assessing the recreational capacity of the health resorts and the determination of the maximum permissible load on the coastal ecosystems of the Azov and Black seas. The range of factors is defined as a "controlled" risk to human health. It consists of the factors characterize the environment of recreational areas: air quality, microclimate comfort, acoustic comfort, the quality of the aquatic environment. The use of GIS is one of the most modern instruments of the research in the field of assessment of anthropogenic impact on the environment of the resort. The functionalities of the GIS were extended through the use of an instrument of forecasting - models. For the solution of tasks connected with the assessment of recreational load on the coastal area the prototype of the geoinformation modeling system was built . The system implements the possibility of systematic observations and assessment of the state of the environment, predictive diagnostics of changes of elements of nature-recreational complex under the influence of anthropogenic activities, analysis of development of the processes of the environment.

The system includes a complex of program modules - mathematical models of evaluation of the sustainability of the development of recreational coastal zone for determination of optimal recreation capacity . A prototype system includes the following blocks: - spatial model of the territory of the coastal zone of the Azov-Black sea coast; - the block of forecasting on the basis of the selected development scenarios, including models for calculation of pollution from point and line sources, with the ability to play different scenarios; - the module of geostatistical analysis, which includes: the module construction of geochemical map of study area on the basis of data expeditionary researches and carrying geochemical model; - assessment module of the demographic development of the region on the basis of the data of the state statistics; - assessment module of the extent of impact of the development of recreational activities on the quality of the environment and the human health. Key words: THE RECREATIONAL CAPACITY, RECREATIONAL LOAD, COASTAL ECOSYSTEMS, ECOLOGICAL MONITORING, SOCIOLOGICAL MONITORING, INFORMATION TECHNOLOGIES, GEOINFORMATION TECHNOLOGIES (GIS) AND DATABASE (DB), THE SIMULATION.