

# CARTOGRAPHIC METHOD OF COGNITION: ANALYSIS AND EVALUATION OF ECOLOGICAL STATE OF A TERRITORY

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An important methodological concept of modern cartography is connected with cartographic method of study, which essence consists in a profound involvement of cartography in sciences of Nature and society for solving a wide scope of scientific and technical problems.

One of such urgent research fields is the theoretical and applied ecology.

Topographic maps seem to be an efficient tool for the cognition and presentation of ecological space and time aspects of relationships between the nature and societies. They are the source of sufficiently ample information on the terrain representing the collection of objects, capable to affect the ecological state of territory.

The present report describes the methods elaborated by its authors, for the evaluation of territory ecological state with the use of information displayed on topographic maps enabling to (1) evaluate anthropogenic impact; (2) estimate the influence of natural objects and phenomena on the ecological state; (3) carry out morphometric analysis based on the areas natural and anthropogenic ecosystems.

The evaluation of anthropogenic influence is based upon the analysis of demographic influence, economic exploration of territory and transport. The main role in ecological and geographic analysis belongs to the population, that is why the aspects related to the economic and recreational activities are thoroughly studied. Using the information on settlements and their number, the population and its distribution type, there were deduced indices of population density, demographic pressure, demographic potential was calculated, and isopleth maps were compiled. The information on industrial and social objects displayed on maps, served to calculate the relative values of indices of ecological danger of industrial enterprises, the probable limits of the pollution spread. On that base there were also proposed appraisal categories of altered lands, of technogenic relief; it was also analyzed cause-and-effect relationships with the use of the scheme:

nature of influence      outcome.      →

The information on road network and communications was used to compute the indices of integral polluting influence of transport (railways, speedways and highways, pipe lines, electric lines). Derived isopleth maps enabling to obtain the values of those indices for any location, are compiled.

The influence of natural objects and phenomena on the ecological state was evaluated using results of the analysis of hydrographic objects (surface waters), relief, vegetation and soils shown on maps.

There were considered conceptual approaches enabling to determine hydro-ecological properties, influence of the relief on the formation of ecosystem and its "organizing" role in the flow of

substance and energy in geo-ecosystems; vegetable cover and soils as indicators of ecosystem state were also analyzed.

There were systematized and tested the methods enabling to establish morphometric and morphologic properties of water flows and drainage systems.

During experiments more than 20 features influencing upon the territory ecological state were revealed and determined on maps, their ecological interpretation was carried out.

The analysis of natural and anthropogenic influence and landscapes with the use of maps allows to evaluate general extent of landscape anthropization and to differentiate morfostructures affected by human activities into groups of weakly changed, averagely changed and altered areas.