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BOOK REVIEWS

RÎŞNOVEANU, Geta – *coord*., 2010 – ***The Characterization of populational Systems***, Ars Docendi Publishing House, University of Bucharest, 392 pp.

RÎŞNOVEANU, Geta – *coord*., 2011 – ***The Identification and Characterization of ecological Systems***, Ars Docendi Publishing House, University of Bucharest, 490 pp.

These two volumes result from the experience of the school of ecology and sustainability that Prof. A. Vădineanu initiated at Bucharest University, for the first time in Romania. We believe the volumes can be considered a successful attempt to provide Romanian trainers with a way of modernizing ecological researches and integrating them into complex socio-economic activity, particularly under the conditions in which globalization (a great challenge of the 21st century) can generate unimagined dysfunctions and imbalances.

At the same time, they are the result of the collaboration of young people with the generation of full professional maturity, the whole team (M. Adamescu, C. Cazacu, R. Cazacu, G. Cosor, N. A. Geamănă, O.F. Musceleanu, M. Oprina-Pavelescu, C.-M. Popescu, C. Postolache, G. Rîşnoveanu, A. Vădineanu and I. Văduva) dedicating these volumes to the much-missed academician Nicolae Botnariuc.

The first volume begins with "*The population: definition, significance of the research*", in which the basic structural and functional characteristics of this supra-individual organization level are emphasized.

Of particular importance for an intending researcher is the chapter focusing on the "*Organization of the research program*", which outlines the principles to be considered in the planning of research, the correct setting of the aims and objectives of population researches, the need for correlating their spatio-temporal extension within the available time and the established budget. Only after these first two stages, will the working methods regarding primary data collection, the measurement of the established parameters, data processing, the identification of organisms, statistical analyses and mathematical modelling be established.

A consistent chapter includes the "*Taking and primary processing of the samples*", a stage upon which the quality of the data, and implicitly the conclusions to be drawn, depend to the greatest extent. Particular emphasis is laid on the selection of the ecosystems in which the populations will be studied; on the need for rendering the heterogeneity of the given hydro-geomorphological unit (HGMU); on the choice of the size, form and number of the samples; on peculiarities in the case of the study of human populations; on sampling frequency (depending on the life cycle of the given species, on spatio-temporal extension and the aim of the research); as well as on the data-processing programme.

Almost equally extensive is Chapter IV ("*Estimation of the size of natural populations*"), which is explained by the importance of this parameter, by the diversity of evaluation methods

(counting, capture, marking and recapture, census, transects, the closest individual or closest neighbour, etc.), as well as by the need for correlating the methods with the group of organisms concerned.

Regarding *"Spatial distribution*", the main types found in nature (random, uniform, grouped) and the most used indices (dispersion, grouping, aggregation k, Morisita index, etc.) are given particular attention, with some illustrative examples from the literature consulted.

The next two chapters approach *"The age structure of natural populations*", in which alternative methods for establishing the number and amplitude of age classes, class distribution, and the way of elaborating and interpreting the age pyramid are scored; and *"Population dynamics*", with the estimation of emigration and immigration rates, birth rate and mortality rate, life expectancy, the importance of command factors or prognosis.

Well elaborated but much more difficult are the methods regarding the *"Estimation of functional parameters*": the energy budget (biomass, consumed energy, expended energy, secondary production), the role of populations in biogeochemical circuits, in the generation of resources and services, with emphasis on the importance of *"... bringing to the foreground the populations of various species as resource and service supplying units (SSU) for socio-economic development*" (p. 299).

The volume ends with *"Research methods specific for human populations*", in which the role and modalities of sociological inquiry and the importance of the Fuzzy Cognitive Mapping Method in the involvement of social partners in dialogue are stressed.

The second volume begins with *"Delimitation and identification of the spatio-temporal configuration of ecological systems*" and develops aspects related to the hierarchical organization of ecological systems; the spatial delimitation and identification of HGMU at ecosystem level (by indirect and direct methods), at the level of HGMU complexes (hydrographic basins); methods and techniques for the spatial identification and delimitation of ecotone areas, as well as for the characterization of the connectivity between HGMU. This first chapter naturally introduces us to the geographical, chorological, matrix and holistic models which, developed using GIS techniques, allow us better to characterize the structure of ecological complexes and, particularly, to evidence the dynamic trends of these complexes, depending on certain environmental variables.

The chapter *"Characterization of hydrogeomorphological units*", dedicated to the complex of physical factors, approaches the fluctuations of these factors and their significance for the components of biocoenoses, the modalities for the measurement and characterization of climate parameters, morpho-structural parameters of soil, physico-chemical parameters of water, soil and sediments, as well as physico-chemical exchanges.

The next chapter (*"Characterization of the internal spatio-temporal structure of biocoenoses and biocoenosis complexes*") lays stress on the living component of ecosystems, starting from the conceptual framework, methods for the characterization of *alpha*-diversity, continuing with *beta*- and *gamma*-diversity indices, and ending with the interesting (but difficult) multivariate analyses.

The last chapter (*"Functional characterization of ecological systems*") starts with a complex presentation of methods for the evaluation of primary production in aquatic and terrestrial ecosystems, including in ecosystem complexes, then develops the methods for the evaluation and characterization of litter decomposition, and ends with the estimation of the functional potential of wet areas.

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By their content and by the manner of presentation of the various topics, these volumes are recommended as an important, essential and useful guide for those who wish to approach elements of the taxonomic and ecological hierarchy of the living world: students, master and doctoral students or researchers already trained who wish to go beyond or complete studies of flora or fauna by the more difficult (but necessary) population and ecosystem study methods.

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