

## To the question of biological databases designing

A.M. Lyakh (1) and I.V. Agarkova (2)

(1) Dept of Biophysical Ecology, Institute of Biology of the Southern Seas  
2, Nakhimov av., Sevastopol, 99011, Ukraine

(2) Dept of Physical Geography and Oceanography, Geographic Faculty, Tavrical National  
University 2, Yaltinskaya str., Simferopol, 95000, Ukraine

E-mail: [antonberlin@yahoo.com](mailto:antonberlin@yahoo.com), [anton@ibss.iuf.net](mailto:anton@ibss.iuf.net)

The structure of a biological database, which provides some marine organism information storage, has been proposed. The biological database is a part of an oceanographic database, which consists of four main and some additional data tables. The main data tables are the following:

A table of cruises, which describes expeditions, their start and end dates, itinerary, who took part in them, etc.

A table of stations, which is a set of oceanographic samples sampled in some point of the World Ocean at the surface or on several discrete depths.

A table of transects, which is a set of oceanographic samples sampled through the fixed time or/and space intervals from one oceanographic station towards another.

Tables of values, which store either parameters of marine organisms (their dimensions, abundance, volume, taxonomic classification, etc.) or physical-chemical characteristics of the water.

We have used the term 'oceanographic parameter' as a general concept, which includes features of water environment, geomorphology of the bottom, characteristics of physical-chemical processes in the water, and properties of biological components. The oceanographic parameters are divided into two groups. The first group (species specific) is a set of only biological parameters, which may be classified according to the taxonomic scheme. The second group (general data) is a set of all other oceanographic parameters, including biological parameters, which describe features of the whole marine community or features of marine organisms community fractions.

There are two different types of data tables (4). The first type of data tables, storing species specific information, includes two linked data tables: a primary and a summary. Each of them keeps the taxonomic names of marine organisms and information about their dimensions, abundance, horizon(s) where they have been sampled, etc. The summary data table summarizes information from the primary data table, i.e. it has total values: total abundance, total biomass, etc.

There are three types of methods of oceanographic parameters measurements, which define the way of oceanographic values interpretation. The types are the following:

Single – the parameter value characterizes some feature of the water environment on the whole station (water transparency, depth of hydrogen sulphide zone, etc.);

Discrete – the parameter value characterizes the state of the water environment or the state of the biological community in the isolated point of the water column. For example, the water temperature, salinity, or the plankton abundance and biomass measured in a water horizon.

Continuous – the parameter value characterizes the general (total) state of the water environment or biological community in the water column. For example, the structural indices of zooplankton community in the water column are the continuous oceanographic parameters.

All species specific data are of the discrete type. General data can be any of the three types.