Encyclopaedia Taxonomica: a taxonomic tool for marine biological monitoring

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Marine research that depends on data from biological monitoring is always hampered by the lack of consistency in names of biological species. When data from several sources need to be used, a lot of effort is always spent on harmonisation of the data. Inconsistencies arise from both different views and expertise in naming of organisms, as well as new insights in taxonomy that come with time. For example, the names of toxic phytoplankton species have changed upon introduction of new molecular techniques that make clear that algae found near Japan are identical to species in the North Sea. To deal with these changes and inconsistencies, and serve as a major tool to standardise biological monitoring, we have developed Encyclopaedia Taxonomica (www.taxonomica.com). Encyclopaedia Taxonomica is currently used as a standard for taxonomic information for the collaborating national and local water authorities in The Netherlands (CIW).

Encyclopaedia Taxonomica is an Internet based repository of taxonomic information, maintained by experts of specific taxonomic groups. Unlike most other systems, Encyclopaedia Taxonomica does not use coded name lists. Coding systems where created with the idea of bringing the taxonomical hierarchy in the code. This turned out to be an unfortunate choice since taxonomical hierarchy changes over time. Encyclopaedia Taxonomica uses the strength of the Internet to communicate with groups of people, whom all play an important role in getting all these different names (scientific names, names in their own language, synonyms) into the database.

We create a virtual office for teams of experts working with the same groups of organisms. This enables them to jointly create complete listings of species. Our software creates unique codes for taxa and names joining all different names for a taxon or species together for reference. Additionally, we enable users to enter their own coding system into the database. This makes it a system that is well suited to bring biological monitoring data together. Synonyms can be translated into currently used names. The coding information can be used to exchange data between different monitoring databases.

Encyclopaedia Taxonomica consists of two major tools. The database with validated taxonomic information is Internet based. Users and experts use the 'EcoWorkBench' as a local software tool that communicates with the central database. Information can be downloaded from Encyclopaedia Taxonomica to the user, and the user can upload new taxonomic information to the system, which needs to be validated by the experts before it is made available. The communication between the central system and the users is XML-based. The use of the system will be demonstrated as well as applications in the analysis of biological monitoring data.