Development of a Knowledge Base for the Corals of the Mascarene Archipelago

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A knowledge base on the scleractinian corals of the Mascarene Archipelago (SW Indian Ocean) is being developed using a collection of ca. 3000 specimens belonging to 185 species and 58 genera. This knowledge base is an information technology tool which provides computer-based assistance for the description, classification and identification of corals, and a tool to be used for a better knowledge and more reliable identification of corals for reef management purposes.

The knowledge base was developed with an original information technology system (IKBS : Iterative Knowledge Base System) which proceeds in 3 steps : 1) Knowledge is acquired through a descriptive model that suits the needs of experts at a semantic level; 2) Knowledge is processed with an inductive-learning algorithm that takes into into account structured knowledge introduced in the descriptive model of the domain; 3) Knowledge is refined through the use of an iterative process to evaluate the robustness of the descriptive model and descriptions.

The extreme variability of intraspecific and even intracolonial structures of scleractinian corals, together with a very large ecological or geographic distribution, represents one of the major difficulties faced during the construction process of the knowledge base. Compulsory reference to specialized literature or even the description of type material do not always provide a guarantee of reliability, due to the lack of accuracy and contradictions resulting from the above mentioned variability. Consequently, the construction of the descriptive model and the robustness of the case base (coverage, accuracy, redundancy) during the development of the first step of the system are of paramount importance. To date 4 families (Pocilloporidae*, Fungiidae, Astrocoeniidae, Siderastreidae) covering 15 genera and 37 species are entered (or are in the process of being entered) in the knowledge base.

* available http://www.univ-reunion.fr/~ikbs