

Introduction

“Unfortunately, nothing is known on the biology of...” How many times have we read this silly little phrase—or a variant thereof—in papers or reports on the resources forming the basis of tropical and subtropical fisheries?

A silly little phrase it is because it is generally not true—it reflects only the information available to its author. This may be a scientist in a developing country, rather isolated, and without access to a good library; or a consultant, too hurried to even look up Aquatic Sciences and Fisheries Abstracts (ASFA); or a young “expert” starting a career in tropical development, following completion of a thesis on “the Dynamics of Coldfish in the Frigid Sea”.

This little phrase, as default assumption of those who do not know better, is also very often a costly error, as it is usually followed by a research proposal outlining how various information, already available on the species in question will be gathered before anything else is done.

Duplication is not the only problem resulting from that little phrase: the quality of any research or management advice will suffer every time the extent of information on a given topic (or here: resource species) is not considered. However, while it is easy to follow up on the negative effects of the little phrase, overcoming the situation which led to it being so widespread is something else. The FISHBASE project, presented below, is an attempt to address this issue. Through this project, an effort is made to make available, to any researcher, resource manager, or other interested persons, the bulk of what is known about all species of fish in the world.

The Elements of FISHBASE

Fig. 1 presents the elements and the development of FISHBASE.

The most important level—and the most costly to implement—is obviously Level III, which contains the *raison d'être* of FISHBASE, i.e., quantitative and

FISHBASE: Assembling Information on Fish

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qualitative data on 5,000 species of fish (as of October 1991). These data entered through about 1,200 fields are arranged and cover the following areas: nomenclature (including museum types); distribution; ecology (e.g., habitat types,

food types, etc.); morphometrics (including graphs); population dynamics (e.g., growth parameters, natural mortality, etc.); reproduction (including information on graphs of eggs and larvae); diseases and parasites; genetics and aquaculture systems, as well as (presently) 2,000 references, identified by language.

FISHBASE is implemented using DataEase, a powerful relational database which allows fast development of large applications without any programming (Level I in Fig. 1). It also enables the user to perform sophisticated searches by filling in simple forms for record and field selection. There is no need to learn a complicated programming/query language.

Also, free text entries are reduced to a minimum (about 10% of all fields); the bulk of the entries are numeric fields and preprogrammed choice fields, roughly similar to “multiple choice” test forms, with only one of the fields being “right”.

Thus, for example, one does not “enter” into FISHBASE, for any fish to be

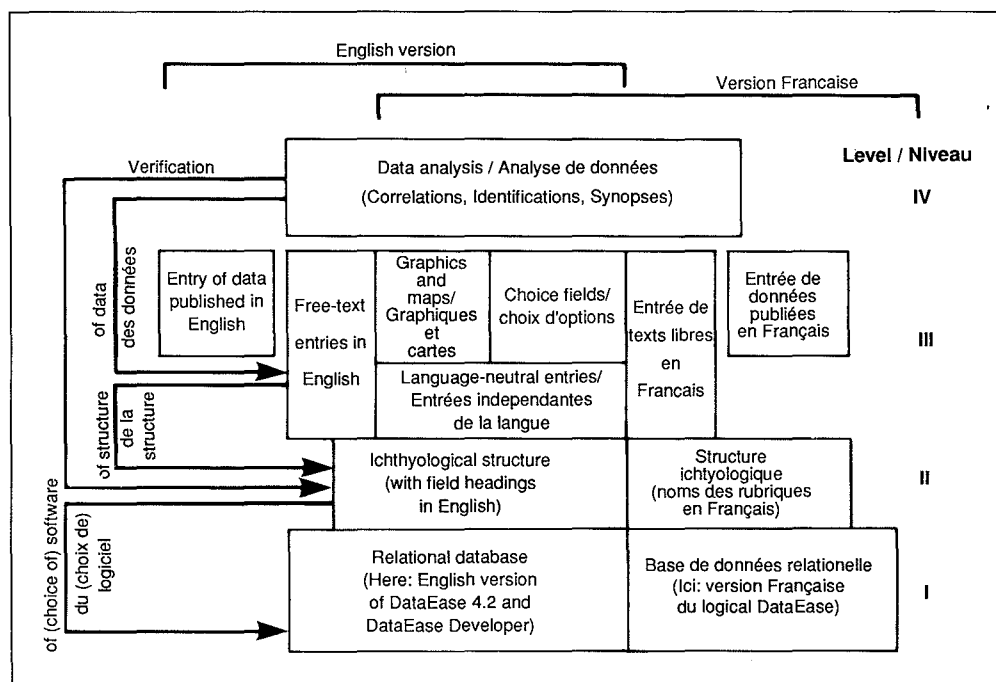


Fig. 1. Elements of FISHBASE by “level”:

- Level I is represented by a commercial database, which can produce executable files that can be distributed royalty-free;
- Level II is the ichthyological structure, created by ICLARM staff in cooperation with various specialists throughout the world;
- Level III consists of the entries themselves, of which only a small fraction—the free text entries—will require translation when preparing versions of FISHBASE for languages other than English, here illustrated for the case of French;
- Level IV consists of various graphical and statistical routines for the presentation and comparative analysis of the quantitative and categorical data entered into FISHBASE (see text).

described, the shape of the caudal fin, but rather must select the appropriate shape from a preprogrammed list (i.e. "forked", "lunate", etc.).

This procedure, applied whenever descriptive information could be structured, has a number of advantages, notably:

- (i) fast entry (no need to type the same words repeatedly);
- (ii) low storage requirements (99 different items of up to 60 characters can be differentiated occupying only one character storage space per record);
- (iii) automatic "translation" of descriptive data from the original version of FISHBASE (in English) to any other language, i.e., only the choice lists have to be translated;
- (iv) possibility to perform various logical operations with and statistical analyses of descriptive data.

This versatility has a price. Thus for fishes, an entire "ichthyological structure" had to be created (Level II in Fig. 1) which accounts for the morphology, anatomy, ecology, behavior, etc. of fishes but which precludes straightforward entry of data on other taxonomic groups, e.g., shrimp or cephalopods.

Collaboration Between FISHBASE and Other Projects

The initial plan concerning FISHBASE (in ICLARM's Five-Year Plan 1987) was for about 2,000 mainly tropical, commercially important species to be included.

However, given ICLARM's growing role in international fisheries research and the ease with which entries can be added to FISHBASE, it was decided that FISHBASE would eventually cover all fish species in the world (about 20,000). This will not detract from ICLARM's focus on tropical/subtropical resources – they will continue to be emphasized, and they form the overwhelming bulk of the extinct fish species anyway, the fish fauna of temperate and cold waters being quite depauperate. Covering all fish species moreover will allow for the transfer of more knowledge on, e.g., the population dynamics and ecology of marine fishes

from north to south, and numerous interregional comparisons.

Such large scope implies, however, that ICLARM cannot work on this alone. In January 1989, ICLARM and FAO agreed that FISHBASE should become a joint project, being developed at ICLARM in close cooperation with FAO. The FAO Species Identification Programme for Fishery Purposes provides scientific and vernacular nomenclature as well as ecological and fisheries information on marine and brackishwater species. This is accomplished through the FAO database SPECIESDAB, whose data have been built up at FAO for over four years.

The present scope of FISHBASE implies external funding, now shouldered principally by the Commission of the European Communities (CEC), with additional inputs from the French Agence pour la Cooperation Technique et Culturelle (ACCT), which supports the development of the French version of FISHBASE and the incorporation of data from Francophone West Africa.

Fig. 2 illustrates the different collaborators of and contributors to FISHBASE as of August 1991. More collaborators are needed. ICLARM has developed DATA COLLECTION FORMS (also available in French), which provide an easy way to accumulate information on a species for entering into FISHBASE. ICLARM looks forward to sending out these forms to interested colleagues.

Availability of FISHBASE

In September 1992, at the end of the present phase of CEC-funding, a diskette-based version 1.0 of FISHBASE will be made available to institutions in developing countries and to all collaborators.

Following feedback and corrections/amplifications, a CD-ROM (laser disk) will then be prepared, along with a user's

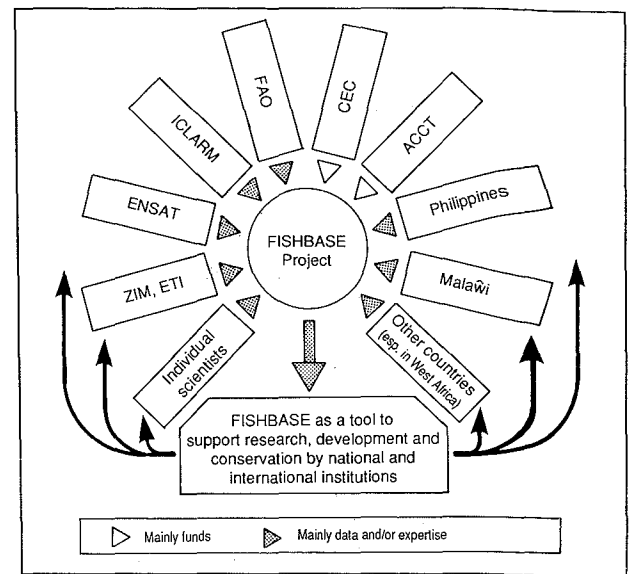


Fig. 2. Contributors to the FISHBASE project as of August 1991 (clockwise): Commission of the European Communities (CEC), Bruxelles; Agence pour la Cooperation Technique et Culturelle (ACCT), Paris; University of the Philippines, Marine Science Institute, Quezon City; Department of Fisheries, MalaWi; Zoologisches Institut und Museum (ZIM), Hamburg; Expert Center for Taxonomic Identification (ETI), Amsterdam; Ecole Nationale Supérieure Agronomique de Toulouse (ENSAT); International Center for Living Aquatic Resources Management (ICLARM), Manila; Food and Agriculture Organization of the United Nations (FAO), Rome.

manual, for distribution in late 1993. It is then expected to produce an update disk every 12 or 18 months, each of which will replace the previous version, i.e., contain new material and corrections to the previous entries, and will be jointly distributed by FAO and ICLARM.

Donors will be sought for distribution of the FISHBASE CD-ROM (and of appropriate disk readers) in developing-country institutions (notably universities, where FISHBASE can be used for both research and teaching) and for training courses, in which interested parties will be taught the use of FISHBASE for information retrieval, species identification, quantitative analysis of comparative data, etc.

For more information on FISHBASE, contact the Director General, ICLARM, MC P.O. Box 2631, Makati, Metro Manila, 0718, Philippines.

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