

The difficulties and complexities of facilitating development based on custom have meant that efforts to develop procedures for accommodating community-based marine tenure systems have had to be put aside.

Traditional community-based marine tenure is not, as is widely suggested, necessarily a hindrance or problem in itself. The problem is the apparently irreconcilable gap between traditional and modern concepts of natural resource development and of

financial security, and the difficulty which foreigners have in understanding the true nature and cultural significance of communal tenure.

The Vanuatu Fisheries Department is committed to developing a procedure for marine resource development which incorporates the best of the customary management systems in a modern context. After all, the reality is that when resources are degrading you can't wait for science.

On traditional knowledge, fish and databases: a call for contributions

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FISHBASE is a joint project between ICLARM and the Food and Agriculture Organization (FAO) of the United Nations and funded by the Commission of the European Communities (CEC). As of September 1992, a third of the over 20,000 fish species in the world have been entered in FISHBASE. These cover over 80% of the world's fish catch, and include all species used in aquaculture, all commercial species of the North Atlantic and the Mediterranean, most European freshwater species, over 800 African freshwater species, over 1,500 Asian marine species, all freshwater species introduced to another country, all fishes included in the IUCN red list, all marine fishes dangerous to humans, all important game fishes, and more. For all of these species, FISHBASE contains over 8,600 synonyms and over 20,000 common names catalogued by language and country where the name is used, a prime example of traditional knowledge.

The database has four elements or 'levels'. The first is a commercial relational database, DataEase 4.5 which permits the easy development of applications that can be distributed without copyright restrictions. The second level is the so-called 'ichthyological structure', which assembles the different types of biological and ecological information into topic-specific tables or forms, e.g., on reproduction, eggs, larvae, population dynamics, nomenclature, introductions, etc. FISHBASE now consists of over 60 tables, each with 10-200 fields. The third level, the actual entry of data, performed exclusively at ICLARM headquarters, is done either by extracting information directly from the literature or from data collection forms sent by colleagues and/or collaborators. The fourth level is a collection of data analytical tools, i.e., routines that will permit checking and inter- and intra-specific comparisons of the data in FISHBASE.

The ichthyological structure in Level 2 enables FISHBASE staff to enter large amounts of information rapidly with a minimum of typographic and other errors; information is reduced to mostly numeric or categorical inputs which do not have large memory storage requirements. Moreover, this structure enables even complex searches for the information contained in the database to be performed straightforwardly.

A first (diskette) version of FISHBASE is available since September 1992 to collaborators and to experts who will check the information in the database. The second (CD-ROM) version is scheduled for release in late 1993, both in English and French, with annual updates, based on continued data entry at ICLARM headquarters.

If traditional knowledge and the management systems based on it are to have any role in modern fisheries management, then there is an urgent need to record traditional knowledge. This was emphasized by Arizpe (1989) who stated that a 'massive

effort should be made, the world over, to record local and traditional knowledge ... using computers and ethnographic methods.'

The Pacific Islands are one of the world's greatest repositories of traditional knowledge (TK) related to fisheries and so can contribute in a major way to a database on this topic.

That such a task is not small we now know from ICLARM's two-year experience of developing FISHBASE, a computerized encyclopedia of biological data on the fishes of the world (Froese 1990; Pauly and Froese 1991; Froese et al. 1992). On the other hand, efforts can be combined. Thus, we recently realized that the basic structure of FISHBASE is compatible with TK. Thus FISHBASE can be used to achieve what Arizpe called for, at least as far as TK on fish is concerned (Palomares and Pauly 1992).

Incorporating TK related to fish into FISHBASE cannot be accomplished by fishery biologists alone, as they are often sceptical about the value of fishermen's and other TK. There is a need, therefore, to establish a multidisciplinary, international network of collaborators and contributors of TK to FISHBASE.

Members of this network will help FISHBASE project staff develop a table for entry of TK on fish into FISHBASE. Once this table is ready, entry of TK must then follow the rules set up for the other information in FISHBASE, i.e.:

—all information entered must be attributable to a published, verifiable source (not necessarily in peer-reviewed journals; these could be books, reports, theses, i.e., the so-called 'grey literature');

—information must refer to individual fish species or group of species, i.e., must not refer to 'fish' in general;

—information must be broken into relatively small units or choices, e.g., 'fish species X is used by ethnic group Y for either A, B, or C' ..., where A, B, etc. are choices described by standardized text fields with descriptions valid between species and ethnic groups.

ICLARM requests that all parties interested in cooperating with the FISHBASE project send copies of publications from which information can be extracted, pertaining to those areas of 'ethno-ichthyology' compatible with FISHBASE:

—**common names of fishes** (in any language). The common names fishermen use for fishes in their respective areas and languages most often give indications on the fish's body form, colour, habitat, behaviour and/or ecology (Palomares and Pauly 1992). Such lists exist for numerous areas of the South Pacific (Bagnis et al. 1972; Dalzell et al. 1991), and we anticipate that their incorporation into FISHBASE via the COMNAMES table illustrated in Fig. 1 will be useful for cross-cultural studies.

—**biology of fishes**, viz reproduction, migration, behaviour, etc. Information on the biology or ecology of a species from accounts by fishermen can be accommodated in other tables of FISHBASE. For example, knowledge of spawning aggregations of a species of groupers or the 'mokas' (*Plectropomus leopardus*) by the fisher-

Figure 1: FISHBASE form for common names of fish

| | | | |
|--|----------------------------|------------------------------|--------------------|
| COMNAMES FORM | | contributed by: _____ | date: _____ |
| Common name: _____ | | MainRef: _____ | |
| Country: _____ | Abbreviation: _____ | C_code: _____ | |
| Language: _____ (see attached list for choices) | | | |
| Remarks: _____ | | | |
| Valid scientific name | | | |
| Species: _____ | | SpecCode: _____ | |
| Family: _____ | | Checked: _____ | |
| Stock code: _____ | | | |

men of Palau (Johannes 1981) is incorporated in the REPRODUCTION table.

—information on fishing practices and the practical, religious and symbolic uses of various species, preferably disaggregated by gender (Chapman 1987) and age. TK related to fishing practices and fish uses is not straightforwardly incorporated into the present version of FISHBASE; appropriate adjustment cannot be done without the collaboration of experts in this particular field.

We thus call on all those interested to contact us at The FISHBASE Project, ICLARM, MC PO Box 2631, Makati, Metro Manila 0718, Philippines. Collaborators will be cited in FISHBASE as the supplier of the specific TK and will be sent, free of charge, a copy of the appropriate FISHBASE products (or of the package as a whole in case of major inputs).

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Importance of community participation and customary knowledge for coral reef conservation highlighted at the 7th Coral Reef Symposium in Guam

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From June 23 to 26, 1992, more than 500 coral reef scientists, managers and policy-makers came together in Guam for the 7th International Coral Reef Symposium. In addition to a range of sessions on coral reef biology, monitoring and education, one session, 'Community-Based Coral Reef Management', focused on the effectiveness and appropriateness of empowering local communities with the authority and responsibility for managing the use of coral reef and coastal resources.

The session, organised by Greenpeace, brought together practitioners from eight countries to present and discuss their experiences of involving

communities in and developing collaborative government – community programs for the sustainable use and conservation of coral reef ecosystems. Presenters used their experience to demonstrate various methods for getting communities to participate in reef management, the effectiveness and appropriateness of community-based and collaborative coral reef management, the importance of marine tenure, practices and knowledge for sustaining reef ecosystems, the role of international NGOs and institutional requirements for community-based and collaborative management, the range of management challenges which could benefit from increased community responsibility and