

## INTRODUCTION

Over 90 percent of the world's rice, equivalent to approximately 134 million hectares, is grown under irrigated, rainfed, and deepwater conditions. These rice-based ecosystems provide habitat for a wide range of aquatic organisms, and offer opportunities for their enhancement and culture. Aquatic biodiversity from rice-based ecosystems serves as a basis for food and, to a lesser extent, income in many countries. Its local consumption, trading and marketing are particularly important for food security as it is the most readily available, most reliable and cheapest source of animal protein and other important nutrients such as minerals and fatty acids for farming households as well as for many landless people who have access to the rice-based ecosystem.

However, this production is seldom recorded in national statistics on fisheries or nutrition due to the following difficulties in obtaining reliable data on this livelihood activity:

- Collection usually involves small amounts of animals at any one time,
- The products are often not sold or exported and therefore do not enter a formal economic system,
- Production is irregular in time and
- Harvesting or culture is practiced by many people at different intensities.

Therefore, the contribution that aquatic biodiversity makes to rural livelihoods is [underestimated/undervalued](#) and therefore often invisible to policy makers.

Policy makers must base their decisions on sound information. Yet, the information they require in regard to ricefield fisheries and rice-based aquaculture is generally not available. Development plans that only focus on increasing yields of rice may possibly give the people more rice to eat, but may at the same time take away much of the aquatic animals and plants also harvested from and around the rice fields. Without a sound understanding of the other components of the ricefield ecosystem there is a great risk that the aquatic animal and plant diversity can be severely affected.

It is therefore vital to learn which aquatic organisms are available to and are being used by rice farming communities. Traditional practices and indigenous knowledge on the management and possible

enhancement of this aquatic biodiversity are recognized to be particularly important. This information is not only valuable for policy makers but for stakeholders at all levels in order to help them manage their natural resources. “Making the invisible visible” became the guiding principle of the work presented here.

In 2001 as part of the framework of the [FAO Inter-Departmental Working Group on Biodiversity](#) with funds provided by the FAO-Netherlands Partnership Programme and the FAO Regular Programme this series of case studies was initiated. The studies generally followed a similar format, starting with participatory rural appraisals to introduce the study to the communities, species collection which was usually done by the farmers themselves, followed by single and group interviews to determine availability of the species, their uses in rural communities, the preferences of local people, and the various fishing tools used. Species were photographed or preserved and identified by the authors with the assistance of taxonomic guide books and local experts to the extent possible. Identification of most species was later verified by internationally renowned taxonomists. Finally, databases with species photos, Latin and local names, sample locations, availability, preference, and tools were created. Farmers from [central Cambodia](#), [southwestern China](#), [northeastern Laos](#) and [northwestern Viet Nam](#) participated and shared their experience and knowledge.



The findings of these studies are summarized in five papers on this CD together with databases containing detailed information on species availability and use, preferences, tools, gender aspects and traditional practices. We have received very positive initial feedback from many colleagues on these “truly amazing” results, from the sheer magnitude of species with over 100 aquatic rice-based species utilized by farmers in Cambodia, to the fascinating anecdotes on indigenous knowledge such as the traditional “dry method” of incubating carp eggs in Viet Nam or how to prepare “Bangmai Bong Basong” (bamboo stem sour fish) in China.

In a wider context, these studies on the important roles of aquatic biodiversity and indigenous knowledge for livelihoods in rice-growing areas should be seen as building blocks contributing to objectives expressed in important international agreements. The [FAO Code of Conduct for Responsible Fisheries \(CCRF\) Article 7.2.2 \(d\)](#) “requires that fishery management should provide that biodiversity of aquatic habitats and ecosystems is conserved and endangered species are protected”. The principles of ecosystem based fishery management, which will be necessary for the sustainable use and conservation of biodiversity from rice-based ecosystems, are key aspects of this Code, as well as of the [Convention on Biological Diversity \(CBD\)](#). The CBD further recommends that States, “respect, preserve and maintain knowledge, innovations and practices of indigenous and local communities embodying traditional lifestyles...and promote their wider



application...” ([Article 8j](#)) and that States “Protect and encourage customary use of biological resources in accordance with traditional cultural practices...” ([Article 10c](#)). Further, the CCRF calls for the establishment of “mechanisms such as databases and information networks to collect and share information on aquaculture development” ([Article 9.2.4.2g](#)),

Although still far from our goal of having the aquatic biodiversity mainstreamed into national rice related policies, it is encouraging to see that the [20th Session of the International Rice Commission](#) in Bangkok in 2002, as a consequence to the reported findings of the two first case studies, not only acknowledged the importance of aquatic biodiversity but recommended to its member countries the enhancement of this resource base and to give stronger attention to the nutritional contribution of aquatic organisms in the diet of rural people. The [2002 Asian Regional Workshop on Traditional use and availability of aquatic biodiversity in rice-based ecosystems](#) in some more detail recommended to analyse available aquatic species and their importance for a balanced diet, to conduct follow-up research on the more important consumed species in terms of nutritional value, and to investigate possibilities to increase the availability of these species. Aquatic biodiversity from rice fields for rural livelihoods also received considerable attention at the recently celebrated [UN International Year of Rice 2004](#).

It is hoped that the information contained in this CD ROM will help implement the articles of the above mentioned important international instruments and help promote responsible use and conservation of aquatic biodiversity and traditional lifestyles. We wish to sincerely thank the study authors Tonette and Peter Balzer with Sibura Pon, Aidong “Roger” Luo, Xaypladeth Choulamany, and Eric Meusch for their impressive and innovative work. We are also grateful to the guest editors for scrutinizing and enriching the papers with their local knowledge as well as to the many local and international taxonomists for their help in the identification of species. Special thanks to Peter Balzer who assembled and linked all of the material on this CD. Hopefully you will find this material as interesting and stimulating as we did.

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