



## Aquatic biodiversity in rice fields

- More than 90 percent of the world's rice is grown in irrigated, rainfed and deepwater environments, which not only provide a home for a wide range of aquatic organisms, but also offer opportunities for the enhancement and culture of this aquatic biodiversity.
- Aquatic animals in rice-based systems provide an important share of the protein, essential fatty acid and micronutrient intake of rural poor people and thus enhance food security.
- The expansion of the human population has led to increased pressure on living aquatic resources in rice fields through agrochemical use and runoff, sedimentation, habitat loss, destruction of fish breeding grounds as well as destructive fishing methods.
- Sustainable management measures for the enhancement of the living aquatic resource base in rice need to be firmly integrated into national, regional and international development programmes.



### THE SITUATION

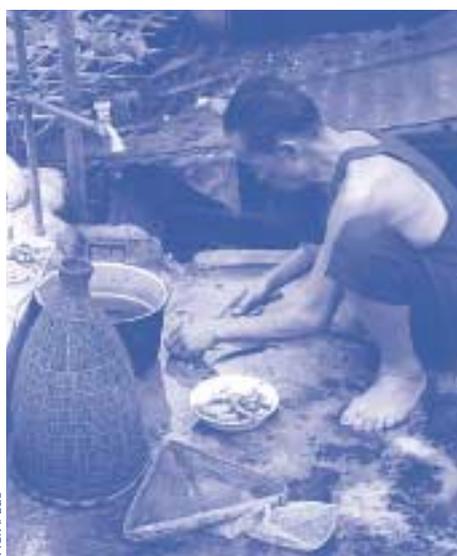
Rice fields provide habitats for wildlife species that include fish, plants, amphibians, reptiles, molluscs, crustaceans and insects, many of which can be captured, collected or farmed as sources of food and medicine. Some rice-based ecosystems contain more than 100 useful species, which are an important resource for rural communities and often offer a safety net that can be relied on in the face of crop failure and other food shortages. In addition, much of this aquatic biodiversity plays an important role in the biological control of vectors and pests that cause disease and/or harm crops, livestock and agricultural production.

Traditionally, rural people have caught fish and other aquatic organisms from paddy fields and irrigation channels, and aquatic animals account for a large share of people's intakes of animal protein, micronutrients and essential fatty acids, especially in poor households. However, various pressures have had a negative impact on this type of fishery, and there is increasing evidence that wild aquatic resources are declining.

### PRODUCTIVE ECOSYSTEM UNDER THREAT

In recent decades, an ever-increasing human population and related intensive farming practices – including a far greater dependence on chemical pesticide and fertilizer applications – are exerting growing pressure on living aquatic resources. Many of the aquatic species that colonize rice fields come from inland water sources, such as rivers and lakes. However, chemicals, agricultural runoff, sedimentation and other forms of pollution also may

accumulate in rice fields and cause environmental damage and the loss of plant and animal species that cannot survive in the deteriorating conditions. In addition, habitat loss through land development activities, the destruction of fish breeding grounds and illegal and destructive fishing methods, such as electro-fishing or chemical poisoning, further threaten aquatic ecosystems and the people who depend on them.



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## INTERNATIONAL RECOGNITION OF BIODIVERSITY IN RICE-BASED ECOSYSTEMS

There is growing recognition that agricultural biodiversity is being eroded and agro-ecosystems impoverished by the loss of genetic diversity. International agreements such as the Convention on Biodiversity (CBD) and the Ramsar Convention on Wetlands are a response to these concerns. In 2002, the Johannesburg World Summit on Sustainable Development (WSSD) concluded that biodiversity is essential to human well-being and to the livelihoods and cultural integrity of individuals and societies and thus plays a critical role in overall sustainable development and the eradication of poverty. The WSSD Plan of Implementation calls for a significant reduction in the current rate of biodiversity loss by 2010.

The key intergovernmental agreement specifically related to aquatic biodiversity

### AQUATIC BIODIVERSITY AND THE INTERNATIONAL YEAR OF RICE 2004

The International Year of Rice (IYR) provides an opportunity for raising awareness about the valuable contribution that wild aquatic plant and animal species make to rural livelihoods. Aquatic biodiversity in rice-based ecosystems needs to be more firmly integrated into a wide range of national, regional and international development and other programmes so that appropriate action plans on the conservation and sustainable use of these resources can be drawn up and implemented. During the IYR in 2004, further studies on the nutritional role of aquatic resources will be carried out and efforts will be made to build capacity, including through integrated pest management and production training in Farmer Field Schools.

in fisheries and aquaculture - the FAO Code of Conduct for Responsible Fisheries – includes issues regarding rice-based fisheries and aquaculture. FAO member countries recognize the importance of aquatic biodiversity in rice fields and, at the 20th session of the International Rice Commission in 2002, they recommended that "Member countries should promote the *sustainable*

*development of aquatic biodiversity in rice-based ecosystems* and that management measures should *enhance* the living aquatic resource base. Attention should be given to the *nutritional contribution* of aquatic organisms as *a means of enhancing food security*."



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