

**WORKSHOP ON**  
**“SMALL INDIGENOUS FRESHWATER FISH SPECIES:**  
**THEIR ROLE IN POVERTY ALLEVIATION, FOOD SECURITY**  
**AND CONSERVATION OF BIODIVERSITY”**

Fish are often an important ingredient in the diet of people who live in the proximity of water bodies. People have traditionally depended on various varieties of indigenous fish species, easily available from nearby water bodies, as a source of nutrition. Daniels (2002) indicates that of 750 species of freshwater fish species found in India, a large number of them are familiar only to the local population. These species are better known to the rural population due to the importance they attach to these species as a vital and affordable source of nutrition. This is not only the case in India but also in other countries in Asia such as Laos, Cambodia, Viet Nam and China (Halwart & Bartley 2005).

A large diversity of indigenous species, an important component of aquatic biodiversity, are found in the water bodies that crisscross the Indian subcontinent. A significant number of these species are a rich source of nutrition for the rural poor either on a seasonal basis or round the year. These species are either caught from nearby water bodies or get naturally recruited to homestead/common village ponds which are then harvested by the pond owner or the local community. Many of these water rich areas are also well known for their fish-cum-paddy culture.

Complex patterns of access rights to such indigenous fish species have been documented in literature—for example, access to them even in privately-owned paddy fields is often enjoyed by the larger community, including landless people, with related food security and poverty alleviation benefits. This highlights the need to understand the local socioeconomic, cultural and institutional context that determines who can access and benefit from fisheries resources from capture or culture fisheries.

Small indigenous fish species of freshwater origin are not only a source of vital protein to the rural poor but also of micro-nutrients such as calcium, zinc, iron and fatty acids (Roos et al, 2007; Halwart, 2008). Indigenous knowledge about these species and about their health benefits is high among rural population. For example, such species are often considered an essential part of the diet of pregnant women and lactating mothers. Research has proved that the bioavailability of calcium from these small indigenous freshwater fish species is at par with that derived from milk (Roos et al., 2007).

Significant production of small indigenous fish species of freshwater origin, from culture and capture fisheries, is reported from several water bodies. That these species tend to sold and consumed locally could be one of the reasons why they remain invisible in national statistics—such statistics are largely based on catches reported at large/major landing centres (Halwart, 2008; Roos, 2007). This invisibility in statistics could account for their poor recognition in fisheries and aquaculture development policies.

Although the system of sewage-fed aquaculture in West Bengal had tried incorporating minor indigenous carp species such as *Labeo bata*, *Labeo fimbriatus*, *Cirrhinus reba*, and *Amblypharyn-*

*godon mola* (Ayyappan & Jena, 2003), there has not been any major effort to integrate these species into carp polyculture systems in India.

Before the introduction of hatchery-produced seeds, in the initial years of reservoir fisheries, water bodies were stocked with naturally available seeds (Sugunan, 1992). It has been observed that a variety of indigenous fish species were stocked, for example, in reservoirs of Tamil Nadu and Kerala. After the introduction of hatchery-produced carp seeds, there was a shift in species used for stocking water bodies from indigenous varieties to a combination of catla, rohu and mrigal. Often small indigenous species were removed as vermin, with negative implications for conservation of biodiversity in freshwater ecosystems.

However, recent research in Bangladesh has demonstrated that integration of some of the small indigenous species into polyculture systems—for example, *Amblypharyngodon mola* along with carp species—has increased overall pond fish production (Roos et al, 2007). *Mola* reproduces several times and increases the productivity of the pond and enhances the local availability of fish. It has also been observed that these species command high prices, often higher, for example, than prices for Indian Major Carps (Ahmed, 2009; Saha, 2003), thus providing a source of supplementary income to rural households. Given the local demand for small indigenous fish species of freshwater origin, the FAO (1999) has also indicated the possibility of integrating such indigenous fish species into freshwater culture systems.

Considering the extent to which small indigenous species of freshwater fish play a role in providing nutrition to the rural poor and in maintaining biodiversity, it is important to consider promoting sustainable use of small indigenous species in both capture and culture fishery systems. Eastern India, for example, has a great potential for expanding freshwater aquaculture by integrating small indigenous species of fish into current production systems. Such integration can help better achieve the objectives of increasing fish production, enhancing nutritional security of the rural poor, providing greater employment opportunities, and conserving biodiversity in freshwater ecosystems. These are all objectives of sustainable development as promoted by the Government of India through the Ministry of Agriculture and the Ministry of Environment and Forests.

It is, however, important to locate these efforts within specific cultural and socioeconomic contexts, looking also at critical issues of ownership and access rights over water bodies, and to formulate relevant strategies, as appropriate. If such factors are taken into consideration, the objectives of nutritional security, promotion of employment and conservation of biodiversity can be better met especially in some of the most disadvantaged areas of Eastern India showing poor human development indicators.

There is, therefore, need to throw light on sustainable use of small indigenous fish species, their role in food security, employment, income, poverty alleviation and conservation of biodiversity and also to actively establish the feasibility of SIS polyculture. In this context, it is important to discuss the developing policy space for sustainable use of small indigenous species in culture and capture fisheries.

## Workshop Objectives

It is against this backdrop that ICSF proposes to organize a three-day workshop in collaboration with Inland Fisheries Society of India (IFSI) titled “Workshop on *Small Indigenous Freshwater Fish Species: Their Role in Poverty Alleviation, Food Security and Conservation of Biodiversity*”, with the following objectives:

- Provide a forum for people working in freshwater fisheries and aquaculture to exchange views about the role of small indigenous freshwater fish species in enhancing rural food and livelihood security and in conserving biodiversity;
- Discuss the socioeconomic and cultural context for culture and capture of SIS with a view to enhancing access, especially of women, to better income, livelihood and nutritional security.
- Propose developing policy space for sustainable use of small indigenous freshwater fish species in fisheries and aquaculture.

The workshop will include two days of input sessions, group discussions and developing recommendations, and one day of field visit to farms practicing polyculture including small indigenous fish species.

## Dates and venue

The workshop will be organized from 23 to 25 February 2010 in Kolkata.

## Participants

The workshop will bring together participants from the Departments of Fisheries from eastern and northeastern States of India, central government agencies, research institutions, scientists, fishing communities, and NGOs. A total of 40 participants are expected. In addition to India, resource persons are also expected from Bangladesh, Cambodia and Denmark.

## Preparatory work

A preparatory study will be carried out prior to the workshop. The study will document the benefits of small indigenous freshwater fish species and their role in meeting nutritional needs of disadvantaged populations. It will also try to understand in-depth the socioeconomic and cultural context within which aquaculture in general and culture of small indigenous freshwater fish species in particular is practiced. The study will draw links between issues of gender, food security, rights to resources and biodiversity.

The study will predominantly focus on the states of Orissa and West Bengal. The study, undertaken over a span of three months, will include a secondary literature survey, and field visit of one month spanning the above states, and will include visits to specialized Indian Council of Agricultural Research (ICAR) institutes namely Central Inland Fisheries Research Institute (CIFRI) and Central Institute of Freshwater Aquaculture (CIFA), under Department of Agricultural Research and Education (DARE) of the Ministry of Agriculture, Government of India.

**Expected Outcomes**

The workshop is expected to:

- Create awareness amongst aquaculture farmers and policy makers about the benefits of integrating small indigenous freshwater fish species into aquaculture systems;
- Provide a platform to promote local livelihood & nutrition-sensitive aquaculture, and
- Encourage research institutions to take up action research to propose alternative practices for integrating small indigenous freshwater fish species into sustainable aquaculture and capture fisheries systems.

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