

# Chapter 3-13

## Fish Nursery Paddy Field Project

### Abstract

This project aims at creating a fish-friendly environment by creating fishways through which fish can swim upstream to paddy fields with ease. This allows fish to lay eggs in paddy fields where the fry can mature and return to Lake Biwa.

**Keywords:** Fish nursery paddy field, "Goho-yoshi" (5-way benefits), Weir type fishway, Biodiversity

### 1. Relationship between Lake Biwa, Paddy Fields and Fish

#### 1.1 Paddy Fields as "Nursery Grounds" for Fish

In the past, the rice fields around Lake Biwa used to play an important role as spawning and breeding grounds for fishes such as crucian carp and catfish. This is because paddy fields offer the advantages of abundant food such as plankton and the scarcity of predators.

Usually, after a heavy rain, fish swim from Lake Biwa upstream to paddy fields through the drainage channels and lay their eggs. Fry that are born in the paddy fields stay there for a while, and later swim downstream to Lake Biwa. When matured, they come back to the paddy fields to spawn again.

#### 1.2 Restoration of Paddy Fields as Spawning and Nursing Grounds for Fish

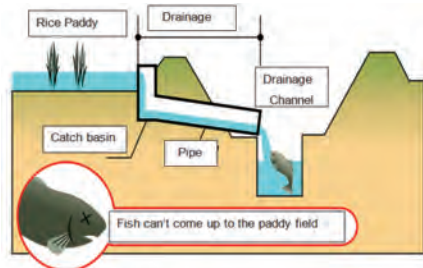
However, differences in the elevations of paddy fields and drainage channels connecting to Lake Biwa effectively cut off



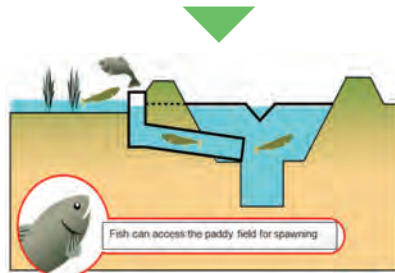
**Fig. 3-13-1** Image of Fish Nursery Paddy Field Project

migration paths for fish, thus making it difficult for fish to reach paddy fields.

The "Fish Nursery Paddy Field Project" has been promoted since 2001 in order to restore the functions of paddy fields for spawning and breeding by creating drainage channels that allow fish to swim freely between paddy fields and Lake Biwa.



**Fig. 3-13-2** Differences in elevation between paddy fields and drainage channels resulting from paddy field development



**Fig. 3-13-3** Elimination of differences in elevation between paddy fields and drainage channels by creating fishways

## 2. Various Approaches in the Past

Since 2001, in coordination with relevant research institutions, the Shiga Prefectural Government has investigated the capacity of fish to breed in paddy fields. The results showed that paddy fields were excellent breeding grounds and this led to the promotion of the development of technology to enable the fish to swim upstream to paddy fields with ease. Finally, this drainage weir type fishway was found to be effective.

In 2006, Shiga became the first prefecture to implement a unique “Fish Nursery Paddy Field Pilot Project” based on the direct environmental payment system. Under this system, payments are made directly to farmers and groups of residents that contribute to the management of paddy fields for spawning and breeding and the maintenance of fishways.

By adopting approaches for conservation and improvement of the farming communities that will be passed down through the generations with direct payment for agricultural ecosystem conservation activities, the “Fish Nursery Paddy Field Project” has been widespread since 2007, reaching 33 areas totaling 109 ha in 2013.



**Fig. 3-13-4** Weir type fishway where crucian carp and catfish swim upstream

## 3. Benefits of the Fish Nursery Paddy Field Project

The Fish Nursery Paddy Field Project enhances not only the revitalization of

ecosystems, but also the vitalization of local communities and increasing awareness of the environment through the creation of fishways. Furthermore, it promotes agricultural product branding by selling “Yurikago Suiden Mai,” rice which is produced by fish-friendly rice farming.

The project has grown popular and promotes the concept of “Goho-yoshi” or “5-way benefits”: i.e. benefits for living organisms (fauna and flora), children, communities, Lake Biwa and farmers in imitation of the philosophy of Omi merchants of “Sanpo-yoshi,” or 3-way benefits that realizes advantages for distributors, buyers and society.



**Fig. 3-13-5** Observation of living organisms



**Fig. 3-13-6** Branding under the name of “Yurikago Suiden Mai” (i.e. rice produced from paddy fields as nursery grounds for fishes)

## 4. Challenges for the Future

Aiming at further maintenance and improvement of biodiversity, we are promoting the creation of paddy fields to nurture a wide diversity of living organisms such as fish nursery paddy fields across the areas from lakeshores to midstream areas.

(Rural Development Promotion Division, Shiga Prefectural Government)