



Photo by R.S.V. Pullin

Rice Terraces and Fish: Integrated Farming in the Philippines

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THE AUTHOR was privileged to serve as a fishery extensionist in Ifugao Province, northern Luzon, Philippines for three years, 1979-81, working in cooperation with Bureau of Fisheries and Aquatic Resources (BFAR) personnel, generating and spreading interest in and distributing common carp, crucian carp, Nile tilapia (*Oreochromis niloticus*) and the Oriental weatherfish (*Misgurnus anguillicaudatus*) locally known as u-u.

Ifugao now has two hatcheries, in the towns of Banaue and Mayoyao. The Banaue farm has been dispersing fingerlings since 1976 when two Peace Corps Volunteers (PCV) were assigned there. In 1979, it was found that stocking in rice paddies at 200/ha with a mean culture period of 147 days and no supplemental feeding, produced 129 kg/ha/year of common carp averaging 645 grams. The largest crucian carp harvested in culture experiments was 80 grams. Data showed good potential for Nile tilapia culture. Stocking of 8 fry/m² in a 35-m² pond yielded fish averaging 250 grams. Carabao,

Even young girls (top) fish for u-u in the terraces. One holds a trap. They sell the catch in the Banaue market. Common carp (above) harvested from a ricefield in Kiangan, Ifugao (2+ kg). *M. anguillicaudatus* (upper right) and rice terraces of Banaue (lower right). Photos above and right by A. Bocek.

cow and duck manure, as well as fine rice bran were given at odd intervals.

The Mayoyao hatchery, with funding and technical assistance from the Asia Foundation, BFAR, Catholic Relief Services, the Provincial Development Staff of Ifugao, local government and PCV, was completed in December 1980 and dispersed fish for the first time in May 1981.

In 1980, formulation of a development plan for Ambuwaya Lake in Kiangan Town, Ifugao, was started. The plan included fingerling production and cage culture of Nile tilapia.

Meanwhile, the u-u introduced into the so-called Mountain Provinces of the Philippines by the Japanese prior to World War II, has assumed economic im-

portance. The u-u is quite interesting. The people did not adopt new technology to culture this fish: it adapted quite readily to the new environment. Once farmers saw the ease with which this fish propagates itself, they began to introduce it into their ricefields. No modification of the fields was necessary. In essence, the fish grew itself. The u-u is now caught in the bottle-shaped traps and sold locally, while foreign investors from Japan and Taiwan have established buying stations.

BFAR has the capacity to develop the technology for successfully managing the u-u as a commercial resource. In Japan, this fish has been widely studied. Perhaps the most important step BFAR could take is to prevent the elimination of the u-u by pesticides or overfishing. This author found that the natural breeding season of the u-u, between May and September, corresponds well with local rice culture methods which do not employ pesticides.



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