

stocked in concrete tanks provided with sufficient aeration. They were fed with tilapia commercial diet and good water management was employed.

In December 2001, two spawning trials by hormone injection were conducted with success. However, the eggs failed to hatch. The trial done in January 2002 on hatching and larval rearing was successful after modifications on the protocols on water management and feeding were undertaken. More improvements in production were attained during the successive breeding activities.

From the experience of the researchers, it was determined that the breeding period of silver perch in the lowlands like Dagupan City is seven months, from August to February of the succeeding year. The breeding of the species in the Philippines can be year round when done in cold areas like the Mountain Province and Benguet. This is an advantage against Australia since their breeding activity is only possible from November to February (four months).

Utilizing the fingerlings produced by the Center, the salinity tolerance of the species had been investigated. They can tolerate a salinity up to 16 ppt. The present experiment being conducted is on the performance of the species at high and low stocking densities under local condition.

The progenies produced by the researchers are now being developed into breeders.

Fingerling Production of **SILVER PERCH** (*Bidyanus bidyanus*)



in the **PHILIPPINES**

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Distribution and Biology

The silver perch (*Bidyanus bidyanus*) is endemic and native to the temperate waters of Murray-Darling River system of Australia. It is considered as the third most important native freshwater fish in the country. Significant wild populations are located in both north-eastern South Wales and south-eastern Queensland. Small communities are also found in colder regions of Victoria. It is one of the highly regarded and sought-after native inland fish (Rowland, 1994).

The species is a member of the family *Terapontidae*. Its FishBase name is Bidyan perch. They are also called bream, freshwater bream, silver bream, black bream and grunter in inland regions of Australia.

The temperature tolerance of silver perch ranges from 2 - 35 C. Optimum growth rates occur at 23-28 C. Growth is negligible at 12 C. Natural habitats range from static lakes and reservoirs to fast flowing rivers. In their native habitat, they spawn during summer floods when water temperature is above 20 C. Females may produce up to 125,000 eggs per kg of body weight.

Like any native species, the distribution and abundance of silver perch have been greatly reduced

cannibalistic. It has a very high market potential in Australia and other developed countries with a present market value of \$ 10/kg of whole fish. The meat recovery is reported to be 40%. It has white meat with less bones which makes it ideal for processing.

The production in Australia seemed to be limited, maybe due to short breeding season of four months, and very cold temperature during many parts the year. Although silver perch has a wide temperature tolerance, its optimum growth rate is at higher temperature of 23-28 C, similar to the wide upland areas in the Philippines.



Breeding of Silver Perch: The Philippine Experience

The BFAR NIFTDC started the study on silver perch in 2000 with stocks donated by a private company. The fish were cultured initially in concrete tanks. Growing trials were also done in earthen ponds with other species like tilapia, catfish and common carps. Upon attaining a weight of about 300 gm, the fish were collected and

fish, and therefore problems such as high mortality rate, diseases, poor feed-conversion-ratio, are common experience. The time frame for aquaculture in a year is also shorter because of extreme low temperature during cold months.

More than 99% of the 14,500 ha freshwater and 239,000 ha brackishwater fishponds are utilized for the culture of tilapia and milkfish. Such a practice results to depressed market of the species during harvest. Both species, especially tilapia, exhibited poor growth performance, high mortality rate during culture, and very low hatchery production during cold months of November, December and January.

Diversification of aquaculture commodities, like the introduction of a select high-end species is an important strategy to maximize the production potential of our aquaculture resources. It will also create more job opportunities in hatchery production and grow-out of the species. Losses on feed costs and pollution impact of aquaculture maybe minimized.

Silver perch has been described as the sleeping giant of world aquaculture. It belongs to low-trophic level in the food chain, similar to milkfish. They feed on plankton, insect larvae and small crustaceans when young, and plant material like algae when old. They feed on artificial feeds with feed conversion ratio of 1.5 kg feeds to produce one kg of fish. They are hardy like tilapia. They do not pose hazard to other fishes because they are not

over the last 50 years. Rowland (1994) reported that it is now either not found or extremely uncommon in many areas. This decline in population has been dramatic in the last 10 years. *Bidyanus bidyanus* has been given the conservation status of “Potentially Threatened” (Jackson, 1994) and maybe eventually declared as endangered.

In an internet bulletin dated 2000, silver perch is reported to be a totally protected species. The minimum legal size imposed is 25 cm and a possession limit of five.



There were introductions of silver perch specifically in Western Australia since 1950 for the purpose of stocking inland farm dams.

Minor stockings were done in Southern Australia where they are used as sportsfish. However, the species gained the reputation for “disappearing” after a few years. It was believed that the cause of the problem could be the change of diet experienced by larger silver perch.

Silver perch as Aquaculture Commodity

The reproductive behavior of *B. bidyanus* in the wild is well studied. Sexual maturity is attained in 2-3 years. They exhibit long migration upstream in spring in areas behind peaks of floods. Spawning takes place in flooded backwaters of low gradient streams. There is

little or no spawning in years with no floods

Silver perch is an excellent edible fish. The flesh is white, firmer and drier than cod or golden perch. It has few bones. The fish is ideally suited for smoking.

It is considered to have high potential for aquaculture due to its rapid growth rate under a variety of conditions (Barlow, 1994; Harpaz *et al*, 1994; Rowland, 1994). It can grow to 2.5 – 8 kg in weight. It also has high survival during culture because it is hardy fish that can be held in captivity at high densities. They also have a high meat recovery of 40 %.

Silver perch are omnivores, consuming zooplankton, small crustaceans, aquatic insects, mollusks, algae and plant material. They are non-cannibalistic. When young, they feed on crustaceans and zooplankton. As the age increases, algae and plant material occupies a greater proportion of their diet. Fingerlings and adults readily accept artificial diets. The optimum dietary protein level is 32 to 36%. Food conversion ratios are 1.5-2.0 kilograms of food to produce 1.0 kg of fish.

The potential of silver perch for aquaculture was recognized in the early 1900's, but it was in the 1960's that research work on its biology and artificial breeding was carried out. The aquaculture production requirements of the species were determined in early 1990's. Commercial production has since developed in North

South Wales and Queensland. In South Australia and Western Australia, small-scale farming and pilot projects are underway. There are also studies conducted on the culture of species in water impoundments. However, the culture of silver perch in farm dams in Australia is beset with problems on predation of wild animals, birds and eels. The pond aquaculture systems and management practices for silver perch are aptly described by Ogburn *et al* 1994.

In Australia, the production in well-managed dams is 5 to 10 tons per hectare. The latest report of the Department of Primary Industries of the State of Queensland, indicates a decrease in the overall production from 1993-94 to 1996-97 despite the increase in the number of farms producing silver perch. The average price (whole fish) has remained stable at around \$10/kg.

Potential of Silver Perch Culture in the Philippines

The Philippines has numerous natural and manmade water resources estimated to be more than 19,000 has situated in high-elevated areas that are less utilized for aquaculture because of diverse climatic conditions. The foremost factor that delimits fish production in lakes, dams and reservoirs is low water temperature.

The current practice of using tilapia (*O. niloticus*) in high elevated, therefore, cold areas, is successful to a limited extent. Tilapia species are tropical or warmwater