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Status of catfish culture

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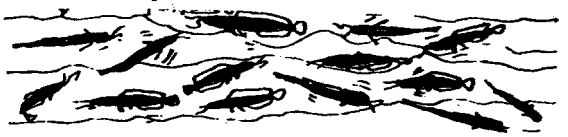
Status of catfish culture

Catfishes belonging to the families Ictaluridae, Clariidae, Pangasidae and Siluridae are widely distributed in different parts of the world, and their culture has been a tradition in some parts of South and Southeast Asia. Catfish are also valued for recreational fishing in southern USA. The recent interest in commercial farming was largely generated by the development of a multimillion dollar catfish farming industry in southern USA. Since the 1900s, considerable research and development have been directed towards catfish farming and the processing and promotion of catfish products. Channel catfish, the main species farmed in the USA, have been transplanted to a number of countries in southern Europe, Africa and Central America, but no comparable enterprises have developed in these regions. Farming local species of catfish is a trend in many countries.



Philippines

Two catfish species are cultured in the Philippines: the local *Clarias macrocephalus* and the imported *Clarias batrachus* — *hito* to Tagalogs, *paltat* to Ilocanos, *ito* to Pampangos, *pantat* to Cebuanos and Ilonggos. The more acceptable species is *C. macrocephalus*, relished for its tender flesh and delicious taste. *C. batrachus* grows larger and faster but has a lower market value than the local species.

Most of those who go into catfish raising depend on limited natural sources for fry. But with proper planning and management, some *hito* farmers produce their own seed. In 1973, the Agro-Fisheries Group in Los Baños, Laguna responded to the problem of fingerling supply by importing *C. batrachus* from Thailand.

The stocking rate in ponds depends on the size of fish and the water depth. It is best to stock in the later afternoon or early morning when it is cool. Catfish grow to market size in 5-6 months.

Size of fish stocked	*Number of fish per m²*	*Duration of culture (months)*
3 - 4 cm	80 to 100	5 to 6
5 - 6 cm	60 to 80	4 to 5
7 -10 cm	40 to 60	3 to 4

There are many catfish collection grounds in the Philippines, including Candaba Swamp, Mangabul Marsh, Laguna de Bay, the Bicol Region, Naujan Lake in Mindoro, Panay, Liguasan Marsh, and Bulusan Lake.

The Philippines exported 776 134 kg of catfish worth ₱ 29.5 million to 13 countries in 1986. The three major importers were the USA, Singapore and Canada.

Sources: (1) RR Radan. *The culture of catfish.* Greenfields undated. (2) S Hara. 1977. *The culture of catfish Clarias macrocephalus Gunther.* Japan Oversees Cooperation Volunteers Philippines. (3) *Earn from catfish farming.* AGRISCOPE Vol. I (II) 1987.

Thailand

Clarias farming in Thailand has developed during the last 15 years to become an important aquaculture system. The current production of farmed *C. batrachus* and *C. macrocephalus* amounts to about 10 000 MT per year at a farm gate value of around US$10 million. This exceeds the production through aquaculture of any other species in Thailand. *Clarias* is stocked at a very high density, generally from 80 to 160 fry/m², but sometimes up to 300/m² or more. Since the fish can breathe air and are fed "complete" feeds, the high densities do not restrict growth. As a result, the annual yield per unit area from 2 or 3 crops a year is very high, reaching an average 200 MT per hectare. Yields of this order are usually obtained only in running-water systems or cages such as for trout and carp in Japan. In Thailand, however, this high yield is obtained in ponds where water exchange is limited. No other pond system produces such

high yields. No doubt the development of *Clarias* culture in Thailand is one of the major achievements of aquaculture in the last decade.

Source: B Hepher. 1981. **Management and Research Approaches in *Clarias* Culture**, Thailand. DOF Thai-UNDP/FAO.

For grow-out of *C. batrachus*, small ponds (200-1000 m²) are used. Normally the ponds are not fertilized, but between crops the ponds are dried and occasionally treated with light doses of lime. They are filled to a depth of 50-80 cm. Stocking is in March or April and the first harvest in July or August. The ponds are stocked again between July and September for a second crop. In order to avoid the period when wild-caught catfish are available in the market, the second harvest may be delayed until the following February or March. The average yield of *Clarias* in Thailand is 29-32.6 tons per hectare per year. A production of up to 100 tons per hectare per every four months has been reported.

Cambodia

Cage culture of *Pangasius* is common in Kampuchea, Thailand, and recently in Vietnam.

In Kampuchea, cages are made of bamboo poles and splints. They are box-shaped when installed separately but when trailed behind a fisherman's boat, as is often done, they are arranged to fit the shape of the boat. The sizes vary considerably, but the larger cages are 40-50 meters long, 4-5 meters wide and 2.5-3.0 meters high. Small cages are 4 x 4 x 2.5 meters. A number of small cages may be lashed together, buoyed with air-tight metal drums, and provided with walkways for feeding, harvest, and maintenance work.

The cages are stocked with wild fry or fingerlings. A large cage may be stocked with 6000 -10 000 fry in June to August. They are fed cooked vegetables like pumpkin, banana and a combination of cooked rice and rice bran. As the catfish grow, they are fed live and dead fish pests and kitchen refuse. Harvest is in February to May when the catfish have grown to 1.5-2.5 kg each.

Vietnam

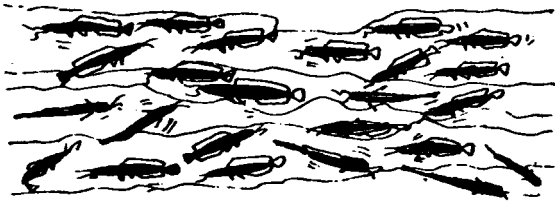
Box-shaped cages are made of wooden planks with mesh-wire panels on the sides for free water flow. There is a floating cabin on the cage farm for the owner or caretaker to live in. The whole installation is moored in the river near the shore, or secured directly to the shore. Cages are stocked with fry 4-6 cm long from August to October. Sometimes, bigger fry from rice fields or rivers are used. The stocking density is about 93 fry/m³. *Pangasius* are fed vegetable matter such as chopped leaves, rice bran and forage fish. These may be supplemented with cooked or uncooked meat of mussels, snails, etc. Harvest is in March to August, after a culture period of over 10 months. The production ranges from 3000 to 25 000 kg per year per cage of 1600 m³ capacity.

Africa

Clarias lazera (= *gariepinus*), known as the African catfish, sharp-tooth catfish, or the Nile catfish, is a recent addition to aquaculture in Africa, which has been largely dominated by tilapia. Catfish culture is presently restricted to the Ivory Coast and, on an experimental scale, to Egypt. Other catfishes such as the *Chrysichthys* species are also being tested in ponds and cages.

Clarias lazera is an omnivore, feeding on vegetable matter, aquatic invertebrates, small fish, and detritus. This catfish species can reach about 1.5 meters and 13 kg in size. It grows in freshwater and in salinities of 10 to 29 ppt.

The African catfish are grown in monoculture or in polyculture with tilapia in ponds. High-density tank culture has not yet been adopted on a commercial scale.



Channel catfish farming

Infofish Marketing Digest (No. 4/86) cited FAO figures to show the extent of catfish (*Ictalurus*) farming in North America:

	1980	1981	1982	1983
Canada	585	689	513	500
Mexico	421	148	337	547
USA	13 091	14 810	16 264	1539
Total	**14 097**	**15 647**	**17 114**	**16 438**

Europe

The European catfish, *Silurus glanis*, known also as the sheatfish or wels, is a highly relished fish particularly in the eastern and central Europe. Besides the taste, the high deboned weight (66%) and the absence of intramuscular bones make *S. glanis* especially valuable for filleting and processing.

Silurus is highly voracious, feeding on fish and other aquatic animals. In fact, its culture started with its use as a predator in carp ponds to control pest fish. Later, its was stocked in recreational waters. In recent years, efforts have been directed towards monoculture in ponds and cages.

Small ponds rich in plankton are stocked at the rate of 10-15 fry per m². They are fed pellets or ground fresh meat or fish several times a day. Fingerlings have been raised very successfully up to 6 months on trout starter-feeds and pellets.

Yearlings can also be grown in polyculture in carp ponds. Fingerlings of both carp and sheatfish, weighing 25-30 grams, are reared together at stocking rates of 3000-5000 per hectare. Reared for almost 2 years, they weigh 900-1100 grams at harvest.

United States

The most important species is the channel catfish (*Ictalurus punctatus*). The white catfish (*I. catus*), which is more tolerant to crowding, higher temperature and low oxygen levels, and the blue catfish (*I. furcatus*), which grows more uniformly also have farming potential.

Raceways are used in intensive catfish culture. Raceways are constructed of concrete, asphalt, concrete blocks or earth. Production intensity depends largely on the water supply. Smaller raceways with high-volume and high-velocity water supply are used for highly intensive production, whereas larger raceways with a lower water flow are used in semi-intensive systems. A recent development is the use of circular and linear tanks.

A culture system of some importance is the so-called fee-lakes, pay-lakes or put-and-take fishing. Operators of such establishments produce their own fingerlings or get them from other hatcheries. People are allowed to fish in these waters for a fee, based on the quantity of fish caught or the duration of recreational fishing.

Grow-out of channel catfish to market size takes a little less than two years after hatching, or one year from the fingerling stage. The usual market size is 500 grams to 1.4 kg, but many are harvested at 450 to 600 grams. Fingerlings are generally stocked in spring and harvested in October-November.

Catfish culture techniques vary between farms depending on the location and culture system. Pond farming is probably the most profitable, larger farms more so than smaller ones. Production has to be at least 1500-2200 kg per hectare to make a profit. Some farmers rotate rice, catfish and soybeans to obtain better returns. The agronomic crops benefit from the improved nutrient level of the soil due to the feces and unconsumed feeds from the fish stock.

Source: TVR Pillay.1990. **Aquaculture Principles and Practices.** Fishing News (Books).

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