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THE CULTIVATION OF PLA SALID IN SIAM

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THE CULTIVATION OF PLA SALID IN SIAM

by

Boon Indrambarya

Director-General of Fisheries, Siam.

INTRODUCTION.

Pla salid is a fresh-water fish. The fish, when salted and dried, is one of the highly esteemed among the Siamese. Being vegetarian, absolutely noncannibalistic in habit, prolific in nature, and palatable in flesh, pla salid is chosen by the Siamese Department of Fisheries to try the cultivation in ponds and to set forth ideas worked out in actual practice to be an improvement over the old methods of merely holding young fish in ponds. This Department started the work in 1934. This paper is the summary of observations and practices and will serve as an information for further consideration in the promotion of food supply in South East Asia.

DESCRIPTION.

The word "pla" in Siamese means fish. "Salid", believed to be derived from a Cabodian word, means leaf. The Siamese sometimes call this fish "pla bai-mai". "Bai-mai" means leaf.

Pla salid is known scientifically as Trichogaster pectoralis (Regan). It belongs to the thread-fin family, Osphronemidae, as gouramy (Osphronemus goramy) and sepat siam (T.leeri and T. trichopterus) do. It closely resembles sepat siam more than gouramy. It can be distinguished from the formers by oblique, and black bands on the sides and a longitudinal black stripe from the eye to the caudal peduncle, whereas T.leeri is shiny silvery-white and T.trichopterus is dark with two spots on each side.

HABITAT.

Pla salid is common in swamps where aquatic plants are of luxuriant growth. It is found to thrive well in water

having the range of temperatures from 28 to 36 degrees centigrade.

FOOD.

The fish is vegetarian and subsists mainly upon aquatic plants. It is fond of duckweed, and roots of pak-bung (Ipomea sp.) and of water-lettuce (Stratiotes sp.). The fry feed upon microscopic plants and animals.

DISTRIBUTION.

Pla salid is a fish of stagnant water and occurs throughout Central Siam and Cambodia. The fish is unknown and not found in Peninsular Siam, Northern Siam, and North-Eastern Siam (or the Korat Plateau), until recently when it was introduced by the Department of Fisheries.

BREEDING HABITS.

Pla salid matures when it is 7 months old, and by that time is about 10 centimetres long. A ripe female of this size contains 7,700 eggs. It is also found that a full-grown female, 24.5 centimetres long, will have about 82,000 eggs.

The spawning season begins from April to October. The fish seems to spawn in quiet shallow recesses where the water is about 30 centimetres deep and where aquatic plants grow rather thickly. A bubble-nest is prepared by the male before the female lays its eggs. The nest looks like a foam of soap suds, floating on the surface of water, among aquatic plants. It has been observed that nests are made and eggs are laid mostly after the rain. This leads to the assumption that not only the temperature but also the condition of water, oxygenated by rain-falls, helps the spawning activity of the fish.

There are in a single nest about 3,000 eggs. Each egg measures about 2 millimetres in diameter. It is spherical and buoyant, and contains an oil globule. The color of newly

laid eggs is yellowish and becomes darker and darker during the cours of development. The egg will hatch out between 36 to 48 hours. The yolk sac will be absorbed within 3 to 7 days.

GROWTH.

The followings are records of sizes and weights of the fish.

<u>Age</u>	<u>Size in centimetres.</u>
15 days	1.5
1 month	3.0
2 months	6.0
3 months	7.0 to 9.0
6 months	10.0 to 12.0
1 year	16.0 to 18.0
1 to 1½ years	20.0 to 24.5

<u>Size in centimetres.</u>	<u>Weight in grams.</u>
10.0	14.0
20.0	130.0 to 140.0
24.5	230.0

The fish is not yet found over the length of 24.5 centimetres.

EXTERNAL SEXUAL CHARACTERS.

Pla salid offers itself conveniently to us in displaying the difference in its external sexual characters between male and female. These characters help us a great deal in the pond cultivation work.

The dorsal fin of the male is long and pointed and extends to or a little over the base of the caudal peduncle, while that of the female is shorter and rounded, and does not reach the base of the caudal peduncle.

MANAGEMENT OF FISH-PONDS.

Fish-ponds may be constructed in any shape, but the rectangular shape is thought to be appropriate, as conveniences in taking care of, in looking after the fish, and in harvest-

ing the fish have to be considered. The size of a spawning pond is 12 metres wide and 20 metres long, while that of a stocking pond is 2 to 4 times as big. The appropriate size of a nursery pond is 5 metres wide and 10 metres long. The depth of water should be maintained, not less than 1 metre.

It should also be born in mind that each fish-pond should be made with berm, and provided with one or more feeding boards placed about 15 centimetres beneath the water, and provided with 2 sheds, or more if necessary, made of thatch and erected above the feeding boards. Beside these, Ipomea are planted, and should occupy not more than three-fourth the area of each pond. The inlet and outlet of the pond should be guarded with finely meshed screens.

In order to increase the rapid growth of Ipomea and the production of microscopic organisms as natural food in ponds, dried cattle or buffalo manure is scattered along the water line every 3 weeks with the proportion of 40 litres for 100 square metres of water area.

Regarding the amount of fish to be punt into the ponds, the department adopts the following proportions: 25 pairs of spawners are for 100 square metres of water area; for every 1 square metre of water area are 10 fishes, of more than 10 centimetres in length; or 20 fishes, of 5 to 10 centimetres in length; or 40 fishes, of less than 5 centimetres in length.

FEEDING.

It is found that waterfleas, Moina sp., and copepods are taken by the fry. These minute crustaceans are then raised separately and given to the fry when they are 7 to 30 days old. After this period, cooked rice-bran, mixed with cooked Ipomea or duckweed, is prepared and made in lumps. One lump is placed on each feeding board. To train the fish, food is

given at specific time, once a day, about 8 o'clock in the morning and the water is beaten with fingers at the feeding board, the fish will soon learn and come to take food.

As rice-bran costs high, and as fresh duckweed can be found and grown easily, the former is sometimes substituted by the latter. At the Bang-Khen Fishpond Station, termites which are easily found are also fed as additional food. The fish takes these vigorously.

To prevent the pond water from fouling by the remain and waste of rice-bran the remain on the feeding board is taken out in the following morning, and the waste falling from the feeding board to the bottom is checked by placing a king of fresh-water snails, locally known as hoi-kom, Vivipara.

NATURAL ENEMIES.

Pla salid has many varieties of natural enemies. Otter (Lutra sp.), turtles, water snakes, catfishes (Clarias sp.), serpent-headed fishes (Ophicephalus sp.) and fisheating birds such as herons, cormorants, and king-fishers, are enemies of the adult. Frogs, toads, climbing-perch (Anabas) and other small fishes prey upon the fry and the eggs. However, the most dreaded are watersnakes and serpent-headed fishes.

PROPAGATION IN WOODEN TANKS.

As it is found that it is difficult to protect pla salid from enemies, and to reduce the loss of eggs and fry as much as possible, the propagation in wooden tanks is resorted to. Such a tank is made of teak, 1.5 metres wide, 3 metres long, and 60 centimetres deep. Clear water is put into the tank up to the depth of 40 centimetres. The tank is three-fourth covered with a thatched shed erected about 1 metre above it. Nests of pla salid, with eggs and Ipomea, are transferred from the spawning pond to the wooden tank, and are allowed to develop therein. This method of propagation gives better

result than that in the spawning pond, as it is convenient to look after the eggs and fry, and water can be removed easily.

The experience, gained by this procedure, leads to another test, which turns out well. The tank is used as a spawning tank. Ipomea is placed in about three-fourth of the tank area. This is prepared during the spawning season. 5 males and 10 females are put in. Within a few days, the fish will spawn. The nests with eggs are then transferred to another tank, while the spawners are allowed to remain to continue their spawning activity in the previous tank.

The fry are fed in the tank with water-fleas and copepods in the same manner as mentioned elsewhere. After one month, they are transferred to the nursery ponds.

TRANSPORTATION.

The transportation of pla salid is also tried. It is found that small pla salid, 5 centimetres in length, can stand long journey better than large ones. The fish, after taken up from the pond, are put in wooden tanks with clear and cool water, and are given one day's rest. During this time and the journey, no food should be given. The fish are put in round tin cans, having 20 litres capacity. Three-fourth of the can is filled with clear and cool water and some Ipomea. The amount of fish put in each can varies according to fish sizes: for instance, for full grown size 40, for medium size 80 and for small size, 5 centimetres in length, 200. During the journey, the cans should be covered with perforated lids and placed, if possible, in cool or damp places. The water should be frequently aerated with the use of a perforated dipper. However, good result is obtained by changing water every 4 hours.

FIELD ACTIVITIES.

The fish was introduced in the province of Chumporn in 1938. Farmers were first advised to try the pond cultivation following the directions given by the department. Owing to adverse conditions of the region, namely the site, the insufficient supply of water throughout the year, and the subject to flooding during the rainy season, the procedure of sepat siam cultivation in Malaya was later adopted. It is reported that the fish thrive well in ponds, ditches, and swamps. Now fresh pla salid is found on sale in the Chumporn market. From Chumporn, the fish finds its way down to Surat and Patalung.

In 1940, some pla salid were taken up north to Lampang, Chiengrai, and Chiengmai. It is reported that the fish adapt itself well to the climatic conditions of Northern Siam.

In 1942, the fish was liberated in a large swamp, known as Nong Harn in the province of Sakol Nakorn. It is now in ditches, bogs and ponds.

In 1944, the department tried to raise pla salid in an acre of paddy farms at the Bangk-Khen Fishpond Station. The farm was so prepared that it could be supplied with water up to 30 centimetres in depth and was also provided with a small pond, 2 metres wide, 5 metres long, and one metre deep. This pond served as a retreat for the fish when water receded. 1,500 pla salid, having the total weight of 3.9 kilograms, were put into the pond and were fed with cooked rice-bran and Ipomea for 4 months. The fish were collected after the harvest of rice, and 873 of them weighing 18.75 kilograms were reclaimed.

It was found that, water in the experimenting farm percolated fast, and could only be maintained at 17 centimetres in depth; Anabas and Ophicephalus were also prevalent. They

were eventually thought to be the causes of the loss of pla salid. However, the Siamese Department of Fisheries still has a strong believe that pla salid can be raised successfully in paddy fields, if proper sites and sufficient amount of water are secured. The department hopes to try the experiment again in terrace-farms in Chiengmai, where water is plentiful throughout the year and where its natural enemies are minimum.