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INDUCED BREEDING OF THAI SILVER CARP

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INDUCED BREEDING OF THAI SILVER CARP

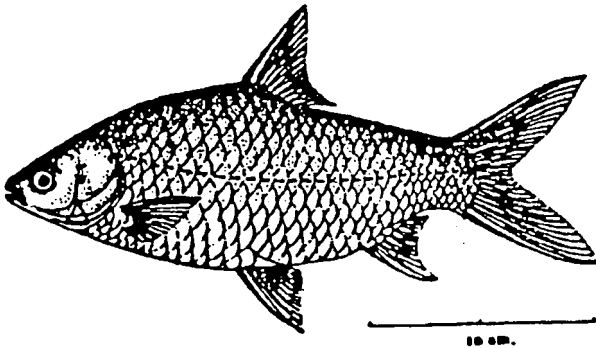
Information and Publication Unit
Fishery Conservation and Extension Division
Department of Fisheries
Thailand

The Secretariat
Southeast Asian Fisheries Development Center
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This manual is a translation of the Thai information pamphlet entitled "การผสมเทียมปลาตะเพียนขาว" (Karn phasom thiam pla ta pian khao), 1981. The translation was prepared by Mr. Vijai Srisuwantach, Senior Fisheries Biologist, National Inland Fisheries Institute, Department of Fisheries, Thailand, and was edited by the Secretariat.

INDUCED BREEDING OF THAI SILVER CARP

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Puntius gonionotus Bleeker, or Thai silver carp, called locally "Pla ta pian khao", is one of the Thai local food fish. It is a fast-growing freshwater fish, easy to culture and highly productive. The species feeds mainly on aquatic plants, grasses, and algae.

Recently, the natural occurrence of Thai silver carp fry has diminished. An adequate supply of stocking fry can be ensured by producing them under controlled conditions. The following

mode of operation is recommended for induced spawning of Thai silver carp, as well as other freshwater species.

1. Selection of brood fish

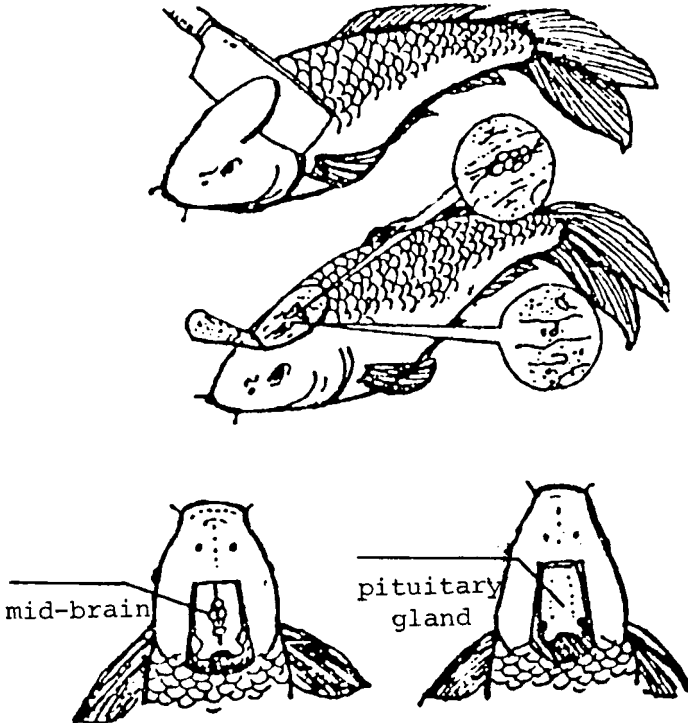
Selection of brood fish is one of the most important stages in induced spawning operations. The farmer should know how to select healthy males and females in order to obtain maximum production of fry. Brood fish should be carefully tended for two to three months before induced spawning operations are carried out. Males and females should be segregated and stocked in separate ponds. The feed should have a high protein content. Change of water by occasionally draining off and refilling the pond is required. The stocking rate of brood stock is about 1 to 2 fish/m².

To be good brooders the fish must be more than one year old. The following characteristics can be used as guidelines to ascertain that the fish are ready for induced spawning operations. The female has a bulging abdomen. It is elastic and soft to the touch, especially at the lower part. The cloaca is reddish and prominent, and the contour of the ovary can be seen on both sides of the abdomen. The abdomen of the male is felt to be flatter when gently pressed, and, if the milt exudes easily, this indicates the ripeness of the milt.

2. Requirements for induced breeding operation

- 1) Brood fishes, 10 males and 5 females.
- 2) Fully mature fish of the same species or common carp for preparation of pituitary gland.
- 3) Small test tube containing acetone for preservation of the gland.
- 4) Knife and chopping board.
- 5) Dip net or carrying stretcher. A cloth of appropriate size forming a trough for holding the fish is fixed to the wooden arms of the stretcher.
- 6) Dissecting kit.
- 7) Homogenizer, distilled water, cotton wads.
- 8) Syringe and needle.
- 9) Round plastic container and feather.
- 10) Scales.

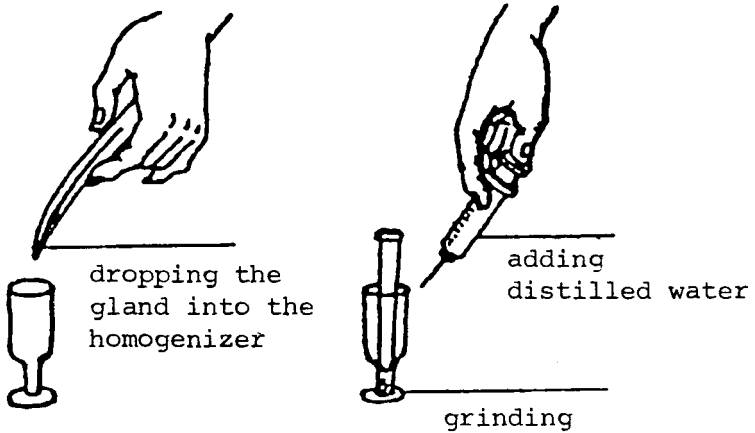
3. Obtaining the Pituitary Gland



Exposing the pituitary gland

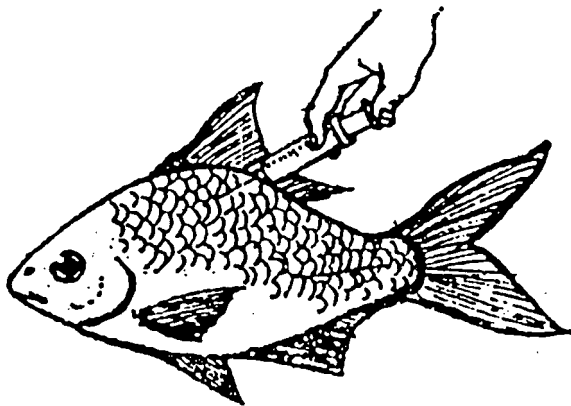
The fish from which the hypophysis is to be collected is weighed and placed on a chopping board. The skull is cut open with a knife. After removing a piece of the skull, fatty tissue and blood are wiped off with a cotton wad. The pituitary gland can be seen after the mid-brain has been folded back by using forceps.

4. Preparation of Pituitary Gland Solution



The gland is ground in the homogenizer; distilled water is added and the gland is again ground. A syringe is used to suck out the solution for injection.

5. Injection of Female Brood Fish



Giving an intramuscular injection

The intramuscular injection is given in the area between the base of the dorsal fin and lateral line. Care should be taken not to insert the needle too deep (about 1-1.5 cm). The injection should be given twice at a six-hour interval. Ovulation occurs about six hours after the second injection.

6. Amount of Pituitary Gland Solution Injected

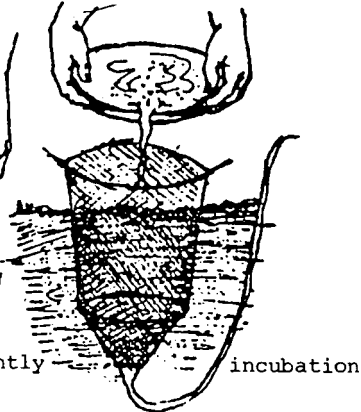
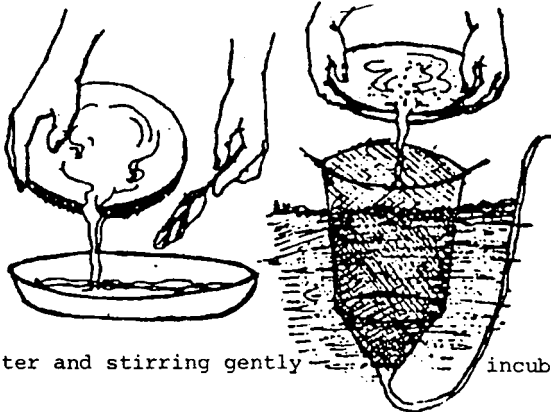
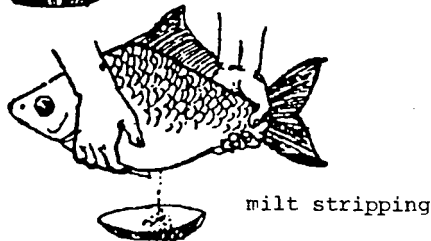
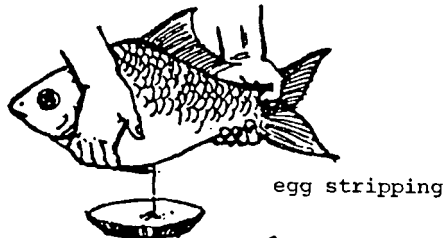
One concentration (one dose) commonly used can be expressed as follows:

$$\text{one dose} = \frac{\text{weight of donor fish}}{\text{weight of recipient fish}}$$

The "weight of donor fish" may be the sum of the weights of several individuals.

The female can be injected with hypophysis of common carp in a dosage of 0.5-1.2 for the first injection. The dosage of the second injection is about three to six times that of the first one.

7. Artificial Insemination



adding water and stirring gently — incubation

The water on the female's body should be wiped off with a towel. As the abdomen is being pressed, the stripped eggs should be collected in a dry plastic container. At the same time, the milt is made to drip on the eggs by pressing the cloaca of the male. Eggs and sperm are mixed and stirred gently with a feather. Next, a little clean water is added and gently mixed again. After one to two minutes, water is added two or three times to cleanse the fertilized eggs. Then the fertilized eggs are transferred to the incubator. Most of the fertilized eggs hatch out within 14 to 16 hours.

8. Fry Nursing

During the first three days after hatching, the fry do not need any food. After that, boiled egg yolk mixed with water can be used as feed, which is sprayed or sprinkled onto the fry incubator three times a day. After feeding with yolk for four days, the fry is transferred to nursery ponds at a stocking rate of 400 fry/m². The fry is fed with steamed eggs mixed with water for ten days and then fed with rice bran, broken rice or soy bean. Feeding frequency is twice daily. The fry are nursed until they are one month old and have reached the size of 5 to 7 cm. In general, the area of the earthen nursery pond ranges from 200 to 400 m², with a 70 cm water depth.

9. Rearing Pond

An earthen rearing pond of about 400 to 1,600 m², with 1 m water depth, is recommended. The stocking rate for fish measuring 5 to 7 cm is 2 to 3 fish/m². They are fed with a cooked mixture of broken rice, rice bran, and vegetables at a ratio of 1:2:4. After culturing for six months, the weight of the fish is about 500 g.

Additional information may be obtained upon request from:

National Inland Fisheries Institute
Department of Fisheries
Bangkhen, Bangkok 10900
Thailand

List of SAFIS Extension Manuals

- SEC/SM/1 Khumua liang pla namcheut (Freshwater Fish Farming: How to Begin)-- in Thai
- SEC/SM/2 Oyster Culture
- SEC/SM/3 Mussel Culture
- SEC/SM/4 Ang pagpuna ug pagtapak sa pukot (Net Mending and Patching)-- in Cebuano-Bisaya
- SEC/SM/5 Mussel Farming
- SEC/SM/6 Menternak Ikan Airtawar (Freshwater Fish Farming: How to Begin)-- in Bahasa Malaysia
- SEC/SM/7 Makanan dan Pemakanan Udang Harimau, *Penaeus monodon* (Nutrition and Feeding of Sugpo, *Penaeus monodon*)-- in Bahasa Malaysia
- SEC/SM/8 Macrobrachium Culture
- SEC/SM/9 Selection of Marine Shrimp for Culture
- SEC/SM/10 Induced Breeding of Thai Silver Carp

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SAFIS is the Southeast Asian Fisheries Information Service. It is a project of the SEAFDEC Secretariat set up to provide extension materials for small - scale fishermen and fish farmers in the region. For additional information, contact the Project Leader of SAFIS

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