

Murrel culture

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Introduction

- Murrels are commonly called as snakeheads belong to family channidae. They are air breathing fishes which inhabit permanent shallow lentic waters.
- Murrel culture contribute important freshwater fishery in India and in great demand for its pleasant tasty flesh and less spines.
- There are about 33 species of murrels distributed in tropical Asia including north China and Africa.
- Over 15 species are reported from Asia and Africa.

Species of culture importance:

Channa striatus (striped snakehead) – **state fish of Andhra Pradesh & Telangana**

Channa marulius (bullseye snakehead)

Channa punctatus (green snakehead)



Channa striatus
Channa marulius



Channa marulius



Channa punctatus

Production

- Total inland fish landings in India (2019-2020) - 2.01 Lakh Tonnes.
- Of that Andhra Pradesh is highest with 0.58 lakh tonnes landings.
- Followed by Bihar (0.45), Telangana (0.38), Assam (0.25)

Food and feeding habits

- Juveniles eat mostly aquatic insects while spawn and early fry nearly entirely devour zooplankton.
- While adults eat medium-sized fish fry, minnows, shrimp, worms, and insects, fingerlings primarily eat shrimp, annelids, and small fish.
- Additionally, they are very piscivorous.
- Piscivorous tendencies in *C. striatus* appear in the size group of 151-250 mm.
- The majority of larger adults are piscivores, with small sized murrel, weed fish, and carp minnows make up the bulk of their diet.
- True cannibalism is also seen in the juvenile and fry stages.

Age at maturity

- One and two years.
- Length:
 1. *C.striatus* – above 25cm.
 2. *C.marulius* – above 36cm.
- Even though rainy season is *C. striatus*'s peak mating season, the species appears to reproduce all year round.

Breeding

1. Natural

The brood fish, which range in size from 100 to 250 g, are stocked in a small pond with shallow water depth. only after the month of March, the fish begin to move in synchrony. They build a nest with their tails near the border of tanks and eat the weeds that grow there. This species typically lays its eggs on shallow margins of weed-infested waters where the weeds have been removed in a small circular area. This clearing of the weeds occurred probably during the breeders'



aggressive spawning movement, as the weeds assisted in keeping the floating eggs from dispersing. Both parents guard the egg and larvae. Fertilization is external.

2. Induced breeding:

- The ideal spawning temperature is between 25 and 28 ° c HCG must be supplied at a dosage of around 2000 IU/kg of body weight for females and 1500 IU/kg of body weight for males. For male and female fish, the recommended doses of carp pituitary extract are 20–30 mg/kg and 30–40 mg/kg, respectively, of body weight.
- Injection is administered intramuscularly (at the base of pectoral fin).
- Typically, the spawning lasts 16 to 18 hours.
- A 1 kg female fish lays between 10,000 and 15,000 eggs. Unfertilized eggs are opaque, while fertilised eggs are translucent.
- The diameter of a fertilised egg is between 1.2 and 1.5 mm.
- Utilizing a plankton net, the fertilised eggs are gathered and moved to a FRP container for hatching.
- The hatching process takes 20 to 24 hours. The average hatchling rate is between 70 and 90 percent, and the fertilisation rate ranges from 80 to 98 percent.
- The size of the newly hatched larvae is between 3.0 and 3.5 mm.

Culture

1. Fry production:

- The digestive tract is visible as a straight tube connected to the yolk sac after hatching, but it lacks any accessory digesting organs (liver, pancreas and gall bladder).
- After 1–2 days of hatching, the digestive tract is fully established, and the yolk sac absorption is quite quick. Fry begin consuming the meal, such as zooplankton, after three days (protozoans, rotifers, and cladocerans).
- They keep doing this until they reach a size of 20 to 30 mm.
- At 20 to 25 days, a survival rate of 50 to 60 percent is anticipated.
- Cannibalism and heterogeneity are the two processes that have a significant impact on the development and survival of striped murrel fry.
- The artificial feeds are provided once the digestive tract has fully developed and contain between 40 and 50 percent protein.



2. Fingerlings production

- The fingerlings eat minute crustaceans and zooplankton (especially insect).



- For hatchery-reared fingerlings, live feed like tubifex and earthworms are a good source of nutrition.
- The stocking rate varies greatly, from 20,000 to 4,60,000 ha each year.
- A stocking density of 15000/ha has been associated with a higher survival rate of 76.67 percent.
- Low market value fish and rice bran are combined in a 3:1 to 8:1 ratio to feed fish.
- Fish are fed between 6 to 8 percent of their body weight.
- To increase survival rates if cannibalism persists, it is advised to increase feeding rates.
- About 40 to 45 percent of striped murrel fingerlings' dietary requirements are for protein.
- A 30 to 40% chance of survival is expected.



3. **Grow out**

- For striped murrel to grow, a pond with a surface area of 0.1 to 0.2 hectare and a depth of 1 to 1.5 m is optimal.
- At a feeding rate of 5% of body weight, the striped murrel is stocked at a density of approximately 10,000/ha.
- The suggested stocking size for grow out is greater than 10 g.
- The annual growth is predicted to be 600–800 g, and the annual fish yield is 2.0–2.5 tons/ha.
- Aquatic weeds are beneficial to striped murrels because they offer shade during the hotter months, act as a deterrent to poachers, and promote the proliferation of insects.

Refernces

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