

BREEDING OF MALAYSIAN GOLDEN AROWANA, *Scleropages formosus* (Müller and Schlegel) IN CONCRETE TANK

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INTRODUCTION



Indonesian Golden Arowana



Malaysian Golden Arowana

Arowana is one of the most popular and expensive ornamental fish in Malaysia. Effort to breed the fish in tank by FFRC Batu Berendam was started in 1990. Samples from Alor Pongsu, Perak were acquired and reared in 5m x 5m concrete.

BROODSTOCK MAINTENANCE



Eight pieces of Malaysian Golden Dragon were reared in 5m x5m concrete tank and water depth about 0.5m . pH of water was maintained between 6.8-7.5 and temperature 27-29°C . A spawning room were built at one corner of the concrete tank. It is hoped that the condition will create a natural living environment for the fish . Live feed such as crickets, wild guppy, freshwater prawn (*Macrobrachium lanchestrii*) and gold fish were given daily . Pelleted feed was also given as the supplementary food .

MATURITY



The fish attain first maturity from the 4th year onwards and measure between 45-60cm . The fish spawn throughout the year with the peak season occurring between July and December . In nature the male incubates the fertilised eggs in its bucca cavity until the fry is free swimming at about 2 months .

SEX DIFFERENTIATION



Male



Female

Sexual differences are indiscernible in juvenile stage and become apparent after maturity is reached in about 3-4 years. Male possesses slimmer and shallower body depth, bigger mouth and more intense colour than the females. The reasons for having wider mouth and deeper lower jaw in males are for eggs incubating purposes. The size of the male's head is relatively bigger. Male is more aggressive and leading in competition for food. A brooding male can be recognised by its remarkable brood pouch under its mouth.

SPAWNING BEHAVIOUR



The fish shows unique courtship behaviour. The courting chase takes place from several days to weeks before the pair starts to mate. They will swim in circles with male chasing the female. About 1-2 weeks before spawning takes place, the fish swims side by side and perform body contact between pair. After the courtship behaviour takes place, the female will lay the eggs and then promptly fertilised by the male. After fertilisation, the male picks up the eggs and incubates them until the fry can swim and survive independently. The eggs are large in size about 8-10mm and yolk rich, hatched about one week after fertilisation. After hatching, the young larvae continue to live in the male's mouth for further 7-8 weeks until the yolk sac

was totally absorbed. The size of the fry was 45-50mm before they are moved out of the males buccal cavity.

REMOVING OF EGGS FROM MALES MOUTH



In the study, the fertilised eggs were forced extruded from males mouth at the 30th day after spawning. The average number of the eggs produced in a single brood was 21 larvae with the maximum number recorded 29.

INCUBATION IN AQUARIUM





The eggs are orange-red in colour and are large in size with diameter 16-20 mm. Once removed from the parents mouth, the half-developed larvae were incubated in glass aquarium tanks, measuring 90x45x45cm. Water temperature is kept around 27-29 degree C using a thermostat heater and dissolved oxygen is maintained at about 5 ppm (mg/l) through continuous aeration of the water. During the first few weeks when the larvae are still having large yolk sac, they tend to remain at the bottom of the tank most of the time. The fry start to swim upward periodically when the yolk sac becomes smaller.

REARING OF FINGERLING



Using the in vitro hatching technique, the survival rate to free swimming stage achieved is 90-100%. The fry will swim freely on the 7th week. Supplementary external live feed (young guppy) was given at the early free-swimming stage to avoid the fry from attacking each other. At the age of the 6th month the fingerlings were reared individually in 75x45x45cm recirculating water system tank. At this age the fry are ready for market.