



E-ISSN: 2347-5129

P-ISSN: 2394-0506

(ICV-Poland) Impact Value: 5.62

(GIF) Impact Factor: 0.549

IJFAS 2018; 6(5): 169-171

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www.fisheriesjournal.com

Received: 27-07-2018

Accepted: 28-08-2018

Sachin Sahu

Fisheries Inspector, Kawardha,
Office Assistant Directorate of
Fisheries, Kabirdham,
Chhattisgarh, India

Shubham Sahu

Research Scholar, Aquaculture,
College of Fisheries, Central
Agriculture University, Tripura,
India

Priyanka Sahu

Fisheries Inspector, Bemetara,
Office Assistant Directorate of
Fisheries, Bemetara,
Chhattisgarh, India

Correspondence

Sachin Sahu

Fisheries Inspector, Kawardha,
Office Assistant Directorate of
Fisheries, Kabirdham,
Chhattisgarh, India

International Journal of Fisheries and Aquatic Studies

A note on the biology of Dwarf Gourami, *Trichogaster lalius* (Hamilton, 1822)

Sachin Sahu, Shubham Sahu and Priyanka Sahu

Abstract

The *Trichogaster lalius*, Dwarf Gourami is a small indigenous ornamental fish species which has long been one of the most popular aquarium fish and among the gourami, it is second most important aquarium fish, adored by aquarists for its sparkling, almost translucent blue colouring accented with fine stripes of red or dark orange. It has also been considered as eatable fish due to their good taste. The present report has been prepared to gather the available information on different aspects of *Trichogaster lalius* further study of which will help to make ornamental fish industry more transparent, vibrant and economically viable but also for conservation.

Keywords: Dwarf Gourami, *Trichogaster lalius*, biology, conservation

1. Introduction

Trichogaster lalius is one of the most reputed ornamental fish among the eight native species of Indian gourami and very much popular to the aquarists. *Trichogaster lalius* commonly known as dwarf gourami is an indigenous ornamental fish. It has high demand in the Indian and international market due to brilliant and beautiful colour. It has also been considered as eatable fish due to their good taste in north east part of India and Bangladesh but it's generally categorised under weed fish.

2. Synonyms

Trichopodus lalius (F. Hamilton, 1822)

Colisa lalia (F. Hamilton, 1822)

Colisa unicolor (G. Cuvier, 1831)

Polyacanthus lalius (F. Hamilton, 1822)

Trichopsis lalius (F. Hamilton, 1822)

3. Taxonomic note

Kingdom: *Animalia*

Phylum: *Chordata*

Class: *Actinopterygii*

Order: *Perciformes*

Family: *Osphronemidae*

4. Common name

Trichogaster lalius is commonly known as Dwarf Gourami.

5. Vernacular name

Trichogaster lalius is vernacularly known as Lolholisha (Assam), Lal khalisha (west Bengal), Khosti (Bihar), Kunggee (Punjab), Gowra, Gowra meen (Tamilnadu) (Mahalder and Mustafa, 2011) [6].

6. Morphological characters

The body is egg shaped, strongly compressed. Mouth is small, directed upwards. Slightly concavity over nape, dorsal and anal fins are spiny. Base of soft dorsal and anal fins are covered with scales.

Lateral line is incomplete. Body scarlet, crossed by oblique bands of pale blue sparkling, almost translucent blue colouring accented with fine stripes of red or dark orange, caudal fin rounded, sometimes slightly, fins with scarlet barb (Mahalder and Mustafa, 2011) [6]. This fishes have accessory respiratory organ called "labyrinth organ" located next to gill cavities. This delicate tissue has a high concentration of blood vessel and function like terrestrial lungs.

7. Distribution

The natural habitat of *Trichogaster lalius* is the Ganga and upper Bramhaputra basin in India and also originated from Bangladesh, Pakistan, Nepal and myamar. This is widely distributed of several other part of the world including Singapore, Colombia and United States (Welcomme, 1988, Degani and Schreibman, 1993) [19, 4].

8. Habitate

In nature the *Trichogaster lalius* are shy and found in slow swimming streams plentiful vegetation, rivers, rice fields, irrigation channels and agriculture land (Menon, 1999, Froese, 2014) [8, 5].

9. Fin formula

D. Xv- Xvii/7-10, P1. 8-10, P2; A. Xvii-Xx/13-17 (Hamilton-Buchanan, 1822)

D. Xv- Xvii/7-10, P1. 10, P2.1, A. Xvii-Xviii/13-17 (Shafi and Quddus, 1982) [18].

D. Xv- Xvii/7-10, P1. 10, A. Xvii-Xviii/13-17 (Talwar and Jhingran, 2001) [17].

D. Xv- Xvii/7-9, P1. 8-9, P2. 1, A. Xvii-Xx/14-16. (Rahman, 2005).

Lateral line series is 27-28 scales in *Trichogaster lalius* (Talwar and Jhingran, 2001) [17].

10. Feeding biology

Trichogaster lalius is the carnivorous fish and feeding on mosquito larvae (Bhatti, 1943; Rao, 2014) [2, 12]. According to Sahu., 2017, it is omnivorous.

11. Water quality parameter for growth and survival

Sahu, 2017 reported that optimum water temperature 20°C to 28°C and pH 6.5 to 7.5 for better growth and survival of *Trichogaster lalius*.

12. Reproductive biology

They are growing upto 3 and ½ inches (8.8 cm) in length but most males will only reach in length of about 3 inches (7.5 cm) with the females being a bit smaller (Rahman, 1989), (Froese *et al.*, 2014) [5]. The dwarf gourami takes 8 to 12 month to mature in temperate areas like northern India. In Singapore it can breed all year round with newly hatched fry reaching sexual maturing in as little as within four months (Sim *et al.*, 1987) [15]. The male of *Trichogaster* spp. builds a floating bubble nest in which the eggs are laid and other bubble nest builder, males will incorporate bits of plants, twigs and other debris, which hold the nest together better (Axelrod 1996; Das 2003) [1, 3]. Rossi (1969) [13] demonstrated that a female pheromone could elicit male nest building in *Trichogaster lalius*. The eggs are laid within a bubble-nest that is built on the surface between submerged plants, up to 2000 eggs may be laid. The males guard the nest eggs and young, until the fry are able to swim freely. The incubation period is about 24 hours (Das 2003) [3].

13. Conservation status

In India trade of this fish still relies upon wild collection, which is creating tremendous pressure on natural stock. This situation wants immediate attention on captive maturation, breeding and culture of native ornamental fish which are endemic to north-eastern and having export value. Therefore, appropriate strategies are to be derived from relevant studies so as to make the ornamental fish industry more transparent, vibrant and economically and financially viable. The studies of environmental and ecological aspects of fishes were carried out throughout the world. However, the scientific studies of ecological parameters e.g. water temperature, pH, alkalinity, hardness and other ecological aspect of this native fish *Trichogaster lalius* is lacking.

14. Conclusion

As per the information documented in this report, limited information so far is available on the nutrition and growth, food and feeding habit (stage wise food preference, gut content, enzymatic study of alimentary canal) and reproductive biology of fish. For success of captive culture and propagation of fish, water quality plays an important role. It is a small indigenous fish species (Mandal *et al.*, 2014, Poul and Chanda, 2014, Sutradhar *et al.*, 2016) [7, 9, 16]. This has just recently made its entry in ornamental fish markets of India. It has moderate demand among the aquarium fish hobbyist due to its brilliant colour pattern, it has also been considered as eatable fish due to their good taste but it's generally categorised under weed fish. *Trichogaster lalius*, Dwarf gourami is a beautiful small indigenous ornamental fish which is very popular among the aquarists. In India trade of this fish still relies upon wild collection, which is creating tremendous pressure on natural stock. This situation points out the need to give attention on captive maturation, breeding and culture of *Trichogaster lalius* and other native ornamental fishes which are endemic and having export value. This will help not only to make ornamental fish industry more transparent, vibrant and economically viable but also to conserve the indigenous fish species. The ICUN red list of threatened species listed dwarf gourami as least concern. The fish is wide spread but may face over-exploitation by the aquarium trade in parts of its range.



A fresh specimen of *Trichogaster lalius*

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