Morphological Characteristics, Ecological Habits and Utilization Value of *Acrossocheilus fasciatus*

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Abstract *Acrossocheilus fasciatus* is a small omnivorous benthic fish widely distributed in the middle and upper reaches of mountain streams and small rivers in hilly and mountainous areas, suitable for stocking in the forks of reservoirs, streams or rivers, and artificial culture in larger ponds and eel farms, *etc*. The paper describes the morphological characteristics, ecological habits, geographic distribution, resources and utilization value of *A. fasciatus*, in order to provide scientific and practical reference information for individuals or enterprises interested in *A. fasciatus* culture and promote the sustainable development of *A. fasciatus* culture industry.

Keywords *Acrossocheilus fasciatus*; Morphological characteristics; Ecological habits; Geographical distribution; Resource and utilization value

Acrossocheilus fasciatus, belonging to *Acrossocheilus*, Barbinae, Cyprinidae, Cypriniformes, is a small omnivorous benthic fish widely distributed in the middle and upper reaches of mountain streams and small rivers in hilly and mountainous areas, mainly distributed in Shanghai, Jiangsu, Anhui, Zhejiang, Jiangxi, Fujian, Yunnan, and Taiwan of China. It is a highly distinctive culture species that prefers live and alkaline water, and is suitable for stocking in the forks of reservoirs, streams or rivers, and artificial culture in larger ponds and eel farms.

1 Morphological Characteristics

1.1 Bodily form Body elongate, laterally compressed, with a slightly elevated dorsal surface behind head and a rounded and shallowly curved abdomen (Fig.1).

1.2 Bodily color Body grayish brown, lower face yellowish, ventral face white, dorsal fin membrane grayish brown, with 6 transverse bands and 1 dark brown longitudinal band on lateral side of body. Male fishes have distinct longitudinal bands and insignificant transverse bands; female fishes only have slightly distinct longitudinal bands posteriorly and significant transverse bands.

1.3 Head organs

1.3.1 Head shape: head moderately large, laterally compressed, slightly pointed anteriorly, conical.

1.3.2 Mouth. mouth anteriorly positioned or subinferiorly, presenting a curved or horseshoe shape, with distance between two mouth corners greater than eye diameter in adults and less than eye diameter in juveniles (Fig.2).

1.3.3 Snout. snout rounded and obtuse, snout folds short, not concealing upper lip, margins glossy-lipped; adult snout with granular cuticular projections.

1.3.4 Mandible. terminal portion of maxilla reaching vertical line of anterior margin of eye, maxilla enclosed beyond mandible; anterior margin of mandible nearly flat, sharply angular, completely bare.

1.3.5 Lip. upper lip narrower than lower lip flap, lower lip flap divided into right and left sides, its spacing wider than that of sulcus posterior, not less than 1/3 of mouth width; sulcus posterior of lip shorter and interrupted at chin.

1.3.6 Barbel. barbel 2-paired, slender, maxilla barbels slightly larger than eye diameter, snout barbels about 1/2 as long as maxilla barbels.

1.3.7 Eyes. eyes moderately large.

1.3.8 Gills. gill rakers short and pointed, sparsely arranged (Fig.3–1, Fig.3–2).

1.4 Fin Outer margin of dorsal fin nearly truncated, terminal unbranched fin slightly stout and stiff but soft apically, posterior margin serrulate (Fig.4); pectoral fin longer than ventral fin, tail end far from starting point of ventral fin, differing by 4–5 scales (Fig.5); ventral fin opposite to dorsal fin at starting point, tail end far from anus (Fig. 6); branched anal fin rays immediately posterior to anus, outer margin obliquely truncate, extending from beginning of ventral fin to base of caudal fin (Fig.7); caudal fin deeply forked, upper and lower lobes pointed, longest fin about 2.5 times as long as central shortest fin (Fig.8).

1.5 Scale Scales moderately large, pectoral fin scales smaller; ventral fin with a long axillary scale at base; scale sheaths of dorsal and anal fins inconspicuous (Fig.9–1, Fig.9–2).

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2 Ecological Habits

A. fasciatus is a kind of small om-

Fig.1 Bodily form of *Acrossocheilus fasciatus*

Fig.2 Mouth of *Acrossocheilus fasciatus*

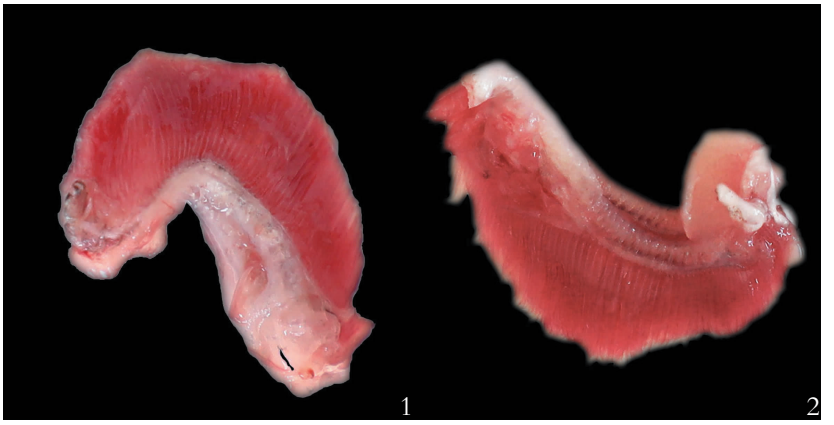

Fig.3 Gills of *Acrossocheilus fasciatus*

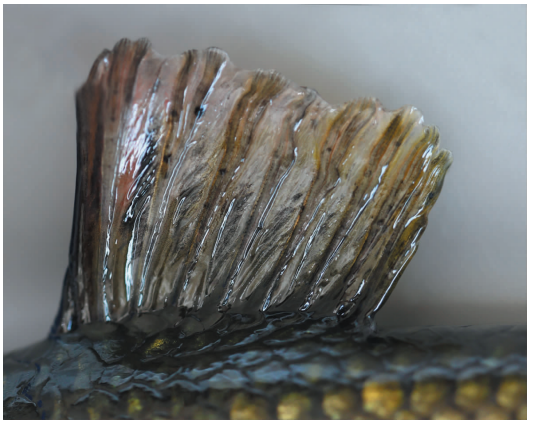

Fig.4 Dorsal fin of *Acrossocheilus fasciatus*

Fig5 Pectoral fin of *Acrossocheilus fasciatus*

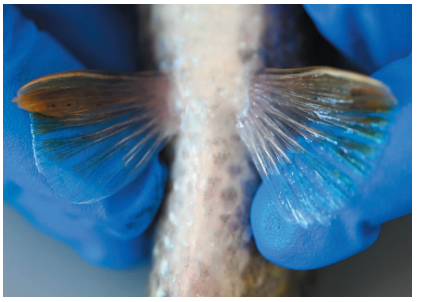

Fig. 6 Ventral fin of *Acrossocheilus fasciatus*

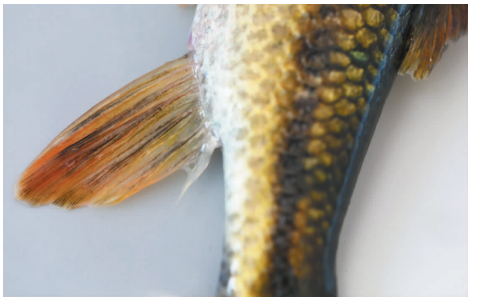

Fig.7 Branched anal fin of *Acrossocheilus fasciatus*

Fig.8 Caudal fin of *Acrossocheilus fasciatus*

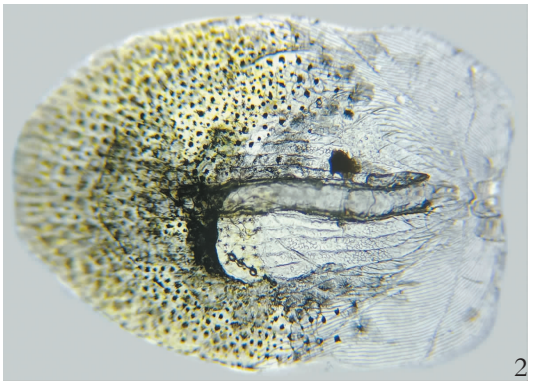

Fig.9 Scale of *Acrossocheilus fasciatus*

nivorous benthic fish widely distributed in the middle and upper reaches of mountain streams and small rivers in hilly and mountainous areas, preferring to inhabit in the rivers and streams with gravel substrate and clear and fast-flowing water.

Under natural conditions, it often shovels moss and algae on rocks with the developed cuticle of its mandibles, and also prefers insects in the water, playing a role of purifying the water. It spawns in shallow rapids from June to August each year.

3 Geographical Distribution

A. fasciatus is widely distributed in Shanghai, Jiangsu, Anhui, Zhejiang, Jiangxi, Fujian, Yunnan and Taiwan provinces of China in large quantities.

4 Resource and Utilization Value

A. fasciatus is a highly distinctive culture species preferring live and alkaline water. It is suitable for stocking in the forks of reservoirs, streams or rivers, and artificial culture in larger ponds and eel farms. The commercial fish generally weighs 400–600 g, and it can also be developed as a swim fishing and ornamental fish.

(1) Edible value. It is a small economic fish with prospects for development, featured by few bones and tender meat, delicate flesh and delicious flavor.

(2) Ornamental value. Because of its beautiful appearance and bright body color, it is suitable for ornamental purposes. In recent years, about 3.5 cm long juvenile fishes have been selected as ornamental fishes in Zhejiang and other places, and achieved considerable profits by export sales.

(3) Angling.

5 Special Tips

(1) *A. fasciatus* eggs are poisonous, and accidental ingestion will cause poisoning symptoms such as diarrhea, abdominal pain, dizziness, vomiting; animals such as cats and chickens will die if they eat *A. fasciatus* eggs. Prolonged heating can destroy the toxin.

(2) There are divergent views on the culture of *A. fasciatus*, with two main points: ①*A. fasciatus* are aggressive in grabbing food, which will lead to insufficient food for other fishes; ②*A. fasciatus* often attacks other fish and dares to tease even those much larger than it. In addition, *A. fasciatus* requires a high level of dissolved oxygen and needs to be equipped with an oxygenator and water circulation device in order to be kept alive.

References

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