



A new species of *Macropodus* (Teleostei: Osphronemidae) from Fujian Province, southern China

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Abstract

A new *Macropodus* species was collected from the river basins of southeastern China. The new species *Macropodus minnanensis*, from Fujian Province, China can be well distinguished from congeners by the following combination of features: (1) dorsal fin with 13 spines and 7 soft rays; (2) anal fin with 20 spines and modally 10 soft rays; (3) vertical insertion of dorsal fin origin at second to third soft rays of anal fin; (4) longitudinal scale rows in midline modally 28; (5) transverse scale rows 14; (6) vertebrae 27 and (7) specific coloration: body with posteriorly black margin on scale pockets; eye greyish; a large opercular, deep black ocellus spot in male. The brief discussions of its related species are also provided.

Key words: new species, freshwater fish, *Macropodus*, Fujian, China

Introduction

The fighting fishes (or so-called paradise fishes) of genus *Macropodus* are the group of wide-distributed freshwater percoids in the fresh waters of Japan, Korea, Taiwan, mainland China, as well as Vietnam (Chen & Fang, 1999; Wang *et al.*, 1999; Freyhof & Herder, 2002; Winstanly & Clements, 2008; Kottelat, 2013). Around the fresh waters of Taiwan, Hongkong and mainland China, there are at least three nominal species of *Macropodus* as: *M. opercularis* Linnaeus, 1758, *M. ocellatus* Cantor, 1842 as well as the Hongkong endangered species, *M. hongkongensis* Freyhof & Herder, 2002.

During our recent field survey for freshwater fish fauna of Fujian Province, China in 2015 and 2023, the undescribed species of *Macropodus* had just been collected. Here we recognize and describe the new collections of rare fish as a new species from the river basins of Fujian Province, mainland China. The brief comparison of related species—*M. hongkongensis* would be also addressed.

Materials and Methods

All fishes were collected by hand-net or casting-net while the field fish investigation in mainland China. All counts and measurements are generally followed Freyhof & Herder, 2002. All morphological specimens were firstly preserved in 10% formalin then transferred to 70% ethanol for permanent preservation. The other DNA materials of individually fin clip was also collected and deposited in 95% ethanol for processing the molecular phylogenetic survey. All type specimens are deposited in the Pisces collection of National Taiwan Ocean University (NTOUP), Keelung, Taiwan, R.O.C.

Systematics

Macropodus La Cepède, 1801

Macropodus La Cepède, 1801: 416 (type species: *Macropodus viridiauratus* La Cepède, 1801: 416, 417, by monotypy). Gender masculine.

Macropodus minnanensis n. sp.

(Figs. 1–2)

Materials examined

Holotype—NTOUP-2023-12-255, 34.7 mm SL, coll. K.Y. Chen *et al.*, 23 Spt. 2023, Janjiang basin, Jangjou City, Fujian Province, China.

Paratypes

NTOUP-2023-12-256, 38.4 mm SL, the date and collection data same as holotype.

NTOUP-2015-03-201, 45.7 mm SL, coll. I-S. Chen *et al.*, 11 Mar. 2015, Joulongjiang basin, Jangjou City, Fujian Province, China.

Diagnosis

The new species *Macropodus minnanensis*, from Fujian Province, China can be well distinguished from congeners by the following combination of features: (1) dorsal fin with 13 spines and 7 soft rays; (2) anal fin with 20 spines and modally 10 soft rays; (3) vertical insertion of dorsal fin origin at second to third soft rays of anal fin; (4) longitudinal scale rows in midline modally 28; (5) transverse scale rows 14; (6) vertebrae 27 and (7) specific coloration: body tawny to blackish brown with posteriorly black margin on scale pockets; eye greyish; a large opecular, deep black ocellus spot in male.



FIGURE 1. *Macropodus minnanensis*, paratype, male, 45.7 mm SL, Pinhe, Joulongjiang basin, Jangjou, Fujian Province, China.



FIGURE 2. *Macropodus minnanensis*, holotype, female, mm SL, female, 34.7 mm SL, Jangjiang basin, Jangjou, Fujian Province, China.

Description

The all relevant morphometric data of 1 holotype and 2 paratypes see in Table 1. Medium size osphronemids with deep, elongate and strong laterally compressed body. Higher body depth at anal fin origin. Snout short but laterally compressed. Body completely covered ctenoid scales. Lateral line absent. Lateral midline scales 28–29 (modally 28); 14 transverse scales. 12–17 gill rakers on ceratobranchial of first arch. 2–3 rows of teeth on upper jaws, 3–4 rows of lower jaws. Larger recorded specimen as 45.7 mm SL so far. Vertebrae 27.

Dorsal fin with 13 spines and 7 branched and unbranched soft rays (totally 20 spines and rays). Bases of unpaired fins scaled. Length of anterior 3–4 rays increasing, then decreasing to the last ray. Anal fin with 20 spines and 10 branched and unbranched soft rays (totally 30 spines and rays). Length of anterior 7–8 soft rays increasing, then decreasing to last rays. Soft dorsal rays 3–4 and soft anal rays 7–8 out margin pointed. Dorsal and anal fin pointed posteriorly, extending far beyond the origin of caudal fin base. Caudal fin emarginate in female to deeply forked in male, with 12–13 branched rays. Pectoral fin 10–11 rays with rounded margin, its rear tip reaching vertical of 3–5 dorsal spines. Pelvic fin pointed with 1 spine and 5 soft rays. First of soft pelvic-fin rays filamentous.

Coloration in fresh specimens

Body and head with tawny to blackish brown background. Lateral body scales with net-like greyish to black margin. Most of poster, outer margin with a black spot. A large deep black, round ocellus spot with a very narrow, posteriorly bright orange to golden rim. A greyish black bar in between eye and the large spot. Two greyish black blotches above the bar. Eye greyish outside pupil. Snout with 2–3 greyish black stripes.

Dorsal fin pale brown and 2–3 rows of deep brown to blackish brown spots on spinous region and 6–8 rows of deep brown to blackish brown spots on soft ray region. Anal fin pale brown with 1–2 rows of deep brown to blackish brown spots on spinous region and 3–5 rows of deep brown to blackish brown spots on soft rays region. Caudal fin pale brown with 9–15 rows of deep brown or blackish brown spots. Pectoral fin pale white and spotless. Pelvic fin pale white to light creamy yellow.

Etymology.—The specific name, *minnanensis*, is referred to its own type locality in Mandarin: “Min-nan” which means the southern part of Fujian Province, China.

TABLE 1. Morphometric data of *Macropodus minnanensis* n. sp. from Fujian, China.

	Male	Female	Male
SL(mm)	45.7	34.7	38.4
In % of SL			
Head length (HL)	27.8%	33.3%	33.3%
Predorsal length	52.3%	54.0%	51.1%
Prepelvic length	39.7%	38.9%	36.6%
Preanal length	50.4%	49.2%	3.0%
Head depth in front of eye	14.0%	13.9%	44.9%
Head depth behind eye	21.2%	23.0%	21.7%
Head depth at nape	26.6%	24.7%	24.7%
Head width at operculum	20.5%	10.9%	18.1%
Body depth at anal-fin origin	37.6%	32.4%	33.8%
Body width at dorsal-fin origin	14.3%	13.3%	13.9%
Body depth at dorsal-fin base end	25.8%	17.7%	20.7%
Postdorsal length	51.9%	51.0%	49.4%
Length of dorsal fin base	38.9%	39.1%	36.7%
Length of anal fin base	51.1%	52.8%	47.0%
Length of pectoral fin	23.4%	26.9%	25.8%
Length of pelvic spine	11.7%	11.9%	13.5%
Length of pelvic filament	30.3%	37.7%	37.2%
Length of middle caudal fin ray	31.0%	37.4%	32.8%
In % of HL			
Eye diameter	24.1%	31.9%	25.3%
Interorbital width	32.2%	29.9%	30.8%
Snout length	22.7%	23.1%	24.1%
Upper lip length	23.9%	23.8%	23.3%

TABLE 2. Meristic comparison of two species in *M. hongkongensis* complex from mainland China.

Species	<i>M. minnanensis</i> n. sp.	<i>M. hongkongensis</i>
Fish samples	3	5
Spines of dorsal fin	13	13–14 (modally 13)
Soft rays of dorsal fin	7	7–8 (modally 7)
Spines of anal fin	20	17–19 (modally 18)
Soft rays of anal fin	10	13–14 (modally 14)
Vertical position of dorsal fin origin	Second to third spines of anal fin	Anal fin origin
Lateral midline scale rows	28–29 (Modally 28)	30–32
Transverse scale rows	14	12
Vertebrae	27	29–30

Distribution.—So far, the new species is merely found from the southern region of Fujian province, China at least existing in the Joulongjiang basin and Jangjiang basin of Fujian Province, mainland China.

Remarks

The allopatric, new species *Macropodus minnanensis*, from Fujian Province, China can be well distinguished from its closely related species—*M. hongkongensis* from HongKong by the following features: (1) anal fin soft rays:

modally 10 vs. modally 14; (3) vertical insertion of dorsal fin origin: second to third soft rays of anal fin vs. anal fin origin; (4) longitudinal scale rows in midline: modally 28 vs. 30–32; (5) transverse scales: 14 vs. 12; (6) vertebral count: 27 vs. 29–30; and (7) specific coloration: eye greyish in male vs red in male; opercular ocellus spot deep black in male vs. brownish green in male. Since the rare fish is not popular even in the type locality, the detailed ecological preference and conservation issue would be very necessary to concerned and conducted in near future.

Acknowledgements

The authors are very grateful to the partial grant support of the survey project from Water Resources Planning Branch, Water Resources Agency, Ministry of Economic Affairs WRA, MOEA, Wufong, Taichung City. The research is also supported by CEO, NTOU, Keelung, Taiwan.

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