



## ***Synodus cresseyi* Prokofiev, 2008, an unnecessary replacement for *S. macrocephalus* Cressey, 1981, and a description of a new species from the Western Indian Ocean (Teleostei: Synodontidae)**

HSUAN-CHING HO<sup>1</sup>, ARTÉM M. PROKOFIEV<sup>2</sup> & KWANG-TSAO SHAO<sup>1,3</sup>

<sup>1</sup> Biodiversity Research Center, Academia Sinica, Taipei 115, Taiwan. E-mail: (HCH) ogcoho@gmail.com; (SKT) zoskt@gate.sinica.edu.tw

<sup>2</sup> A. N. Severtsov's Institute of Ecology and Evolution, Russian Academy of Sciences, Moscow 119071 and P. P. Shirshov Institute of Oceanology, Russian Academy of Sciences, Moscow 117856, Russia. E-mail: prokart@rambler.ru

<sup>3</sup> Corresponding author

### **Abstract**

*Synodus cresseyi* Prokofiev, 2008 is an unnecessary replacement name for *S. macrocephalus* Cressey, 1981 according to Article 23.9.5 of the International Code of Zoological Nomenclature. The material used for the description of *S. cresseyi* includes two species. One of them represents a new species which differs from its congeners in the following combination of characters: anterior palatine teeth not longer than posterior teeth; preopercle scaled posterior to corner of mouth; membranous posterior flap of anterior nostril slender, with a pointed tip, reaching to above posterior nostril when laid back; pectoral fins reaching a line connecting dorsal and pelvic fin origins; pelvic process broad; color in alcohol without any marking, deep brown on dorsal surface restricted to central two-third of head and body, about two scale rows above lateral line, lateral and ventral surface uniformly silver white without blotches.

**Key words:** nomenclature; ICZN; *Synodus vityazi*, new species, Western Indian Ocean

### **Introduction**

Prokofiev (2008) described *Synodus cresseyi* as a replacement name for *Synodus macrocephalus* Cressey, 1981 (Fig. 1) which is preoccupied by *Synodus macrocephalus* Lacépède 1803. However, *Synodus macrocephalus* Lacépède is a member of the Cyprinidae and now valid as *Luciobrama macrocephalus* (Lacépède). Thus, they are in different families and there is unlikely to be confusion. According to Article 23.9.5 of the International Code of Zoological Nomenclature (ICZN, 1999), these two names apply to taxa that have not been considered congeneric after 1899, and the junior homonym must not automatically be replaced. In this case, current usage of *Synodus macrocephalus* Cressey, 1981 should be retained and treated as available and valid. Consequently, *Synodus cresseyi* Prokofiev, 2008 is considered to be an unnecessary replacement name, and is invalid.

During discussion of this nomenclature problem with Dr. W. N. Eschmeyer (personal communication, August, 2008), the first author compared the data and figures of *S. cresseyi* with the type series of *S. macrocephalus* Cressey, 1981 and found they were not identical. With the suspicion that they might represent two species, the second author reexamined the three original specimens used for the description of *S. cresseyi* and found that they indeed represented two species: one specimen was identical to *S. macrocephalus* Cressey, 1981; while the other two were an undescribed species.

An additional lot containing seven specimens of the new species was found at The National Museum of Natural History (USNM). All nine specimens were collected in 1989 by the former Soviet Union research vessel *Vityaz II* at the same station on the 17th Cruise from Madagascar.

In this paper we propose the retention of *S. macrocephalus* Cressey, 1981 and describe the new species previously referred to as *S. cresseyi* Prokofiev, 2008.

### Method and materials

Standard length (SL) and head length (HL) are used throughout. Counts and measurements followed Waples and Randall (1988). Vertebral counts were made from radiographs and include the hypural. The count of lateral line scales did not include the small pored scales on the caudal-fin base. Abbreviations for institution followed Fricke and Eschmeyer (2009, online version).



FIGURE 1. Holotype of *Synodus macrocephalus* Cressey, 1981, USNM 217776, 158.1 mm SL.



FIGURE 2. Holotype of *Synodus vityazi* sp. nov., USNM 307924, 99.0 mm SL. A. Dorsal view. B. Lateral view.

### *Synodus vityazi* new species (Figs. 2–3, Table. 1)

*Synodus cresseyi* Prokofiev, 2008: 424, figs. 1, 2a–2d (in part, 2 specimens, 104 and 131 mm SL).

Holotype. USNM 307924 (99.0 mm), R/V *Vityaz II*, cr. 17, st. 2829, bottom shrimp trawl, 12°04'–12°10'N 53°14'–53°09'E, northeast of Madagascar, W. Indian Ocean, 36–40 m, 15 Jan. 1989.

Paratypes. USNM 396992 (ex. USNM 307924, 6: 64.4–89.1 mm), same locality and date as for the holotype. IORAS 2617 (2: 104.0–131.0 mm), same locality and date as for the holotype.

**Diagnosis.** Dorsal rays 12 or 13; anal rays 9 or 10; pectoral rays 12 or 13; lateral line scales 56–58; scales between lateral line and base of dorsal fin 3.5; median predorsal scales 16 or 17; vertebrae 56 or 57; peritoneal spots 8; anterior palatine teeth not longer than posterior teeth; preopercle scaled posterior to corner of mouth; membranous posterior flap of anterior nostril slender, with a pointed tip, reaching to above posterior nostril when laid back; pectoral fins reaching a line connecting dorsal and pelvic fin origins, the fin length 2.3–2.6 in head length; pelvic processes wedge-shaped, broad at base; color in alcohol without any marking, deep brown on dorsal surface restricted to central two-third of head and body longitudinally, about two scale rows above the lateral line, lateral and ventral surface uniformly silvery white without any blotch; colorless in all fins, except for inner edge of caudal fin fork is black.

**Description.** Dorsal fin rays usually 12 (rarely 13), branched except first two, the last branched to base, the first ray about two-thirds of second ray in length; anal rays 9 or 10, unbranched except the last, branched to base; pectoral fin rays 12 or 13, the upper two and lowermost unbranched; pelvic fin rays 8, the rays with a slender posterior branch, except first and last, the first ray about one-third of the longest ray in length; principal caudal fin rays 19, the upper and lower unbranched; lateral line scales 56–58, not including three tubal scales curving ventrally on caudal fin base; scale rows between lateral line and dorsal fin 3.5; scale rows below lateral line to origin of anal fin 4; median predorsal scales 16–18 (usually 16); circumpeduncular scales 17; gill rakers on ceratobranchial 32 or 33, 10 or 11 on upper limb and 21 or 22 on lower limb; vertebrae 56 or 57; peritoneal spots 8 (3 specimens examined).

Body slender, body width 7.2–7.8 in SL; head length (HL) 3.2–3.6 in SL; snout length 4.1–4.4 in HL; orbital diameter 3.5–4.2 in HL; interorbital space narrow, slightly concave when viewed anteriorly, the least bony width 13.1–15.4 in HL; caudal peduncle depth 5.4–7.2 in HL; caudal peduncle length 2.7–3.1 in HL. Mouth terminal and slightly oblique, forming an angle of about 15° to horizontal axis of body; mouth very large, extending more posterior to eye than anterior, the upper jaw length 1.6–1.8 in HL; teeth in jaws needle-like, the largest arrow-tipped, about equal in length to pupil diameter, and angling medially and anteriorly, except for a few teeth at front of jaws; teeth of upper jaw in 3 close-set rows, those of outer row fixed and rather apart, and largely covered by lip, medium and inner rows inwardly depressible, outer row about twice length of inner and medium teeth; teeth in lower jaw in 4 close-set rows, progressively smaller laterally, except for 2–3 enlarged anterior teeth, outermost row fixed, rather apart and hidden by lip, the other rows inwardly depressible; palatine teeth in 2 to 4 rows, progressively longer medially, angling medially and posteriorly; no vomerine teeth; anterior palatine teeth not enlarged, about equal to posterior teeth; about 35 posteriorly depressible teeth in 4 irregular rows on anterior part of tongue, followed by a relatively narrow tooth band bearing 4 irregular rows of smaller teeth.

Anterior nostril on a line from upper edge of orbit to tip of snout, half way to base of upper lip; membranous posterior flap of anterior nostril a slender flap, the pointed tip reaching to or beyond posterior margin of posterior nostril when laid back; posterior nostril nearly round, with only a slight rim at front, directly behind anterior nostril, the internarial distance about equal to posterior nostril diameter.

Predorsal scales extending forward to about half of orbital diameter behind eye vertically; posterior cheek fully scaled, with 5 slightly oblique latitude rows, progressively smaller posteriorly; a row of 5 scales on anterior part of opercle, each crossed by a sensory canal with 2 or 3 pores, the first in preopercular canal; remaining scales on opercle large and embedded except a few large scales at dorsal; no scales on dorsal, anal and paired fins; a broad central zone of scales basally on caudal fin, ending in a pair of very large pointed scales, 1 or 2 in each lobe, nearly reaching margin of fork of fin; a triangular scaly process at base of pelvic fin.

Predorsal length equal to distance from dorsal fin origin to rear base of adipose fin, 2.1–2.4 in SL; dorsal fin base 2.0–2.3 in HL; second dorsal ray longest, 1.7–1.9 in HL; anal fin base 2.7–3.3 in HL; third anal ray longest, 3.0–3.9 in HL; caudal fin forked, the lobes pointed, the longest rays 1.6–1.8 in HL; caudal concavity 3.4–4.7 in HL; pectoral fins just reaching a line connecting origins of dorsal and pelvic fins, the fin rounded when spread, 2.3–2.6 in HL; sixth pelvic ray longest, 1.0–1.2 in HL.

**TABLE 1.** Morphometric and meristic data of type series of *Synodus vityazi* n. sp.

	IORAS 2617		USNM 307924	USNM 396922						Ave.	SD
	Paratype		Holotype	Paratype							
SL (mm)	131.0	104.2	99.0	89.1	82.7	77.7	77.5	75.4	64.4		
Morphometrics											
Proportion as % SL											
Body width	15.3	14.4	13.6	13.4	13.2	13.8	13.8	12.9	13.8	13.8	0.7
Head length	26.7	28.9	29.1	29.3	30.8	29.0	27.9	28.6	29.5	28.9	1.1
Caudal peduncle depth	4.2	4.8	4.0	5.1	5.1	4.9	4.6	5.3	4.8	4.8	0.4
Caudal peduncle length	13.0	13.5	9.9	10.5	11.5	9.4	9.8	11.0	9.6	10.9	1.5
Pre-dorsal fin length	42.0	43.3	43.5	45.1	47.0	42.5	42.1	43.6	44.9	43.8	1.6
Pre-anal fin length	81.7	76.9	77.7	78.1	79.9	78.2	76.8	77.9	77.3	78.3	1.6
Pre-adipose fin length	81.7	80.8	81.9	82.9	83.3	81.2	81.8	79.8	81.1	81.6	1.1
Pre-pelvic fin length	35.9	37.5	36.4	36.6	37.8	36.6	35.2	36.6	36.2	36.5	0.8
Dorsal fin base	13.0	13.5	14.3	12.8	14.6	14.0	13.5	12.7	12.9	13.5	0.7
Longest dorsal ray	14.5	15.9	16.4	16.0	17.5	15.1	16.3	17.0	16.5	16.1	0.9
Anal fin base	9.9	10.6	10.4	9.2	9.9	9.7	10.3	9.7	9.0	9.9	0.5
Longest anal ray	9.2	6.7	8.7	8.5	9.9	7.3	9.4	8.1	9.0	8.5	1.0
Caudal fin length	16.0	17.3	17.5	16.7	19.0	16.9	17.8	16.8	18.3	17.4	0.9
Caudal fork	6.1	8.2	7.4	6.3	7.0	6.4	7.9	8.4	7.3	7.2	0.8
Pectoral fin length	11.5	11.1	12.8	12.1	13.3	11.7	12.3	12.7	11.5	12.1	0.7
Pelvic fin length	25.2	25.0	23.5	26.3	27.0	25.7	27.0	26.0	26.2	25.8	1.1
Proportion as % HL											
Snout length	25.7	23.3	23.6	22.6	22.7	23.1	22.7	22.7	24.2	23.4	1.0
Orbit diameter	18.6	20.0	24.0	23.8	23.9	25.3	27.8	28.2	24.7	24.0	3.2
Interorbital width	10.7	10.0	7.6	6.9	7.1	6.7	6.5	5.6	6.8	7.5	1.7
Upper jaw length	65.7	60.0	55.6	62.1	60.4	58.2	59.7	57.4	57.4	59.6	3.0
Meristics											
Vertebrae	56	56	56	57	56	57	57	57	57		
Pored lateral line scales	57	56	56	57	56	57	57	58	57		
Predorsal scales	18	16	17	16	16	16	16	16	16		
Dorsal fin rays	13	13	12	12	12	12	12	12	12		
Anal fin rays	10	10	9	9	9	9	9	9	10		
Pectoral fin rays	13	13	12	12	12	12	13	12	12		
Caudal fin rays	19	19	19	19	19	19	19	19	19		
Transverse scale row	3.5/5	3.5/5	3.5/5	3.5/5	3.5/5	3.5/5	3.5/5	3.5/5	3.5/5	3.5/5	
Peritoneal spots	8	–	8	–	8	–	–	–	–		

Pelvic processes long, broad at base and pointed at apex, wedge-shaped.

**Color in alcohol (Fig. 2–3).** Color in alcohol without any marking, deep brown on dorsal surface restricted to central two-thirds of head and body, about two scale rows above each side of the lateral line,

lateral and ventral surface uniformly silvery-white, without any blotch; colorless in all fins, except for inner edge of caudal fin fork, black.

**Etymology.** The species is named for the research vessel *Vityaz II*, in recognition of its great contribution to deep-sea fish research and for collecting the type series described in present study.



**FIGURE 3.** Paratypes of *Synodus vityazi* **sp. nov.**, USNM 396992, 4 of 6, 77.5–89.1 mm SL.

## Discussion

Prokofiev (2008: 426) described pelvic processes as “narrow” for this species; however, he used the term “wide processes” only for those that have a well-developed plate from the base to the tip. In the new species, the pelvic processes are wide at the base and pointed at the tip, wedge-shaped instead of uniformly narrow, and needle-like as in *S. macrocephalus*.

*Synodus vityazi* **sp. nov.** is most similar to *S. macrocephalus* Cressey, 1981 (Fig. 1), but the species differs by the absence of a longitudinal row of color patches along the lateral body and having a wide pelvic process (vs. narrow). Furthermore, the new species has a modally lower number of dorsal (usually 12 vs. 13) and anal fin rays (usually 9 vs. 10), a slightly higher number of vertebrae (56 or 57 vs. 55 or 56), more peritoneal spots (8 vs. 6 or 7), a slender nasal appendage (vs. broad) and, on average, longer pectoral fins (11.1–12.8 vs. 12.6–15.3% SL) and shorter pelvic fins (23.5–27.0 vs. 18.0–23.0% SL) than in *S. macrocephalus*.

*Synodus vityazi* **sp. nov.** is a relatively shallow living species; the type series was collected at depths between 36–40 m. *S. macrocephalus* occurs comparatively deeper; the type series was collected at depths between 75–175 m, with two additional specimens collected from 158–296 m depth.

It is notable that the eye diameter in the type series shows an asymmetrical growth with age. The eye diameters of the 104 mm and 131 mm SL paratypes are relatively small and shorter than the snout length, whereas those of the remaining type series are relatively larger than the snout length.

Within the group of species having a broad pelvic process, the newly described species is similar to *Synodus usitatus* Cressey, 1981 from Indo-west Pacific. However, it differs in having the pectoral fin reaching a line between the origin of the dorsal fin and the origin of the pelvic fin (vs. extending well beyond this line), 56–58 pored lateral line scales (vs. 58–60), 8 peritoneal spots (vs. 14–17) and a relatively large orbital diameter (7.0–7.4% SL vs. 5.7–6.6% SL).

**Comparative material.** *Synodus macrocephalus*: USNM 217776 (158.1 mm), holotype. USNM 217739 (6: 97.0–165.0 mm), paratype. IORAS 2618 (1: 127.8 mm), FRV Professor Mesyatsev, cr. 12, Saya-de-Malha, coll. Yu. P. Pavlov. ZMMSU 21663 (4: 140.0–224.5 mm), FRV Professor Mesyatsev, sta. 461, Indian Ocean, Saya-de-Malha, 200–296 m, trawl Langust, 05 Oct. 1977, coll. Busakhin. ZMMSU 21664 (1: 230.0 mm), FRV Professor Mesyatsev, sta. 453, Indian Ocean, Saya-de-Malha, 158–156 m, trawl Langust, 04 Oct. 1977, coll. Busakhin. *Synodus usitatus*: USNM 225068 (1: 96.0 mm), paratype. IORAS 264 (1: 105.0 mm), R/V Vityaz, cr. 17, st. 2803, bottom shrimp trawl, 11°21'–11°22'S 61°47'–61°45'E, Mascarene Ridge, 87–110 m, 07 Jan. 1989.

## Acknowledgements

We are grateful to Prof. N.V Parin (IOAN) for making type specimens available, and J. Williams, S. Smith and D. Pitassy (USNM) for curatorial assistance. This study was partially supported by grants RFBR-NSC 07-04-92000-NNS-a to AMP and NSC96-2621-B-001-006-MY3 from the National Science Council, Taiwan to K.-T. Shao. We also thank D. G. Smith (USNM) for reading and improving the manuscript.

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