



First record of Saddle Barb, *Barbodes sellifer* Kottelat & Lim 2021 (Cypriniformes, Cyprinidae), on Belitung, Indonesia, with an update of its geographic distribution

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Abstract. Saddle Barb, *Barbodes sellifer*, is a freshwater fish endemic to Malay Peninsula and the Indonesian archipelago and is here recorded for the first time from Belitung Island, Indonesia. This is a range extension of about 300 km to the southeast from the closest previously known locality on Bangka Island, and, in addition to reporting its occurrence on another island of the Indonesian archipelago, this is the southernmost known locality for the species. We also provide an updated map showing the species' distribution.

Key words. Conservation, Indonesian Archipelago, range extension, Smiliogastrinae, Sundaland

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INTRODUCTION

Barbodes Bleeker 1859, is a cyprinid genus included within the subfamily Smiliogastrinae (Fricke et al. 2024b) and currently comprises about 50 valid species (Froese and Pauly 2024). Saddle Barb, *Barbodes sellifer* Kottelat & Lim, 2021, was recently described from specimens collected in rivers of Singapore and on the Malay Peninsula, as well as in Sumatra, islands of Riau (Lingga, Batam, Bintan), Anambas, and Natuna in Indonesia (Kottelat and Lim 2021; Fricke et al. 2024b). This species' populations had previously been wrongly identified as *Barbodes banksi* (Herre, 1940) (Kottelat and Lim 2021). Recently, Prananda et al. (2022) extended the geographic distribution of *B. sellifer* to Bangka Island, Indonesia.

Here, we report *B. sellifer* in the upstream reaches of the Cerucuk River, Belitung Island, based two specimens, extending the species' distribution by about 300 km southeast of Bangka Island, as well as to another island of the Indonesian archipelago.

METHODS

Two specimens of *Barbodes sellifer* were collected using a scoop net on 12 May 2023 upstream in the Cerucuk River (02°46'50"S, 107°51'31"E), Badau Subdistrict, Belitung District, Belitung Province, Belitung Island, Indonesia (Figures 1, 2). The specimens were preserved in 96% alcohol and deposited in the Airlangga Natural History of Museum (ANHM), Faculty of Fisheries and Marine Sciences, Universitas Airlangga, Surabaya, Indonesia.

The morphological inspection followed Kottelat and Lim (2021), based on the examination of fresh and recently preserved materials, as well as colouration in life. Abbreviations: SL = standard length.



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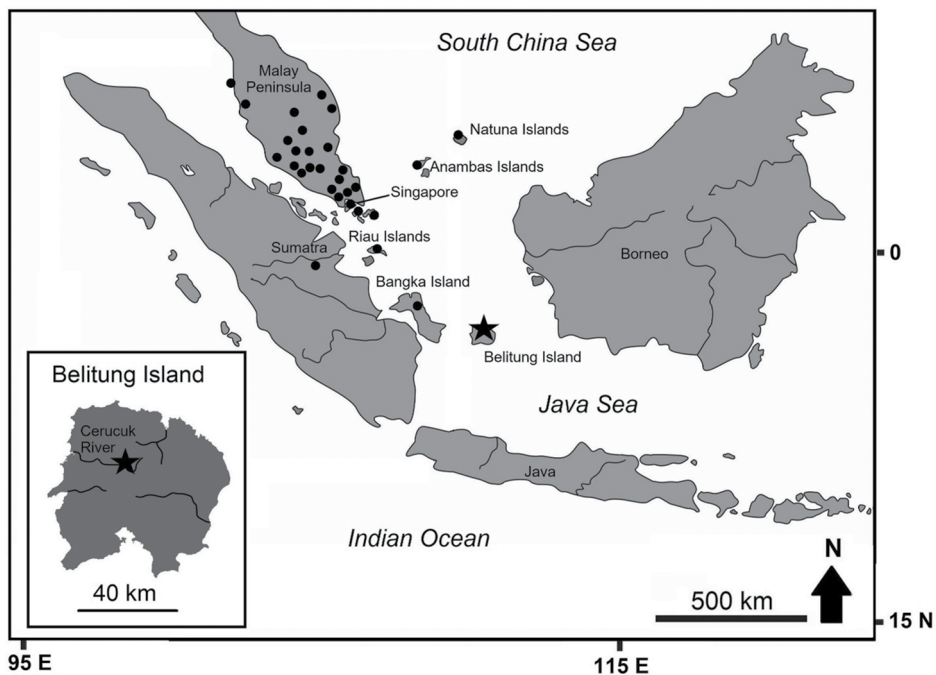


Figure 1. Distribution map of *Barbodes sellifer*. The black star indicates the new record from Belitung Island, Indonesia. Black circles indicate previous records based on Kottelat and Lim (2021) and Prananda et al. (2023).



Figure 2. Cascade on the springs, upstream of Cerucuk River, Belitung Island, Indonesia, where *B. sellifer* was found. Photograph by W. Kusumah.

RESULTS

Barbodes sellifer Kottelat & Lim, 2021

New records. INDONESIA – BELITUNG ISLAND • Belitung District, upstream of the Cerucuk River; 02°46'50"S, 107°51'31"E; 12.V.2023; V. Hasan leg.; scoop net; 1 ♂, 82.5 mm SL, ANMH 0008 • same locality; 12.V.2023; V. Hasan leg.; scoop net; 1 ♀, 79.0 mm SL; ANMH 0009.

Identification. Adults of *B. sellifer* are diagnosed mainly by possessing a broad triangular (inverted) to rectangular conspicuous dark blotch below the dorsal-fin base, occupying 4–6 scales on row 4 and 2.5–4.5 on



Figure 3. *Barbodes sellifer* from upstream of Cerucuk River, Belitung District, Belitung Island, Indonesia. **A.** Live specimen (ANMH 0008). **B.** Preserved specimen (ANMH 0009). Photograph by W. Kusumah and Edited by Vieira LO.

row 2, and by the absence of black spots behind the opercle (Kottelat and Lim 2021). Moreover, *B. sellifer* differs from its morphologically more similar congeners by the features listed below: *B. banksi* possess a linear dark blotch which is uniformly about 1–2 scales wide below the dorsal-fin base and slightly slanted forwards; *B. zakariaismaili* Kottelat & Lim, 2021 possess a dark blotch like a narrow, triangular mark below the anterior part of the dorsal-fin base; *B. rhombeus* (Kottelat, 2000) and *B. binotatus* (Valenciennes, 1842) possess a small, dark blotch (not triangular) below the dorsal-fin base; and *B. bunau* (Rachmatika, 2005) possess a very conspicuous, black, broadly triangular (inverted) blotch over more than six scales on row 4, and black spots behind the opercle (Rachmatika 2005; Kottelat and Lim 2021).

The two specimens examined here (Figure 3) have a conspicuous, broadly triangular (inverted) to rectangular, dark blotch below the dorsal-fin base, occupying four scales on row 4 and 2.5 on row 2, as well as they lack black spots behind the opercle. These are the main diagnostic character states of *B. sellifer* according to Kottelat and Lim (2021). Therefore, our specimens fit with the main diagnostic features exhibited by adults of this species. Morphometric and meristic characters of the *B. sellifer* from Belitung Island are listed in Table 1.

Habitat notes. The specimens were collected in a stream with cascades, a sandy and rocky bottom, and clear, flowing water. The stream was 0.5–1 m deep. In this stream there were some aquatic plants, such as *Hydrilla* Rich., *Cryptocoryne* Fisch. ex Wydler, and ferns. The bank of the stream was covered by shrubs, with moderate canopy cover (Figure 2).

DISCUSSION

The discovery of *Barbodes sellifer* (Figure 3) in the Cerucuk River, Belitung District (Figures 1, 2) is the first published record of this species from the island of Belitung. This new record represents a range extension of about 300 km to the southeast from the closest, previously known locality on Bangka Island. It also adds another island in the Indonesian archipelago where this species is known to occur. Belitung Island now is the southernmost known locality for the species (Figure 1).

New records of freshwater fishes are essential in supporting appropriate conservation-related decisions and environmental impact assessments, and they are much needed for understanding patterns in species diversity and biogeography (Hasan et al. 2023b, 2023c, 2023d; Hasan et al. 2024). Our new record fills a gap in the geographic distribution of *B. sellifer* and reports an additional island where this species is known to occur in the Indonesian archipelago. Recently, many new records of fish species have been published for islands of this archipelago (e.g. Hasan et al. 2021a, 2021b; Hasan et al. 2022a, 2022b, 2023a, 2023b,

Table 1. Morphometric and meristic characters of *Barbodes sellifer* from the upstream of Cerucuk River, Belitung Island (present study) and Singapore (Kottelat and Lim 2021).

Morphometrics data (mm)	Present study		Kottelat and Lim 2021
	AMNH 0008	AMNH 0009	
Standard length, SL (mm)	82.5	79.0	59.5–97.8
Percent of SL			
Total length	132.12	131.65	131.9–141.3
Head length	27.88	27.85	27.6–32.2
Snouth length	9.70	8.86	8.80–11.0
Predorsal length	59.39	58.23	57.9–62.9
Prepelvic length	49.70	49.37	48.4–53.5
Preanal length	72.73	72.15	70.5–74.6
Eye diameter	8.48	8.86	7.80–8.90
Meristics			
Dorsal fin rays (unbranched)	3	3	3 (1) / 4 (8)
Dorsal fin rays (branched)	8½	8½	8½ (8) / 9½ (1)
Pectoral fin rays	16	16	15 (3) / 16 (5) / 17 (1)
Pelvic fin rays	9	9	9
Anal fin rays (unbranched)	3	3	3
Anal fin rays (branched)	5½	5½	5½
Principal caudal fin rays	10+9	10+9	10+9
Lateral line scales	21+3	21+2	21+2 (6) / 21+3 (1) / 22+2 (2)

2023c, 2023d, 2024; Tan et al. 2023), including from Belitung Island (Hasan et al. 2023d, 2024). Likewise, a number of newly discovered freshwater fish species have been recently described from this archipelago (e.g. Ahnelt et al. 2020; Tan and Kottelat 2020; Low et al. 2022; Tan 2023). Thus, these islands are still undersampled, and additional collection expeditions on these islands should be encouraged, to better understand the species' distribution, as well as to better assess conservation status of species.

Recent molecular studies (Ng and Tan 2021; Sobri et al. 2021) on the *B. binotatus* complex have highlighted the importance of molecular approaches in taxonomy and in detecting cryptic species lineages. Ng and Tan (2021) and Sobri et al. (2021) demonstrated the existence of cryptic species lineages within the species complex and that some nominal taxa belong to more than one lineage. Therefore, these authors suggested the existence of possible undescribed species within this species complex in the Sundaland region, without making taxonomic decisions, such as synonymizing, describing, or redescribing species. They only indicated the possibility of the group having greater diversity.

Kottelat and Lim (2021) described two new species in the *B. binotatus* complex, *B. sellifer* and *B. zakari-aismaili*. The descriptions of these species were based on dozens of examined specimens and reported morphological variations among different size classes in juveniles and adults. Furthermore, Kottelat and Lim (2021) examined comparative materials of other species of the group, including type materials, and provided information and photographs of these.

As our specimens fit the description and diagnosis of *B. sellifer*, we consider them to be the first specimens of this species recorded from the Belitung Island (Figure 1). However, this does not exclude the possibility that the Belitung Island population that we call *B. sellifer* to be described as a new species in the future. For now, recording *B. sellifer* from Belitung Island fills an important biogeographic gap, ensures that this population will not be ignored in future taxonomic works, and assures that it will not be excluded from conservation policies and measures; this species is rare on Belitung Island.

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ADDITIONAL INFORMATION

Conflict of interest

The authors declare that no competing interests exist.

Ethical statement

No ethical statement is reported.

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Author contributions


Conceptualization: VH, FPO, JS. Data curation: JS, FPO, VH, LOV. Formal analysis: VH, FPO, LOV. Funding acquisition: VH. Investigation: VH, JS, FSV, FPO, LOV, ABS, SA. Methodology: JS, VH, LOV, FPO. Project administration: VH. Writing – original draft: VH, FPO, LOV. Writing – review and editing: VH, JS, FSV, FPO, LOV, ABS, SA.


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Data availability

All data that support the findings of this study are available in the main text.

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