



# First record of *Spottobrotula mahodadi* Cohen & Nielsen, 1978 (Ophidiiformes, Ophidiidae) in the Straits of Malacca, Malaysia

Ying Giat Seah<sup>1,2</sup>, Siti Asmal Mat Piah<sup>1</sup>, Ryo Okamoto<sup>3</sup>, Norhafiz Hanafi<sup>4</sup>, Md Repin Izarenah<sup>5</sup>, Mizuki Matsunuma<sup>6</sup>

<sup>1</sup> Faculty of Fisheries and Food Science, Universiti Malaysia Terengganu, 21030 Kuala Nerus, Terengganu, Malaysia

<sup>2</sup> South China Sea Repository and Reference Centre, Institute Oceanography and Environment, Universiti Malaysia Terengganu, 21030 Kuala Nerus, Terengganu, Malaysia

<sup>3</sup> Faculty of Environmental Science, Nagasaki University, 1-14 Bunkyo-machi Nagasaki City, Nagasaki 852-8521, Japan

<sup>4</sup> School of Biological Sciences, Universiti Sains Malaysia, 11800 Gelugor, Pulau Pinang, Malaysia

<sup>5</sup> Division of Fisheries Conservation and Protection, Department of Fisheries Malaysia, 62628 Putrajaya, Malaysia

<sup>6</sup> The Kyoto University Museum, Yoshida-honmachi, Sakyo-ku, Kyoto 606-8317, Japan

Corresponding author: Mizuki Matsunuma (k1139853@kadai.jp)

**Abstract.** Three specimens of *Spottobrotula mahodadi* Cohen & Nielsen, 1978, collected from Perak, Malaysia in July 2023, represent the first record of the species from the Straits of Malacca. Previous records had been limited to the Andaman Islands and Ranong, Thailand in the Andaman Sea. The newly collected specimens are described in detail, with morphometric and meristic data provided.

**Key words.** Distribution, morphology, new record, fish fauna, Neobythitinae

**Seah YG, Mat Piah SA, Okamoto R, Hanafi N, Izarenah MR, Matsunuma M (2025)** First record of *Spottobrotula mahodadi* Cohen & Nielsen, 1978 (Ophidiiformes, Ophidiidae) in the Straits of Malacca, Malaysia. *Check List* 21 (2): 299–303. <https://doi.org/10.15560/21.2.299>

## INTRODUCTION

The ophidiid genus *Spottobrotula* Cohen & Nielsen, 1978 (Ophidiiformes, Ophidiidae, Neobythitinae) is characterized by have many spots and blotches on the head, body, and fins. This genus includes three species (Nielsen et al. 1999, 2014): *S. mahodadi* Cohen & Nielsen, 1978, *S. mossambica* Nielsen, Schwarzhans & Uiblein, 2014, and *S. persica* Nielsen, Schwarzhans & Uiblein, 2014. *Spottobrotula mahodadi* was originally described by Cohen and Nielsen (1978) based solely on the holotype collected off Barren Island in the Andaman Sea. Later, Matsunuma et al. (2017) reported two additional specimens from the Thailand coast at Ranong, and Psomadakis et al. (2020) included newly collected material of *S. mahodadi* in their field guide to the marine fishes of Myanmar; the precise locality is not provided. All these records are from the Andaman Sea.

The Straits of Malacca comprise a narrow, funnel-shaped waterway from the northernmost tip of Sumatra and Phuket Island to south of Tanjung Piai (Malaysia). At its narrowest point, the strait is less than 50 nautical miles wide near One Fathom Bank (Permatang Sedepa), south of Perak (Rusli 2012). Not only does the narrow strait have increasing shipping and sea passage, contributing to the economic growth of the Southeast Asian region, but the strait is also rich in natural resources, such as fisheries and mangrove forests. However, there is a lack of information on the biodiversity of this area. In July 2023, three specimens of *S. mahodadi* were collected at a fish-landing port at Bagan Panchor, Perak, west coast of Malaysia, facing the Straits of Malacca. The specimens, which represent the first record of the species from the Straits of Malacca and Malaysia, are described here.

## METHODS

Specimens were collected from a fish-landing station at Bagan Panchor, Perak, Malaysia in July 2023. Each specimen was given a tag number, photographed, and subsequently fixed and preserved following Seah et al. (2011). Morphometric and meristic data were taken following Nielsen et al. (1999, 2014). Specimens were measured to the nearest 0.01 mm using digital calipers. Standard length is abbreviated as SL. The specimens were deposited in the South China Sea Repository and Reference Centre, Universiti Malaysia Terengganu, Malaysia (UMTF). Previous occurrence records of the species are from Nielsen et al. (2014), Matsunuma et al. (2017), and Psomadakis et al. (2020).



Academic editor: Felipe Ottoni

Received: 16 October 2024

Accepted: 5 March 2025

Published: 18 March 2025

Copyright © The authors. This is an open-access article distributed under terms of the Creative Commons Attribution License (Attribution 4.0 International – CC BY 4.0)

## RESULTS

### *Spottobrotula mahodadi* Cohen & Nielsen, 1978

Figures 1, 2

**New record.** Malaysia — PERAK • Bagan Panchar; 04.5295°N, 100.6553°E; 24 July 2023; Seah, Y.G. leg.; bottom trawl; 3 spec., UMTF11004–11006.

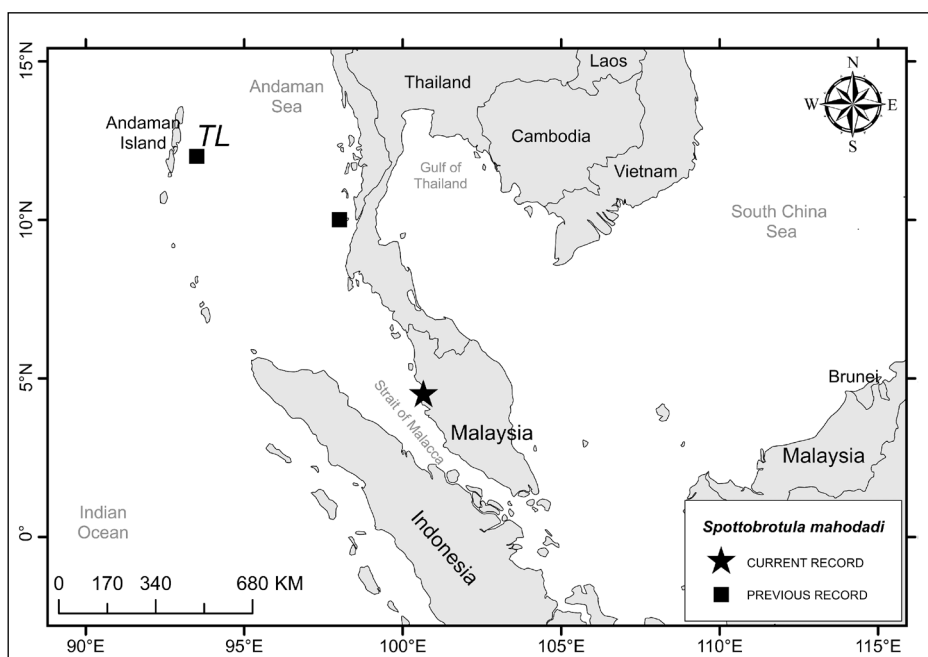
**Local name.** Belukor Keli Bintik

**Identification.** Photographs of one specimen (UMTF 11005) are presented in Figure 1, with meristic and morphometric data for the three specimens in Table 1. The specimens were identified as belonging to the genus *Spottobrotula* based on the following combination of characters, defined as diagnostic for the genus by Nielsen et al. (2014): head and body fully scaled; pelvic fin with two rays bound together with tough skin; no spines on preopercle; opercular spine short, not reaching posterior margin of opercle; a prominent skin flap above pectoral-fin base; 9–11 prolonged gill rakers on first gill arch; 25–42 pseudobranchial filaments; single median basibranchial tooth patch; granular teeth present on palatines; dorsal part of head and body with rather large dark spots, dorsal fin with about two large black blotches. The specimens were identified

**Figure 1.** *Spottobrotula mahodadi* (UMTF 11005, 227 mm SL) collected from Perak, Malaysia (Straits of Malacca). **A.** In fresh condition. **B.** Preserved.



**Figure 2.** Distributional map of *Spottobrotula mahodadi*, showing previously known records (squares) and present record from Perak, Malaysia (star). TL indicates type locality. Also recorded by Psomadakis et al. (2020) from Myanmar in the northern Andaman Sea (precise locality unknown).



as *S. mahodadi* by the following characters, also based on Nielsen et al. (2014): large dark spots on head and body but lacking black band; 26–28 pectoral-fin rays; pelvic fin length 22.8–25.7% of SL; and pre-pelvic fin length 15.3–16.5% of SL.

*Spottobrotula mahodadi* is readily distinguished from *S. mossambica* by the absence of a distinct band on the postorbital region; and from *S. persica* by having large dark spots on the light-colored head and body, versus light spots on a dark background in *S. persica* (Nielsen et al. 2014).

The number of vertebrae in the specimens could not be determined, but other features observed were similar to the description and photographs of *S. mahodadi* presented by Nielsen et al. (2014), Matsunuma et al. (2017), and Psomadakis et al. (2020), including the characteristic dark spots and blotches scattered on the body (Figure 1).

Meristic differences, including numbers of dorsal-fin rays (96–105 in the newly collected specimens versus 104–107 in previously reported specimens), pectoral-fin rays (26–28 versus 30), pseudobranchial filaments (26–42 versus 29–40), total gill rakers (15–17 versus 16–18), and scale rows between dorsal-fin origin and lateral line (16–18 versus 18) between the present specimens and those of *S. mahodadi* previously reported (Table 1) may simply represent intraspecific variation. Some differing body proportions—i.e. body depth at dorsal-fin origin (19.1–20.8% of SL versus 18.1–19.0%) and eye window diameter (5.1–5.4% of

**Table 1.** Morphometric (% of SL) and meristic data of *Spottobrotula mahodadi* from Perak, Malaysia (Straits of Malacca; present study) and the Andaman Sea (based on previous studies).

	Present study			Matsunuma et al. (2017)		Nielsen et al. 2014
	UMTF 11004	UMTF 11005	UMTF 11006	KAUM-I. 33115	THNHM-F 13331	Holotype
<b>Standard length (mm)</b>	259	227	200	308.6	267.6	216
<b>Morphometric measurements (% of SL)</b>						
Head length	23.5	22.2	22.2	23.0	23.7	22.0
Body depth at dorsal-fin origin	20.8	19.1	20.0	23.0	23.7	22.0
Body depth at anal-fin origin	19.3	17.5	18.2	18.4	18.1	19.0
Snout length	5.1	5.0	4.9	—	—	—
Upper-jaw length	12.3	11.3	11.3	11.8	12.1	10.5
Posterior height of maxillary	2.9	2.7	3.0	2.9	3.0	2.7
Diameter of eye window	5.4	5.1	5.2	4.8	5.3	4.6
Interorbital width	5.9	6.2	6.0	6.2	5.6	5.7
Postorbital length	13.3	12.8	12.5	13.2	13.2	12.5
Pre-pectoral Length	23.3	22.7	22.9	—	—	—
Pre-pelvic-fin length	16.1	16.5	15.3	15.0	16.4	17.5
Pre-anal-fin length	44.2	46.7	45.1	45.8	44.2	43.5
Pre-dorsal-fin length	25.8	24.3	24.9	24.3	25.2	24.0
Pelvic-fin base to anal-fin origin	30.5	32.8	31.5	32.9	29.8	28.0
Pectoral-fin length	13.4	12.2	12.4	13.5	13.8	12.0
Pelvic-fin length	25.7	22.8	25.1	24.4	26.7	22.5
<b>Meristic counts</b>						
Dorsal-fin rays	103	105	96	107	105	104
Caudal-fin rays	9	9	9	9	9	8
Anal-fin rays	81	79	81	81	81	78
Pectoral-fin rays	26	28	27	30	30	30
Pelvic-fin rays	2	2	2	2	2	2
Pseudobranchial filaments	42	29	26	40	29	35
Long rakers on anterior gill arch	10	11	10	10	10	11
Total gill rakers	16	17	15	18	17	16
Dorsal fin rays before level of anal-fin origin	22	27	26	27	27	30
Scale rows between dorsal-fin origin and lateral line	16	17	18	18	18	18

SL versus 4.6–5.3%)—among them are most likely due to growth-related changes, although no significant relationships between such measurements and SL were apparent due to the low number of specimens.

## DISCUSSION

The new specimens of *Spottobrotula mahodadi* reported here represent the first record of the species from the Straits of Malacca and Malaysia (Figure 2). Like the holotype of *S. mahodadi*, collected from relatively shallow water (ca. 40 m depth; Nielsen et al. 2014), the specimens from Perak were also collected in a shallow coastal area (depth often <40 m) characterized by turbid waters and a muddy bottom.

Each nominal species of *Spottobrotula* is restricted to a limited distributional region in the Indian Ocean: *S. mahodadi* from the Andaman Sea and northern Strait of Malacca (ca. 40 m depth), *S. mossambica* from Oman to the Mozambique Channel (22–82 m depth), and *S. persica* from the Persian Gulf (45 m depth) and off Socotra Island (480–515 m depth) (Nielsen et al. 2014). The biology of *S. mahodadi* is poorly known due to limited material. However, the conservation status of the species warrants investigation, particularly concerning its susceptibility as trawl bycatch. Because the fish diversity along the west coast of Malaysia remains poorly studied in comparison to the east coast (e.g. Matsunuma et al. 2011; Seah et al. 2020, 2021; Motomura et al. 2021; Zainal Abidin et al. 2024), further exploration of the marine fish fauna in the Straits of Malacca is necessary for understanding fish species richness and basic biological characteristics, particularly for poorly studied species such as *S. mahodadi*.

## ACKNOWLEDGEMENTS

We extend our heartfelt gratitude to Mohd Sharol Ali, Nur Athirah Abdul Latiff, and Jen Nie Lee for their invaluable support during the field survey. We are grateful also to Graham S. Hardy (Ngunguru, New Zealand) for reading the manuscript and providing help with English, and the academic editor and reviewers for providing valuable comments on the manuscript. We also acknowledge the South China Sea Repository and Reference Centre, Universiti Malaysia Terengganu, and the National Academy of Marine Research, Taiwan, for their contributions to the expedition in Perak. Additionally, this study received funding from the Department of Fisheries, Malaysia, under the project titled “Data Collection of Critical and Resilience Habitat of Perak” (PRK.ML.630-1 Jld 5(7)). We also specially thank the Japan Society for the Promotion of Science (JSPS): Core-to-Core project Collaborative Research and Education Project in Southeast Asia for Sustainable Use of Marine Ecosystems (CREPSUM) for their endless support of marine fish diversity studies.

## ADDITIONAL INFORMATION

### Conflict of interest

The authors declare that no competing interests exist.

### Ethical statement

No ethical statement is reported.

### Funding


This study was financially supported by the Department of Fisheries, Malaysia in the project of “Data Collection of Critical and Resilience Habitat of Perak” (PRK.ML.630-1 Jld 5(7)).


### Author contributions


Data curation: YGS, SAMP, RO. Formal analysis: YGS, SAMP, RO. Funding acquisition: YGS, MRI. Project administration: YGS, MRI. Validation: YGS, SAMP, RO. Visualization: YGS, SAMP, RO, NH, MRI. Writing – original draft: YGS, SAMP, RO, NH, MRI. Writing – review and editing: YGS, SAMP, RO, NH, MRI, MM.

### Author ORCID iDs

Ying Giat Seah  <https://orcid.org/0000-0002-2976-4448>

Siti Asmal Mat Piah  <https://orcid.org/0009-0000-9301-5292>

Norhafiz Hanafi  <https://orcid.org/0000-0003-3662-3843>

Mizuki Matsunuma  <https://orcid.org/0000-0002-9061-1598>

### Data availability

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

## REFERENCES

- Cohen DM, Nielsen JG (1978) Guide to the identification of genera of the fish order Ophidiiformes with a tentative classification of the order. NOAA Technical Report NMFS Circular (417): 1–72.
- Matsunuma M, Motomura H, Matsuura K, Shazili NAM, Ambak MA (Eds.) (2011) Fishes of Terengganu—east coast of Malay Peninsula, Malaysia. National Museum of Nature and Science, Tokyo, Japan; Universiti Malaysia Terengganu, Kuala Nerus, Malaysia; and Kagoshima University Museum, Kagoshima, Japan, 251 pp.
- Matsunuma M, Yoshida T, Motomura H (2017) Records of *Spottobrotula mahodadi* (Ophidiiformes: Ophidiidae) and *Hapalogenys bengalensis* (Perciformes: Hapalogenyidae) from the Andaman Sea, with a note on the fresh coloration of *S. mahodadi*. *Species Diversity* 22 (1): 73–79. [https://doi.org/10.12782/sd.22\\_73](https://doi.org/10.12782/sd.22_73)
- Motomura H, Kimura S, Seah YG, Sheikh Abdul Kadir ST, Ghaffar MA (Eds.) (2021) Reef and shore fishes of Bidong Island, off east coast of Malay Peninsula. The Kagoshima University Museum, Kagoshima, Japan, 80 pp.
- Nielsen JG, Schwarzhans W, Uiblein F (2014) Review of the Indo-West Pacific ophidiid genera *Sirebo* and *Spottobrotula* (Ophidiiformes, Ophidiidae), with description of three new species. *Marine Biology Research* 11 (2): 113–134 (for 2015). <https://doi.org/10.1080/17451000.2014.904885>
- Nielsen JG, Cohen DM, Markle DF, Robins CR (1999) Ophidiiform fishes of the world (order Ophidiiformes). An annotated and illustrated catalogue of pearlfishes, cusk-eels, brotulas and other Ophidiiform fishes known to date. FAO fisheries synopsis. No. 125, vol. 18. FAO, Rome, Italy, 178 pp.
- Psomadakis P, Thein H, Russell BC, Tun MT (2020) Field identification guide to the living marine resources of Myanmar. FAO species identification guide for fishery purposes. FAO and Department of Fisheries, Ministry of Agriculture, Livestock and Irrigation, Republic of the Union of Myanmar, Rome, Italy, xvii + 694 pp.
- Rusli MHBM (2012) Straits of Malacca and Singapore: pride of the Malay Archipelago, priceless maritime heritage of the world. *Journal Hadhari Special Edition* (2012): 109–127.
- Seah YG, Ali MS, Ghaffar MA, Mat Jaafar TNA (Eds.) (2021) Marine fishes of Kuantan: Malaysia Biodiversity Information System (MYBIS). Universiti Malaysia Terengganu, Kuala Nerus, Malaysia, 172 pp.
- Seah YG., Mat Jaafar TNA, Ali MS (Eds.) (2020) Field guide to trawl fishes near Bidong Island. Universiti Malaysia Terengganu, Kuala Nerus, Malaysia, 144 pp.
- Seah YG, Mazlan AG, Abdullah S, Zaidi CC, Usup G, Mohamed CAR (2011) Feeding guild of the dominant trawl species in the southeastern waters of Peninsular Malaysia. *Journal of Biological Sciences* 11 (2): 221–225. <https://doi.org/10.3923/jbs.2011.221.225>
- Zainal Abidin DH, Nor SAM, Seah YG, Ali MS, Jamaluddin JAF, A Rahim M, Zulkifly NS, Tan MP, Md Zain K, Mat Jaafar TNA (2024) An odyssey of integrative taxonomy unveils marine fish diversity, new records and cryptic species in Malaysian waters. *Zoological Studies* 63 (30): 1–21. <https://doi.org/10.6620/ZS.2024.63-30>