

***Melamphaes brachysomus*, A NEW SPECIES OF BIGSCALE (MELAMPHAIDAE)  
FROM THE ANDAMAN SEA**

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**ABSTRACT:** A new species of melamphaid, *Melamphaes brachysomus* sp. nov. is described based on a single specimen (55.4 mm in standard length) collected from the Andaman Sea off southern Thailand at depths of 651–655 m. The new species is distinguishable from 37 known congeners by the following combination of characters: 16 dorsal-fin soft rays; 8 anal-fin soft rays; 3–4 upper and 13 lower-gill rakers; 8–11 filaments on the pseudobranch; 12 abdominal and 16 caudal vertebrae; body depth 30.7% of standard length; head length 42.8% of standard length; eye diameter greater than suborbital width; pelvic-fin origin slightly anterior to vertical through the posterior end of the pectoral-fin base; anal-fin origin under the base of the last dorsal-fin ray; widely spaced circuli on the posterior field of body scales; and some body scales with a shallow notch on the posterior margin.

**Keywords:** description, deep sea, Thailand, BIOSHELF, Beryciformes, Stephanoberyciformes.

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## INTRODUCTION

The melamphaid genus *Melamphaes* Günther, 1864 is characterized by usually having 17 or more total dorsal-fin rays, one supramaxilla, jaw teeth in bands, two cheek scales, cephalic sensory pores often in groups and smooth frontal ridges (Ebeling, 1962; Kotlyar, 2011). The genus inhabits pelagic depths below 100–200 m in all major oceans except for the Arctic and Mediterranean Sea, and currently comprises 37 valid species (Ebeling, 1962; Kotlyar, 2012; 2013; 2016c).

A single unidentified specimen of the genus *Melamphaes* was found among deep-sea fish specimens collected in the Andaman Sea off Thailand by R/V Chakratong Tongyai in the course of the Biodiversity of the Andaman Sea Shelf project (BIOSHELF: see Aungtonya *et al.*, 2000). Other beryciform and stephanoberyciform fishes of BIOSHELF specimens are listed in Kimura *et al.* (2019). A detailed examination of the specimen and a comparison of it with 37 known species of *Melamphaes* revealed it to

be clearly separable from all congeners. We herein describe it as a new species of the genus.

## MATERIALS AND METHODS

Counts, measurements and the terminology of cephalic sensory pores generally follow Ebeling (1962). Scales apparently located on the midline in front of the dorsal-fin origin are counted as predorsal scales. Single rakers at the angle of the first and fourth gill arches are included in the numbers of rakers on the lower limb. The length of the gill raker at the angle of the first arch was measured from the tip of the raker to the middle of its base. All measurements were made to the nearest 0.1 mm with calipers or dividers. Standard and head lengths are abbreviated as SL and HL, respectively. Vertebral counts were made from radiographs. The specimen examined in this study is deposited at the Reference Collection of the Phuket Marine Biological Center, Phuket, Thailand (PMBC).

***Melamphaes brachysomus* sp. nov.**

(New common English name: short-body bigscale)

Figs. 1 and 2; Table 1

**Holotype.** PMBC 30251, 55.4 mm SL, off southern Thailand, Andaman Sea, eastern Indian Ocean (7°20'N, 97°14'E – 7°22'N, 97°13'E), 655–651 m depth, R/V Chakratong Tongyai, otter trawl, 28 Jan. 1999, collected by S. Bussarawit and C. Aungtonya.

**Diagnosis.** A species of the genus *Melamphaes* with the following combination of characters: 16 dorsal-fin soft rays; 8 anal-fin soft rays; 3–4 upper and 13 lower-gill rakers; 8–11 filaments on pseudobranch; 12 abdominal and 16 caudal vertebrae; body depth 30.7% SL; head length 42.8% SL; eye diameter greater than suborbital width; pelvic-fin origin slightly anterior to vertical through posterior end of pectoral-fin base; anal-fin origin under base of last dorsal-fin ray; widely spaced circuli on posterior field of body scales; and some body scales with a shallow notch on posterior margin.

**Description.** Dorsal-fin rays III, 16; anal-fin rays I, 8; pectoral-fin rays 14 on left side, 15 on right side; pelvic-fin rays I, 7; caudal-fin rays 3, 10 + 9, 3; scale rows ca. 29; scales in diagonal series 8; predorsal scales ca. 6; gill rakers on first gill arch 4 + 13 = 17 on left side, 3 + 13 = 16 on right side; gill rakers on fourth gill arch 2 + 10 on left side, 3 + 10 on right side; filaments on pseudobranch 8 on left side, 11 on right side; vertebrae 12 + 16 = 28. Proportions as % SL: body depth 30.7; head length 42.8; head depth 27.6; head width 19.3; snout length 9.7; length of snout to preopercle 27.8; length of upper jaw 19.1; length of lower jaw 22.0; orbital diameter 6.5; postorbital length 28.0; length of orbit to cheek ridge 7.6; length of orbit to cheek angle 13.4; suborbital width 5.2; interorbital width 12.6; length of frontal fossa 15.3; width of frontal fossa 8.7; predorsal length 45.7; postdorsal length 64.1; prepectoral length 41.9; prepelvic length 41.5; preanal length 69.7; length of dorsal-fin base 33.4; length of anal-fin base 9.0; pectoral-fin length 31.9; pelvic-fin length 19.9 (tips of rays damaged); length of pelvic to anal 28.5; length of anal to caudal 32.7; caudal-peduncle length 24.4; caudal-peduncle depth 10.3; length of gill raker at angle of first arch 5.4.

Body moderately compressed, depth greatest near origin of dorsal fin. Dorsal profile of anterior tip of upper jaw to frontal knob steep and concave in front of posterior nostril; that of frontal knob to dorsal-fin origin almost straight. Head large; length 2.3 in SL. Posterior margin of upper jaw extending well beyond vertical through posterior margin of orbit. Conical teeth in both jaws arranged in bands; tooth formula 6/5. Orbital diameter substantially greater than suborbital width. Bony ridges of head not expanded. Epidermis of head relatively strong, but rather fragile on preopercle. Embossed lines on epidermis distinct. Sensory pores in group inside cheek angle two on left side, three on right side. Pores in group under posteroventral angle of orbit two on both sides. Pores in group on supratemporal canal directly above preopercle four on both sides; anteroventral pore of them very small and inconspicuous. Pores on preopercle above angle 2 + 3 + ca. 2 + 2 on left side, 2 + 1 + 2 + 2 on right side. Pores on outer margin of mandible from angle to symphysis 1 + 3 + 2 + 1 on both sides. Lower part of posterior margin of cheek ridge concave; cheek angle with asymmetrically diverging spine-like ridge. Posterior margin of preopercle slightly concave; one small process on posteroventral angle of preopercle with weak ridge directed toward cheek angle; lower margin of preopercle without spines. Posteroventral angle of interopercle with flat projection. Gill rakers of first gill arch slender and widely spaced; uppermost one on upper limb of left side quite rudimentary. Length of gill raker at angle of first arch shorter than eye diameter. Rakers on lower limb of fourth gill arch reduced to low knobs or bumps; posterior rakers large with ca. 10 spines. Body scales almost intact but not very adherent; clearly visible circuli on posterior fields more widely spaced than anterior fields (Fig. 2). Posterior margin of some body scales with shallow notch. Single rows of slender scales covering base of dorsal and anal fins. Four scales on opercle, subopercle and interopercle. Anal-fin origin under base of last dorsal-fin ray. Pelvic-fin origin slightly anterior to vertical through posterior end of pectoral-fin base.

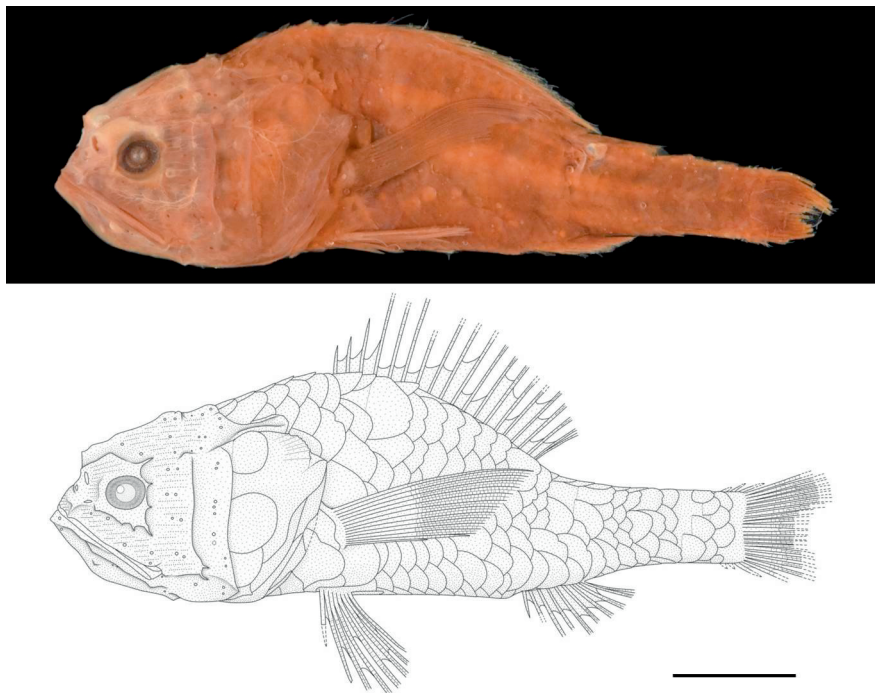
*Color in alcohol.* Head, body and fins almost uniformly brownish; parts of head covered with epidermis slightly pale. Inconspicuous dark brownish pigment on soft rays of each fin.

*Melamphaes brachysomus*, a new species of bigscale (*Melamphaidae*) from the Andaman Sea

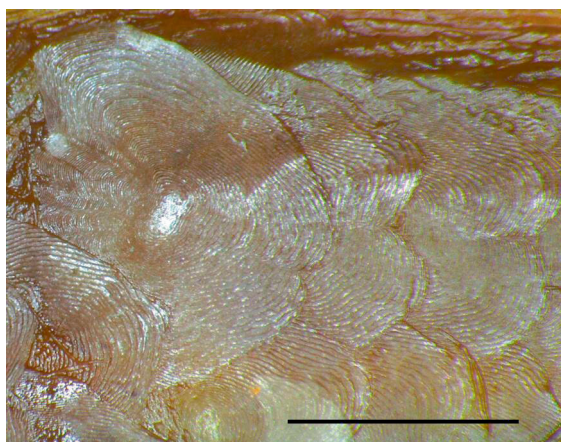
**Distribution.** Known only from the Andaman Sea off southern Thailand at depths of 651–655 m.

body, in reference to the relatively short and stout body of the new species.

**Etymology.** The specific name is derived from the Greek “*brachy*” meaning short and “*somus*” meaning



**Figure 1.** *Melamphaes brachysomus* sp. nov., PMBC 30251, holotype, 55.4 mm SL. Scale bar 10 mm.



**Figure 2.** Body scales below anterior part of dorsal-fin base on left side of *Melamphaes brachysomus* sp. nov., PMBC 30251, holotype, 55.4 mm SL. Scale bar 3 mm.

**Remarks.** Ebeling (1962) placed species of *Melamphaes* into six species groups: *Melamphaes lugubris* group, *Melamphaes macrocephalus* group, *Melamphaes suborbitalis* group, *Melamphaes spinifer* group, *Melamphaes typhlops* group and *Melamphaes simus* group. *Melamphaes brachysomus* is similar to species of the *M. spinifer* and *M. typhlops* groups in having 16–17 total gill rakers, the eye diameter greater than the suborbital width, and the maximum body size of 55.4 mm SL or more (vs. usually 20 or more rakers in *M. lugubris* group, *M. macrocephalus* group and *M. suborbitalis* group, and eye diameter less than suborbital width and maximum length of 29.5 mm SL or less in *M. simus* group) (Ebeling, 1962; Kotlyar, 2011). Although the new species resembles both the members of *M. spinifer* group, *Melamphaes eulepis* Ebeling, 1962 and *Melamphaes spinifer* Ebeling, 1962, in terms of the scales almost fully remaining on the body (most often, almost or fully missing in *M. typhlops* group), it is clearly separable from the two species by the lack of expanded bony ridges of the head (vs. head ridges expanded to reveal reticular bone in *M. eulepis*) and the lack of well-developed spines on the lower margin of the preopercle (vs. spines present in *M. spinifer*) (Ebeling, 1962; Kotlyar, 2014; 2016c). Consequently, the new species is considered to belong to *M. typhlops* group. Compared with the 15 species of the *M. typhlops* group, *M. brachysomus* most closely resembles *Melamphaes janae* Ebeling, 1962, *Melamphaes longivelis* Parr, 1933, *Melamphaes parvus* Ebeling, 1962 and *Melamphaes succedaneus* Kotlyar, 2015 in having 16–17 total gill rakers and the anal-fin origin just under the base of the last dorsal-fin ray (vs. 14–15 or 18–19 gill rakers, and/or anal fin origin under the base of the third to fifth from the last ray or well behind the last ray in the other 11 species) (Ebeling, 1962; Kotlyar, 2014; 2015a; 2015b; 2015c; 2016a; 2016b; 2016c). The new species can be distinguished from the four species by the high number of filaments on the pseudobranch, deep body, greater head and postorbital lengths, and anteriorly positioned pelvic fin (Table 1). Although *M. brachysomus* is mostly similar to the Indo-Pacific sympatric species *M. janae* with regard to the proportional characters and position of the pelvic fin, it is clearly separable from *M. janae* in having  $12 + 16 = 28$  vertebrae (vs.  $11-12 + 14-15$

$= 25-27$ , usually  $11 + 15 = 26$ ), the gill raker at the angle of the first arch shorter than (vs. equal or longer than) the eye diameter, and body scales with widely spaced circuli on its posterior field (vs. no circuli but microscopic striae present on the posterior fields of the body scales) (Ebeling, 1962; Kotlyar, 2015c). *Melamphaes brachysomus* is also distinguishable from *M. longivelis* and *M. parvus* in having 16 soft dorsal-fin rays (vs. 17–18 in the former and 13–15, more frequently 14 in the latter) (Parr, 1933; Ebeling, 1962; Kotlyar, 2015a). The new species can be separated from *M. succedaneus* in having two or three pores in the group inside the cheek angle (vs. three or four, more frequently four) (Kotlyar, 2015b). The large head of the new species (42.8% SL) is one of the most distinctive characters; the only species of the *M. typhlops* group with a head length greater than 40% SL is *M. janae* (34.4–41.9% SL) (Ebeling, 1962; Kotlyar, 2014; 2015a; 2015b; 2015c; 2016a; 2016b). Although body scales of most species of *Melamphaes* are deciduous and are almost always lost, the peculiar body scales of the new species with a posterior notch may be also useful in distinguishing it from congeners. The presence or absence of spurs on the hemal arch of the first caudal vertebra is an important character in the genus. However, the condition in the present specimen could not be determined because the radiographs of the specimen were inconclusive probably due to decalcification caused by long-term preservation in 10% formalin solution. For the same reason, natural coloration of the present specimen was probably lost.

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**Table 1.** Comparison of selected characters between *M. brachysomus* sp. nov. and four related species of *M. typhlops* group.

	<i>M. brachysomus</i>	<i>M. janae</i> <sup>a</sup>	<i>M. longivelis</i> <sup>a</sup>	<i>M. parvus</i> <sup>a</sup>	<i>M. succedaneus</i> <sup>d</sup>
Filaments on pseudobranch	8–11	3–5 <sup>b</sup>	7–8 <sup>c</sup>	4–5 <sup>b</sup>	4–7
Body depth (% SL)	30.7	26.7–30.2	25.4–28.0	25.0–27.6	23.3–29.7
Head length (% SL)	42.8	38.6–41.9*	34.9–39.2*	34.8–38.6*	34.3–39.4
Postorbital length (% SL)	28.0	25.0–28.4*	22.3–26.0	22.3–25.5	19.8–23.5
Position of pelvic-fin origin related to posterior margin of pectoral-fin base	Anterior	Anterior, under or posterior	Anterior, under or posterior	Under or posterior	Under or posterior

a, b, c and d: data from Ebeling (1962), Kotlyar (2015c), Kotlyar (2015a) and Kotlyar (2015b), respectively.

\*Data from adult and half grown specimens from Ebeling (1962).

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