

A rare species of scaled barracudina (Paralepididae) newly collected from the eastern Indian Ocean off Indonesia

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Abstract. A rare, scaled barracudina species *Magnisudis indica* (Ege, 1953), collected from the Eastern Indian Ocean off Java, is described in detail. This species can be distinguished from its congeners in having a combination of the following characters: 60–62 total vertebrae, 54–56 total lateral-line scales, 34 gill rakers, position of nostrils clearly before posterior end of maxilla, pelvic-fin origin below dorsal-fin base, and snout length more than twice eye diameter. Comments on the diagnostic characters of the genus *Magnisudis* are provided.

Key words. Actinopterygii, taxonomy, ichthyology, *Magnisudis*, *Paralepis*

INTRODUCTION

The scaled barracudina fishes, subfamily Paralepidinae, were reviewed by Post (1987) who recognised four genera and nine species. Post (1987) provided detailed information of eight morphometric and eight meristic characters for each species, as well as their ontogenetic and geographical variation. Since then, no additional information on the taxonomy of this group has been added, except for inclusion of species in some regional books or checklists.

Ege (1953) described *Paralepis brevis indicus* based on some young and juvenile specimens. Yamakawa, in Okamura et al. (1982), and Okamura & Machida (1986) reported specimens of *Paralepis atlantica indica* collected from Japan. Post (1987) subsequently examined the holotype of *Paralepis brevis indicus* and two specimens from Japan; together with the data provided by Ege (1953) and Rofen (1966), he recognised *Paralepis brevis indicus* and validated it as *Magnisudis indica*. Since then, no additional information on the taxonomy of this species had been added.

During the SJADES (South Java Deep-Sea) biodiversity cruise conducted in March–April 2018 off the southwestern coast of Java in the eastern Indian Ocean, an adult specimen of *Magnisudis indica* was obtained by beam trawl. This

specimen represents the first adult record of the species in the eastern Indian Ocean. In this paper we provide a detailed description of the newly collected specimen and compare it to members of two closely related genera mentioned above.

MATERIAL AND METHODS

Standard length (SL) and head length (HL) are used throughout. Methods for taking measurements and counts followed Ho et al. (2019). Abbreviations: DFO = dorsal-fin origin; VFO = pelvic-fin origin; AFO = anal-fin origin; D–V = distance between origins of DFO and VFO; D–A = distance between DFO and VFO.

The specimen of *Magnisudis indica* is deposited at the Bitung Research Station, Research Center for Oceanography, Indonesian Institute of Sciences (RCO-LIPI), Bitung, North Sulawesi, Indonesia. For more details on SJADES localities, please refer to Ho et al. (2021, this volume) and Chim et al. (2021, this volume).

TAXONOMY

Order Aulopiformes Bonaparte, 1831

Family Paralepididae Bonaparte, 1835

Magnisudis Harry, 1953

Harry (1953) established *Magnisudis* based on his new species *Magnisudis barysoma* [= *M. atlantica* (Krøyer, 1868)] which possesses the following diagnostic characters: minute teeth on vomer; supramaxillary free at its posterior end; gill rakers reduced to flat bases armed with four long filaments; tongue far forward, near the symphysis of the lower jaw;

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Table 1. Morphometric data of *Magnisudis indica* (Ege, 1953).

<i>Magnisudis indica</i> (LBRC-F 4648)				
Standard length	280 mm			
	%SL	%HL	in SL	in HL
Pre-dorsal-fin length	59.6	–	1.7	–
Pre-pelvic-fin length	62.1	–	1.6	–
Pre-anal-fin length	79.3	–	1.3	–
Pre-adipose-fin length	87.9	–	1.1	–
Pre-anus length	68.2	–	1.5	–
Head length	26.9	–	3.7	–
Head depth	9.5	35.5	10.5	2.8
Snout length	12.0	44.8	8.3	2.2
Post-orbital length	10.4	38.8	9.6	2.6
Pre-nostril length	7.7	28.6	13.0	3.5
Upper-jaw length	10.7	39.9	9.3	2.5
Lower-jaw length	16.3	60.6	6.1	1.6
Eye diameter	5.5	20.6	18.1	4.9
Interorbital width	4.4	16.5	22.6	6.1
Mouth gape	14.5	53.9	6.9	1.9
Body depth at pectoral-fin origin	11.6	43.1	8.6	2.3
Anal-fin base	15.9	59.3	6.3	1.7
Dorsal-fin base	6.7	24.9	15.0	4.0
Pectoral-fin length	16.2	60.2	6.2	1.7
Dorsal-fin length	8.6	32.0	11.6	3.1
Longest anal-fin ray	8.0	29.7	12.6	3.4
Longest caudal-fin ray	14.2	52.8	7.1	1.9
Caudal-peduncle length	7.4	27.4	13.6	3.7
Caudal-peduncle depth	4.0	14.9	25.0	6.7

lateral-line scales large and rounded, with a median pore; body scales small; and relatively few anal-fin rays.

Paralepis was distinguished from *Magnisudis* based on the following observations: members of the former genus have more numerous, shorter, and more spine-like teeth on the gill rakers; tongue long and attached further back in the mouth; and lateral-line more complex.

Post (1987) promoted three subspecies of *Paralepis atlantica* to species level in *Magnisudis*. Instead of adapting the characters provided by Harry (1953), he provided only a few characters to separate *Magnisudis* from *Paralepis*, including maximum size >450 mm SL, no loss of gill rakers and teeth in adults; and three or four peritoneal sections in young specimens. However, these characters are not consistent in various sizes of specimens, and Ho & Duhamel (2019) have further reported the reduction of teeth and gill rakers in adult of *Magnosudis*.

On the other hand, Post (1987: 94) mentioned that “within the subfamily, the species of *Paralepis* have no common features which separate them equally from other genera.” Consequently, there are no suitable diagnostic characters to distinguish these two genera, and the relationship of these two genera needs further study.

Despite the confusion at generic level, *Magnisudis indica* has the lowest number of total vertebrae and is distinct from other members in *Magnisudis* and *Paralepis* (see Discussion below).

Magnisudis indica (Ege, 1953)

(Fig. 1, Table 1)

Paralepis brevis indicus Ege, 1953: 5, fig. 1 (type locality: off Madagascar, Indian Ocean, 11°18'S, 50°0'3E, about 2,000 m [4,000 m wire out]).

Magnisudis indica (Ege, 1953): Post, 1987: 94.

Specimen examined. LBRC-F 4648, 280 mm SL, CP25, 6°50.185'S, 105°10.353'E–6°50.923'S, 105°10.776'E, 876–937 m, South of Tanjung Layar, Java, Beam Trawl, 27 March 2018.

Description of LBRC-F 4648. Dorsal-fin rays 11; pectoral-fin rays 17 (both sides); pelvic-fin rays nine (both side); anal-fin rays 22; upper/lower procurrent rays 15/16; upper/lower principal caudal-fin rays 10/9. Gill rakers on first arch 34, six on upper limb, 28 on lower limb (16 on ceratobranchial + 12 on hypobranchial, including three anterior ones with short spine-like teeth). Lateral-line scales before DFO 25, before VFO 27, before AFO 40 (left)/41 (right), total 56. Vertebrae: prehaemal 31; before DFO 26, before VFO 28, before AFO 41; caudal 30; total 61.

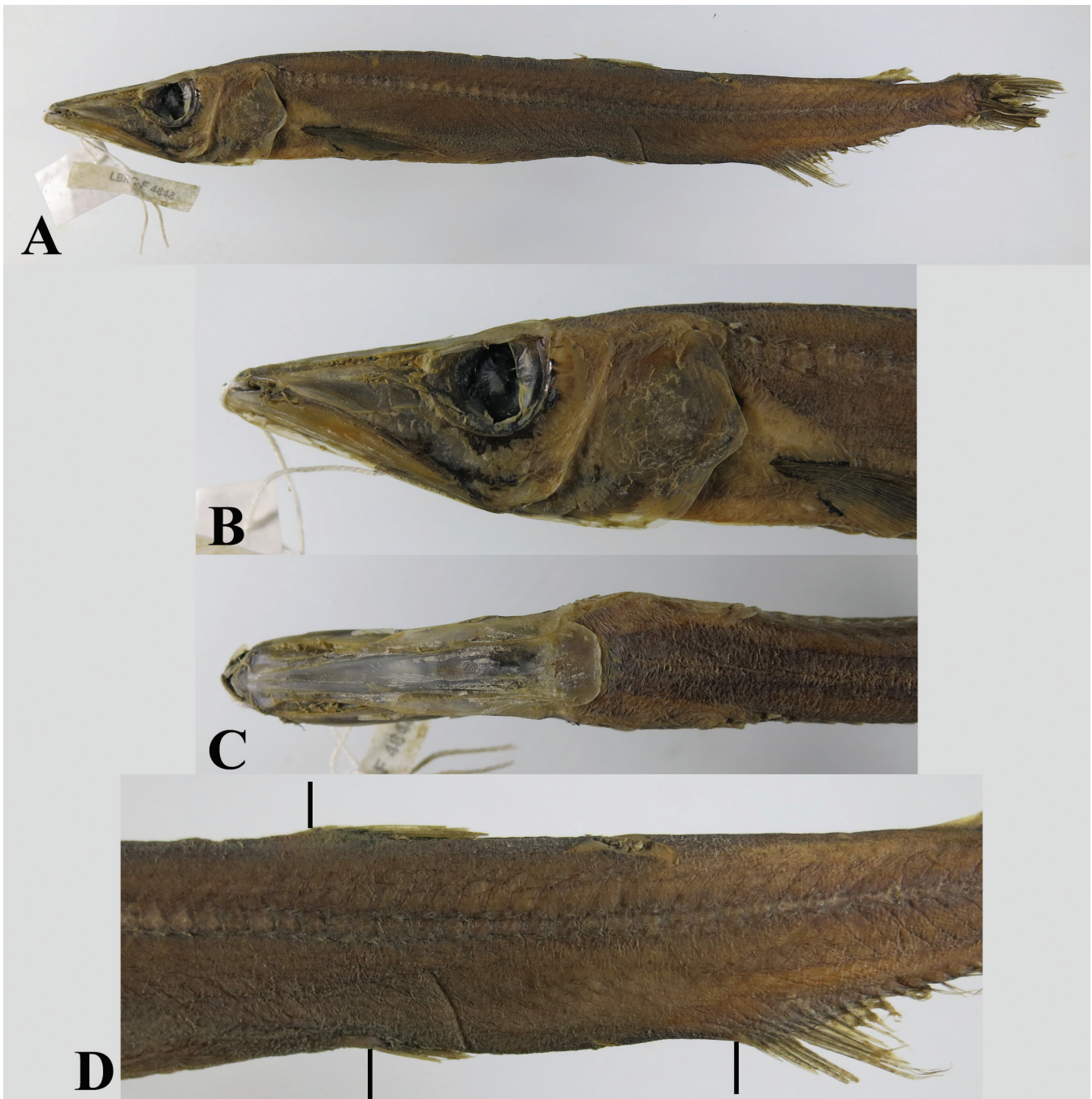


Fig. 1. *Magnisudis indica* (Ege, 1953), LBRC-F4648, 280 mm SL, preserved. A, lateral view; B, lateral view of head; C, dorsal view of head; D, lateral view of trunk region, bars indicate DFO (upper), VFO (lower left) and AFO (lower right).

Body relatively deep and stout, moderately compressed; depth at pectoral-fin base 8.6 in SL, 2.3 in HL. Caudal peduncle slightly larger than eye diameter. Dorsal adipose fin well developed. No abdominal ridge on margin of belly; no ventral adipose fin.

Head large, its length 3.7 in SL, depth 2.8 in HL. Mouth terminal, gape not especially large, extending to below middle of eye, length of gape 1.9 in HL. Premaxilla small, present at tip of snout. Maxilla slender, its length 2.5 in HL, its posterior end extending to below anterior margin of eye. Lower jaw slightly upturned at tip, its length 1.6 in HL; a symphyseal knob on lower side. Snout moderately tapering, not especially pointed, its length 2.2 in HL. Eye large, 4.9

in HL. Interorbital space broad and flat, its width 6.1 in HL; two moderately high ridges on interorbital space, the inner ridge trifold at posterior end and extending forward to near the tip of snout.

Seven suborbital bones, the first large and well expanded dorsal-ventrally, its anterior tip extends to about anterior fourth of maxilla; last four suborbital bones well expanded posteriorly. Two nostrils closed together, situated well before posterior end of maxilla, about two-thirds eye diameter before the eye. Opercle outline smooth, its posterior margin bluntly pointed. Tongue broad and short, its anterior margin bearing a fleshy membrane.

DFO slightly but clearly behind middle of the fish, predorsal length 1.7 in SL. Pectoral fin well above ventral margin of abdomen, its uppermost ray at about same level of lower margin of eye. VFO slightly but clearly behind a vertical through the DFO, below about base of fourth dorsal-fin ray, prepelvic length 1.6 in SL. AFO at about posterior fifth of the body, preanal length 1.3 in SL. Anal-fin base short, 6.3 in SL. Dorsal adipose fin over posterior end of anal-fin base, about twice its base length before caudal-fin base, its base length less than eye diameter.

Teeth on jaws and palatines generally small; a single row of small teeth on maxilla; scattered teeth present on lower jaw; single row of slightly larger teeth on palatines; no teeth on vomer. Gill rakers as described by Post (1987: fig. 3C, D), present on all five gill arches. Each raker with a cluster of four to seven long needle-like teeth, arranged roughly in two rows, those on outer row about twice length as those on inner row. Moderately long needle-like teeth on fifth ceratobranchial arch, forming a long oval patch with a few independent clusters of similar teeth. Tongue with two irregular rows of slender teeth, clearly shorter than those on gill arches. Pharyngeal arches with two long oval patches of slender teeth, arranged in about 8 rows.

Body completely scaled; scales mostly deciduous but leaving distinct pockets. Lateral-line originating from above pectoral girdle and running along upper third of the flank to slightly behind a vertical through posterior end of anal-fin base. Lateral-line scales large, broader than long, each with a branched tubular structure on upper and lower portion; scales gradually smaller posteriorly, about as high as wide, and ending with a short row of small scales. Luminous organ absent.

Colouration. When fresh, specimen with body uniformly dark greyish; all fins darker grey. Eyes, snout, and cheek blackish (but most of skin damaged). Preserved colour pale grey. Mouth cavity and gill chamber black.

Distribution. Post (1987) examined the holotype collected off Madagascar and two large adult specimens from Tosa Bay, Japan; the remaining records were documented by Ege (1953) based on larvae or juveniles collected from the Indian Ocean. Our specimen represents the first adult record from the eastern Indian Ocean off Indonesia.

DISCUSSION

Among the three congeners in *Magnisudis*, the Indonesian specimen can be readily identified as *M. indica* in having 61 total vertebrae (including urostyle counted as 1) which agrees with 59–61 provided by Post (1987; without urostyle), whereas *M. atlantica* has 63–67 and *M. prionosa* has 68–73 (from Post, 1987; without urostyle).

Magnisudis indica is also similar to *Paralepis coregonoides* in having a large number of gill rakers (34, cf. 27–35 in *P. coregonoides*), but differs in having VFO slightly but clearly

behind DFO (vs. VFO about same vertical of DFO); 61 total vertebrae (vs. 68–74 total vertebrae; from Post, 1987; without urostyle); nostrils clearly before posterior end of maxilla (vs. nostrils at about same level of posterior end of maxilla).

Magnisudis indica differs from *Paralepis brevirostris* in having a slender snout, snout length 2.2 times eye diameter (vs. 1.1–1.3 times in *P. brevirostris*), and 61 total vertebrae (vs. 64–66, from Post, 1987; without urostyle), and from *Paralepis elongata* in having 56 total lateral-line scales (vs. 60–65 in *P. elongata*), prehaemal vertebrae 31 (vs. 39–41), total vertebrae 61 (vs. 74–77, from Post, 1987; without urostyle), and VFO slightly but clearly behind DFO (vs. VFO slightly anterior to a vertical through DFO).

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LITERATURE CITED

- Bonaparte CL (1831) Saggio di una distribuzione metodica degli animali vertebrati. Giornale Arcadico di Scienze Lettere ed Arti, 52: 155–189.
- Bonaparte CL (1835) Iconografia della fauna italiana per le quattro classi degli animali vertebrati. Tomo III. Fascicle 12–14. Dalla Tipografia Sleviucci, Roma, pp. 59–79.
- Chim CK, Wirawati I, Avianto P, Richer de Forges B, Chan TY & Tan KS (2021) SJADES 2018 biodiversity research cruise: Methodology and station data. In: Rahayu DL & Tan KS (eds.)

- South Java Deep-Sea (SJADES) Biodiversity Expedition 2018. Raffles Bulletin of Zoology, Supplement 36: 17–22.
- Ege V (1953) Paralepididae I (*Paralepis* and *Lestidium*). Taxonomy, ontogeny, phylogeny and distribution. Dana Report, 40: 1–184.
- Harry RR (1953) Studies on the bathypelagic fishes of the family Paralepididae. 1. Survey of the genera. Pacific Science, 7(2): 219–249.
- Ho H-C & Duhamel G (2019) A new species of the fish genus *Arctozenus* from the Kerguelen Islands, with comments on the lost teeth in adults (Aulopiformes: Paralepididae). Zootaxa, 4651(3): 497–512.
- Ho H-C, Oktaviani S, Peristiwady T, Lee M-Y, Jaafar Z, Lim K & Tan HH (2021) Preliminary checklist of fishes obtained from South Java Deep-Sea (SJADES) Biodiversity Expedition 2018. In: Rahayu DL & Tan KS (eds.) South Java Deep-Sea (SJADES) Biodiversity Expedition 2018. Raffles Bulletin of Zoology, Supplement 36: 496–526.
- Ho H-C, Tsai S-Y & Li H-H (2019) The barracudina genera *Lestidium* and *Lestrolepis* of Taiwan, with descriptions of two new species (Aulopiformes: Paralepididae). Zootaxa, 4702(1): 114–139.
- Okamura O & Machida Y (1986) Additional records of fishes from Kochi Prefecture, Japan. Memoirs of the Faculty of Science, Kochi University (Ser. D) (Biology), 7: 17–41.
- Okamura O, Amaoka K & Mitani F (eds.) (1982) Fishes of the Kyushu-Palau Ridge and Tosa Bay. The intensive research of unexploited fishery resources on continental slopes. Japan Fisheries Resource Conservation Association, Tokyo, p. 435.
- Post A (1987) Results of the research cruises of FRV “Walther Herwig” to South America. LXVII. Revision of the subfamily Paralepidinae (Pisces, Aulopiformes, Alepisauroidae, Paralepididae). I. Taxonomy, morphology and geographical distribution. Archiv für Fischereiwissenschaft, 38(1/2): 75–131.
- Rofen RR (1966) Family Paralepididae. In: Mead GW, Bigelow HB, Olsen YH, Breder CM, Schroeder WC, Cohen DM, Schultz LP, Merriman D & Tee-Van J (eds.) Memoirs, Sears Foundation of Marine Research. No. I. Fishes of the Western North Atlantic. Part 5. Yale University, New Haven, pp. 205–461.