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Second Record of the Rare Skate *Anacanthobatis borneensis* from the East China Sea

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Anacanthobatis borneensis was described by Chan (1965b) on the basis of a single specimen taken from the South China Sea. Since the original description no additional material has been reported. Four specimens of this species were collected from the Okinawa Trough during the survey conducted by the Seikai Regional Fisheries Research Laboratory. In the present paper detailed description of this species is given, and the taxonomic problems in the Indo-Pacific species of the genus are briefly discussed.

Anacanthobatis von Bonde et Swart, 1924

Anacanthobatis von Bonde and Swart, 1924: no page, described on the attached errata slip (type species: *Anacanthobatis marcoratus* von Bone et Swart, 1924).

Leiobatis von Bonde and Swart, 1924: 18 (type species: *Leiobatis marmoratus* von Bonde et Swart, 1924).

Springeria Bigelow and Schroeder, 1951: 111 (type species: *Springeria folirostris* (Bigelow et Schroeder, 1951)).

Sinobatis Hulley, 1973: 153 (type species: *Anacanthobatis borneensis* Chan, 1965b).

Schroederobatis Hulley, 1973: 154 (type species: *Anacanthobatis americanus* Bigelow et Schroeder, 1962).

Diagnosis. No dorsal fin. Anterior-most tip of snout with rostral filament. Anterior pelvics free from posterior pelvics. No denticle on dorsal or ventral surfaces of body.

Anacanthobatis borneensis Chan, 1965b

(New Japanese name: Itohiki-ei)

(Fig. 1)

Anacanthobatis borneensis Chan, 1965b: 47 (original description, adult male, 317 mm in length; type locality, north of Kuching, 6°00′N; 109°57′E, 827.5～834.5 m depth, Nov. 5, 1964; cat. number, BMNH 1965·1·29·1); Hulley, 1973: 147, figs. 10～12 (key; clasper).

Materials examined MTUF (Museum, Tokyo University of Fisheries) 25001, adult male, 551 mm in length; 351 mm in disk width, collected off Sakishima Is., 25°15′N; 124°46′E, 1,000 m depth, Jan. 22, 1978; MTUF 25005, immature male, 528 mm in length; 327 mm in disk width, collected off Tokara Is., 30°0′N; 128°21′E, 900 m depth, Feb. 3, 1978; MTUF 25002, young male, 455 mm in length; 271 mm in disk width, collected off Tokara Is., 29°45′N; 128°26′E, 1,000 m depth, Feb. 3, 1978: MTUF 25004, adult female, 594 mm in length, 377 mm in disk width, collected with MTUF 25005, all collected by otter trawl by Mr. Shuzo Kishida, Nansei Regonal Fisheries Research Laboratory.

Description. Counts and measurements of the materials are shown in Table 1. Methods of counts and measurements follow those for the Rajidae proposed by Hubbs and Ishiyama (1968). Clasper terminology follows Hulley (1973). A single young specimen was used only for counting characters. Vertebral counts were taken from radiographs.

Body uniformly thin, its anterior profile triangular and posterior profile roundish. Snout rather produced with a rostral filament at tip. Eyeball small, almost hidden under the skin. Spiracle small and roundish. Tail produced, like a rat-tail without dorsal and caudal fins, shorter than precaudal length. Lateral folds more or less well developed on posterior part of tail. Mouth straight with minute teeth. Teeth arranged in pavement in both sexes. Nostrils small, separated by a distance equal to mouth width. Nasal curtain not overlapping skin covering lateral sides of mouth. Nasal fimbriae moderately developed. Pectorals free from posterior pelvics in adult male, while united in other materials. Anterior pelvics slender and leg-like, and completely free from posterior pelvics. Posterior pelvics perfectly united with root of tail in young male, while slightly separated from it in other materials. No denticles on dorsal or ventral surfaces of body. Small patches of alar hooks developed on postero-lateral region of pectorals in adult male. Dermal papillae present especially on snout region. Ampullae of Lorenzini apparent on areas in front of mouth.

Coloration: Dorsal ground color dark brown. The color partly faded into white, particularly in a young specimen in which the coloration was almost white. Oval patch of alar hooks whitish. Ventral ground color light

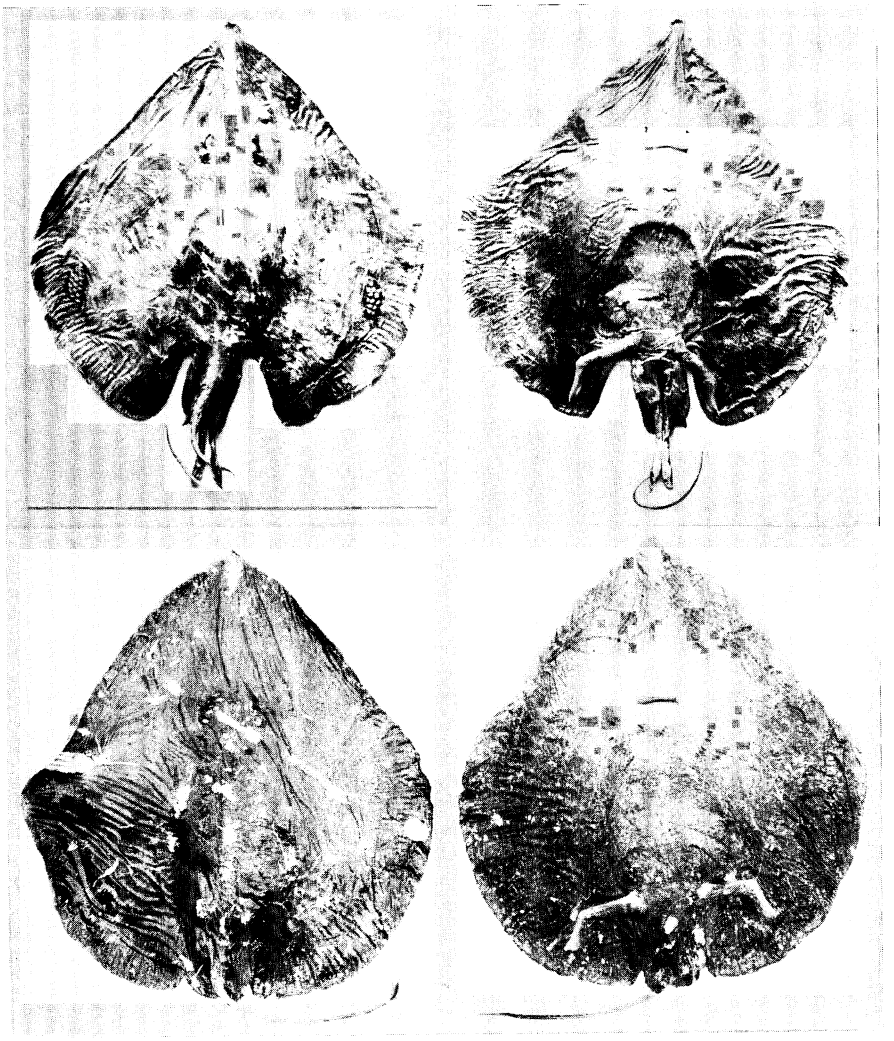

Fig. 1. Dorsal and ventral views of *Anacanthobatis borneensis*. Adult male, MTUF 25001, 351 mm in disk width (top); adult female, MTUF 25004, 377 mm in disk width (bottom).

brown. Areas around mouth whitish. Tail almost whitish, except mesial line of tail and end of lateral folds darkish. Rostral filament white.

Clasper: Inner surface of dorsal lobe with pseudorhipidion, and that of ventral lobe with shield, rhipidion, sentinel and spike.

Notes. This is the first record of the family Anacanthobatidae in Japanese waters. According to the key to the anacanthobatid skate proposed by Chan (1965b) and Hulley (1973), the present specimens fall into *Anacanthobatis borneensis,* previously known only from the holotype. The present specimens agree well with the original description and figure of this species (see Table 1 for comparison of the specimens with the holotype). The description of the clasper structure of *A. borneensis* by Hulley (1973) supports this identification.

In the Indo-Pacific region the following five species are distributed: *Anacanthobatis borneensis, A. mamorata, A. melanosoma, A. nanhaiensis,* and *A. ori.* The relationships among them have not been established.

According to Hulley (1973), *A. melanosoma* which was described from a juvenile specimen (Chan, 1965a), is distinguishable from *A. borneensis* by the longer tail and the wider

Table 1. Counts and measurements of *Anacanthobatis borneensis*. Data on holotype from Chan (1965b).

Characters	Holotype BMNH 1965·1·29·1	Present MTUF specimens N=4 (♂=2; ♀=1; young=1)
Measurements		
Total length (mm)	317	528～594
Disk width (mm)	210	327～377
In thousandths of disk width		
Disk length	890	1,042～1,071
Head length	—	401～464
Preocular length	371	312～384
Eyeball length	35	26～43
Interorbital width	52	56～65
Spiracle length	—	12～20
Interspiracular width	104	103～106
Precaudal length	881	905～968
Caudal length	667	607～709
Over 1st gill slits	172	229～245
Preoral length	380	356～419
Prenarial length	—	319～382
Nasal curtain length	—	37～48
Internarial width	95	73～85
Mouth width	100	80～85
Width of anterior pelvics	—	228～265
Length of posterior pelvics	—	145～159
Clasper length	—	285
Length of lateral folds	—	64～279
Length of rostral filament	—	23～28
Counts		
Tooth rows on upper jaw	24	25～29
Alar hooks: transverse	4	2～3
: longitudinal	9	4～8
Precaudal vertebrae (including the 1st half centrum)	—	29～31

interorbital. The differences between the two species are considered to be intraspecific variations because morphometric characters in skates frequently change with growth.

Meng and Li in Zhu et al. (1981) described *Springeria nanhaiensis* on the basis of specimens from off Hong Kong without comparison of their specimens with *A. borneensis*. The figure of *S. nanhaiensis* in the original description shows close similarity to *A. borneensis* excepting the fusion of the pectorals with the posterior pelvics. Bigelow and Schroeder (1962) stated that the inner margins of the pectorals of the Anacanthobatidae are united with the lateral margins of the posterior pelvics in females and immature males, while free from them in mature males. Thus, the validity of *S. nanhainensis* is doubtful. Wallace (1967) described *Springeria ori* on the basis of juvenile specimen from the Mozambique Channel and commented that *S. ori* differs from *A. melanosoma* in the entire fusion of the posterior margin of the posterior pelvics with the root of the tail. However, this character is considered as another intraspecific variation similar to the fusion of the pectorals with the posterior pelvics. Further studies are necessary to clarify the relationships among these four species. The remaining species of the genus *Anacanthobatis, A. marmorata,* is characterized by the dorsal light specks, and the validity of the species is not doubtful.

Hulley (1973) pointed out the close relationships between the Anacanthobatidae and the Crurirajidae since the two families share the unique character of the anterior leg-like subdivision of the pelvics, though no dorsal fin is found in the former and two dorsal fins are present in the latter.

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東シナ海でとれたイトヒキエイ（新称）

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西海区水産研究所の沖縄舟状海盆トロール調査において，一科一属のイトヒキエイ科ホコカスベ属のイトヒキエイ（新称）*Anacanthobatis borneensis* が4個体採集された．イトヒキエイ科エイ類は本邦初記録で，背鰭がない，吻端に rostral filament がある，腹鰭前葉は後葉と完全に分離して人間の脚のようである，背腹面とも棘がなく滑らかであるという特徴を持つ．標本は Chan (1965b) と Hulley (1973) のイトヒキエイ科エイ類の検索表により本種に同定された．インド・太平洋にはイトヒキエイとこの属の模式種である *A. marmorata* の他に *A. melanosoma*, *A. ori.*, *A. nanhaiensis* が分布するが，前二種は幼魚に基づく種であり，後一種は本種との比較なしに立てられた種であるので，いづれも種の確実性に疑問が残る．

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