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Gymnothorax prolatus, a New Moray from Taiwan

Kunio Sasaki[1] and Kunio Amaoka[2]

[1] Department of Biology, Faculty of Science, Kochi University, Akebono, Kochi 780, Japan
[2] Laboratory of Marine Zoology, Faculty of Fisheries, Hokkaido University, Hakodate 041, Japan

Abstract A new moray, *Gymnothorax prolatus*, is described from a single specimen from Taiwan. The new species is distinctive in its combination of a slender body (depth 28 in TL) with anus at midbody, smooth-edged teeth, numerous vertebrae (187), and uniformly dark brown body and fins.

At the Laboratory of Marine Zoology, Hokkaido University (HUMZ), we encountered a specimen of *Gymnothorax* (Muraenidae) from Taiwan characteristic in its slender body and plain colouration. We describe herein a new moray on the basis of this specimen. Methods for measurements follow Hatooka and Yoshino (1982); vertebral count follows Böhlke (1982). Total length and head length are expressed throughout as TL and HL, respectively.

Gymnothorax prolatus sp. nov.
(Figs. 1–3)

Holotype. HUMZ 107775, 370.5 mm TL, gravid female, Suao fish market, east coast of northern Taiwan, bottom trawl, local fishermen, 9 April 1986, coll. K. Nishida.

Diagnosis. Body greatly elongate. Anus situated at midbody. Dorsal fin origin on rear of head. Eye situated above middle of gape. Teeth smooth-edged; maxillary teeth biserial. Vertebrae numerous (187 in the holotype). Body and fins uniformly dark brown.

Description. Proportions in TL: body depth at gill opening 29.4; body depth at anus 28.3; body width at gill opening 48.8; body width at anus 36.3; preanal length 2.0; predorsal length 12.7; HL 10.8; upper jaw length 26.1; snout length 52.9; eye diameter 77.2; fleshy interorbital width 69.9. Proportions in HL: upper jaw length 2.4; snout length 4.9; eye diameter 7.1; fleshy interorbital width 6.5. Proportions in trunk length: HL 4.4.

Total vertebrae 187 (predorsal 8, preanal 83, caudal 104).

Body greatly elongate, subcylindrical except for somewhat compressed head and posterior half of tail. Dorsal fin origin on rear of head, only slightly in front of gill opening (see also remarks); anal fin origin immediately behind anus at midbody. Gill opening nearly vertical, well below midlateral region.

Supraorbital pores 3; anteriormost at snout tip; second slightly in front of anterior nostril; third between second pore and posterior nostril, closer to the second. Infraorbital pores 4; anteriormost below anterior nostril (not shown in Fig. 2); second between anterior nostril and anterior margin of eye; third below anterior margin of eye; fourth below posterior margin of eye. Seven mandibular pores in a line along lower jaw; first pore very close to tip of lower jaw; last pore slightly anterior to mouth corner. Branchial pores 2. Tiny pores in series on head, visible under magnification (Fig. 2).

Anterior nostril tubular near tip of snout, with a V-shaped indentation. Posterior nostril above anterior margin of eye, ovate, with a slightly raised rim. Eye situated above middle of gape.

Mouth closes completely; snout projects slightly in front of tip of lower jaw. Teeth on jaws sharp, without serrations in their edges (teeth of the holotype partially torn off, particularly from upper jaw (Fig. 3)). Premaxillary tooth patch consisting of approximately 10 (or 11–12?, some teeth missing) large teeth around margin, enclosing two (or three?) median depressible fangs. Vomerine tooth patch comprising three small teeth in a line on posterior portion of mouth roof (some anterior teeth may be missing). Maxillary teeth biserial; outer row of about 20 small teeth and inner row of six (left) or eight (right) slender, depressible teeth. Dentary teeth uniserial with five large anterior teeth and about 15 small posterior teeth.

Colour in alcohol: body uniform dark brown; fins darker, without pale margins. Anterior nostril, rim

Fig. 1. *Gymnothorax prolatus* sp. nov., holotype, HUMZ 107775, 370.5 mm TL.

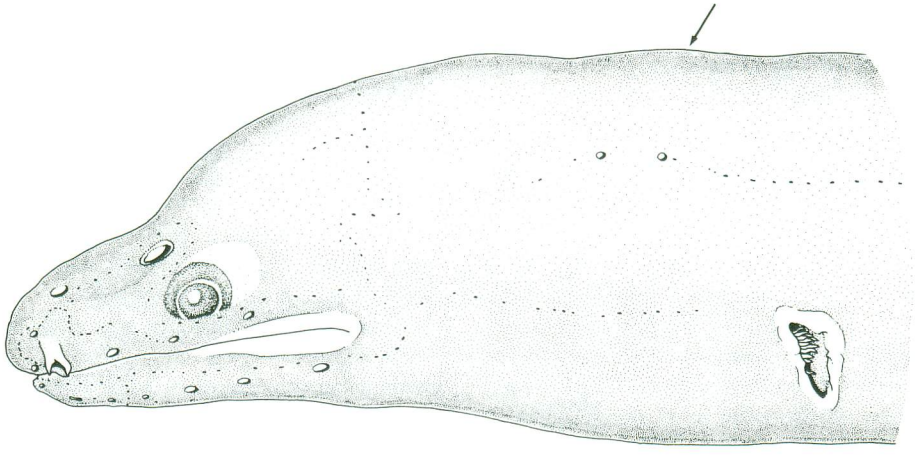

Fig. 2. Head of *Gymnothorax prolatus* sp. nov. (holotype, HUMZ 107775). Arrow indicates dorsal fin origin.

of posterior nostril, and skin around gill opening whitish. Edges of jaws whitish posteriorly due to jaw bones being visible through thin skin.

Remarks. The condition of the dorsal fin appears to be anomalous in the holotype: a vertical dorsal fin fold (which is usual in *Gymnothorax* species) is not formed on the head and trunk, because each fin ray is bent laterally and enclosed by skin which is not loose dorsally. However, additional material is needed to confirm whether or not this condition is truly anomalous.

Comparisons. Inclusion of the new species in *Gymnothorax* is provisional, awaiting future revisions, since the definitions of muraenid genera are less than satisfactory, as pointed out by Böhlke and Böhlke (1977). In this case, difficulty arises in that *G. prolatus*, together with *G. phasmatodes* (Smith, 1962), approach *Pseudechidna* (see Smith, 1962, regarding reason for rejecting *Strophidon*) in their slender body, bridging the gap between the two

genera. Although *Pseudechidna*, diagnosed only by the relative elongation of the body, may prove to be a generic synonym of *Gymnothorax*, evaluation of generic limits is beyond the scope of this paper. Accordingly, we place the new species in the older available genus.

Gymnothorax prolatus resembles *G. phasmatodes* (from Mozambique) in its elongate body, smooth teeth, and uniform body colour, but differs from it in the longer jaws which are contained 2.4 times in HL (3 times in *phasmatodes*), biserial maxillary teeth (uniserial), 187 vertebrae (166–170, data from Castle and McCosker, 1986), and uniformly dark brown body and fins (body pale yellow, margins of dorsal fins light blue).

Böhlke (1982) showed that muraenids with more than 170 vertebrae are rare. Among *Gymnothorax* species, *G. albimarginatus* (Temminck et Schlegel, 1847) (type locality: Japan) only is comparable with *G. prolatus* in this regard (188, Böhlke, 1982; 171–181, Hatooka, 1984). However, *G. albimarginatus* is immediately separable from *G. prolatus* in having a more anterior dorsal fin origin (about midway between mouth corner and gill opening, resulting in Böhlke's counting only four predorsal vertebrae) and different colouration (pores along jaws in whitish patches; fins margined white; head with two saddle-like bars when young, as shown by Hatooka (1984) for a specimen of 52 cm TL).

Compared with the species of *Pseudechidna*, the new species is most similar to *P. ui* (Tanaka, 1918), described from Japan, in its entirely brown body and fins, as well as in the vertebral count (197 in *P. ui*, IORD 79-218). However, the former is clearly different from the latter in the position of the eyes and anus. The eyes are distinctly closer to the snout tip than mouth corner in *P. ui*, owing to the short snout (length 7.7–9.9 in HL vs. 4.9 in *prolatus*). The anus is situated forward of the midbody in *P. ui* (preanal length 2.3–2.4 in TL vs. 2.0 in *prolatus*).

Biology. The holotype is a gravid female, with approximately 1.0–1.2 mm eggs, indicating that *Gymnothorax prolatus* matures at less than 400 mm TL. This species probably lives on muddy or sandy bottoms, because the specimen was taken in a trawl. The dark colouration as well as the very slender body further support this habitat.

Distribution. Known only from the type locality.

Etymology. The new species is named from the Latin *prolatus*, "extended" or "elongated", in reference to its slender body.

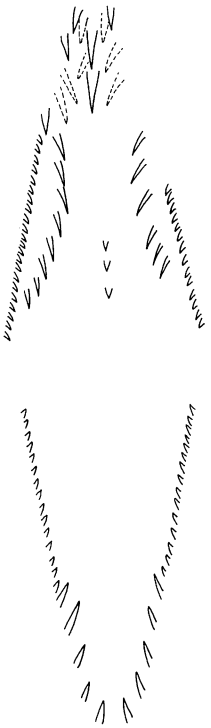

Fig. 3. Dentition of *Gymnothorax prolatus* sp. nov. (holotype, HUMZ 107775). Top, upper jaw; bottom, lower jaw. Broken line indicates teeth hidden under skin.

Comparative material

Pseudechidna ui: IORD (Institute of Oceanic Research and Development, Tokai University) 79–218, 1272.5 mm TL, off Shimizu, Suruga Bay, Shizuoka Pref., Japan, 21 September 1979; IORD 86–88, 1794.9 mm, Amitori Bay, Iriomote-jima, Ryukyu Is., 15 July 1986.

Acknowledgments

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台湾から得られたウツボ属の1新種

佐々木邦夫・尼岡邦夫

ウツボ属の1新種 *Gymnothorax prolatus* が，台湾北部東岸の蘇澳漁港に水揚されたトロール漁獲物中から得られた．本種は体が細長く延長すること，肛門が体の中央近くに開くこと，顎歯の縁辺が円滑であること，脊椎骨数が187個と多いこと，および体と鰭が一様に暗褐色であることなどで特徴づけられる．

(佐々木：780 高知市曙町2-5-1　高知大学理学部生物学教室；尼岡：041 函館市港町3-1-1　北海道大学水産学部水産動物学講座)