



***Gymnothorax baranesi*, a new moray eel (Anguilliformes: Muraenidae) from the Red Sea**

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Abstract

Gymnothorax baranesi n. sp. is described from three specimens collected in moderately deep water in the Gulf of Aquaba, Red Sea, Israel. It is characterized by irregular, pale, rosette-like spots on a dark background. The snout is somewhat slender. The intermaxillary teeth are arranged in one peripheral and one median row. The maxillary teeth are arranged in 1–2 rows, the inner row, when present, consists of only two depressible teeth. The new species is compared to other pale-spotted species in the Indian Ocean.

Key words: taxonomy, Indian Ocean

Introduction

The Muraenidae (moray eels) is a large and diverse family of eels found around the world in tropical and subtropical waters. Morays are common and frequently collected inhabitants of coral reefs, but many species live in offshore waters, where their cryptic habits make them difficult to collect. The specimens described in this paper were collected from a depth of approximately 200 meters off Eilat, Israel, in the northern Red Sea. They could not be identified with any known species and are herein described as a new species. The fact that the new species was collected in an area that has been well studied (Baranes and Golani, 1993) for many years (and in fact, directly in front of a major marine laboratory) indicates how much we still have to learn about the ichthyofauna inhabiting this peculiar biotope.

Methods

Counts and measurements are as in Böhlke (1989). All measurements are in mm, and unless otherwise stated, lengths are total lengths. In the description of counts and measurements, the figure in parentheses is that of the holotype. Type specimens are deposited in the collections at the Hebrew University of Jerusalem (HUJ) and the National Museum of Natural History, Smithsonian Institution, Washington, DC (USNM).

***Gymnothorax baranesi* n. sp. (Figs. 1–4)**

Holotype: HUJ 18976 (male, 857 mm TL), Red Sea, Gulf of Aqaba, 29°29'33.0" N, 34°55.07.8" E, 200 m, S. Einbinder, 23 April 2002.

Paratypes: HUI 18975 (1: 762), Red Sea, Gulf of Aqaba, 29°29'37.7" N, 34°55'10.7"E, 200 m, S. Eimbinder, 22 February 2002; USNM 388603 (1: 828), Red Sea, Gulf of Aqaba, Same locality, 200 m, S. Eimbinder and E. Brokovich, 3 August 2005.

Diagnosis. A moderately large moray of the subfamily Muraeninae with a color pattern of irregular, complex, rosette-like pale spots on a brown background, the spots becoming smaller on head. Intermaxillary teeth in one peripheral and one median row. Maxillary teeth in 1–2 rows, the inner row, when present, consisting of only two depressible teeth. Mandibular teeth in one row. Vertebrae 6–7, 52–55, 137–142.

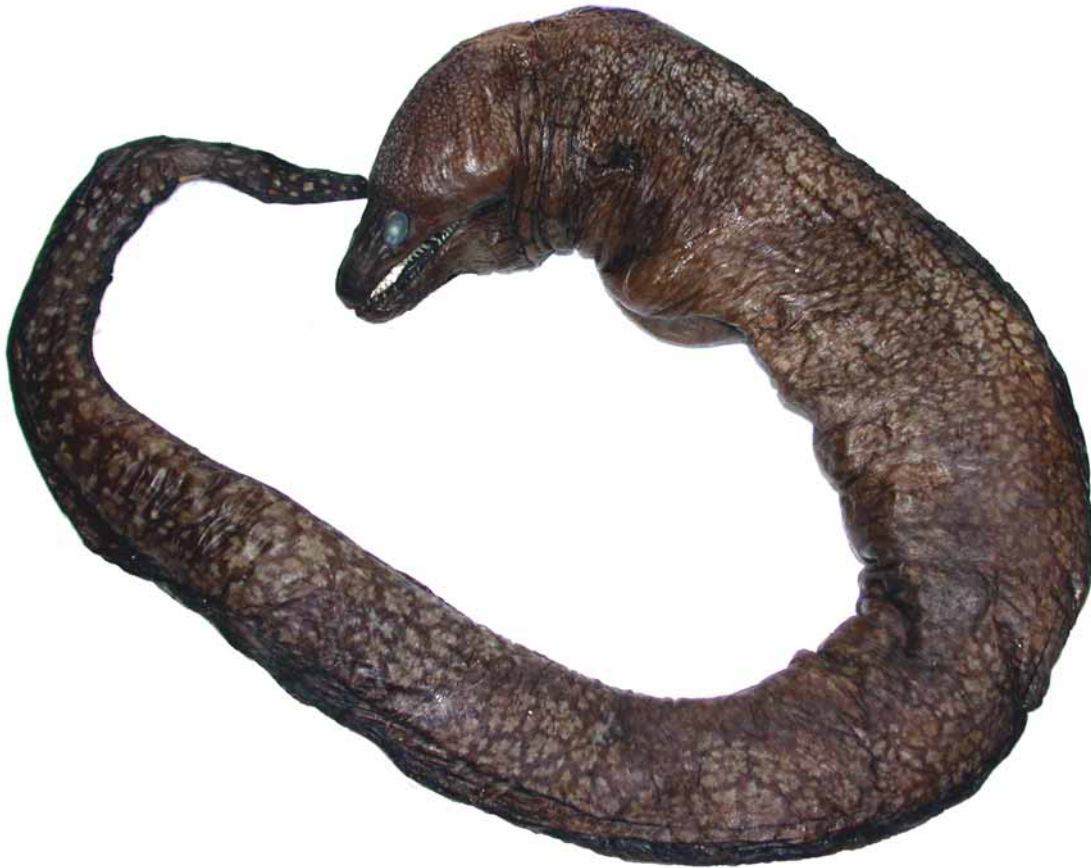


FIGURE 1. *Gymnothorax baranesi*, holotype, 857 mm TL, HUI 18976.

Description. Proportional measurements in percent of TL: preanal 47–49 (47), predorsal 12–13 (13), head 13–15 (13), depth at gill opening 5.6–8.3 (8.3), depth at anus 5.3–7.0 (7.0); in percent of head: snout 18–21 (21), upper jaw 39–41 (39), eye 7.6–9.4 (7.6), interorbital 10–12 (12). Meristic characters: predorsal vertebrae 6–7 (7), preanal vertebrae 52–55 (52), total vertebrae 129⁺–142 (137).

A moderately stout moray eel with the anus slightly anterior to midlength. Dorsal and anal fins continuous with caudal fin, anal fin beginning immediately behind anus, dorsal fin beginning slightly anterior to gill opening. Jaws and snout moderately slender, arched in middle and not closing completely, teeth visible when mouth closed, this condition most obvious in the large holotype, upper and lower jaws nearly equal in length. Gill opening approximately midlateral in position. Anterior nostril tubular, short, not reaching edge of upper lip when depressed ventrally; posterior nostril small, elliptical, without a raised rim, located just above eye, about level with anterior margin of eye. Six pores in preoperculo-mandibular canal, all anterior to rictus; three supraorbital pores, one just above edge of upper lip anterior to anterior nostril, one just medial to anterior nostril, and one on dorsolateral surface of snout at a point between a third and a half of distance between tip of snout and eye; four infraorbital pores, one just posteroventral to anterior nostril, two just above upper lip

between anterior nostril and eye, and one just anterior to a vertical through posterior margin of eye; two pores at anterior end of lateral-line canal, anterodorsal to gill opening.



FIGURE 2. Head of holotype.

All teeth smooth, without serrations. Intermaxillary teeth in one peripheral and one median series: each paratype with 5 peripheral teeth on right and 7 teeth on left, continuous around anterior end of upper jaw, fixed, the anterior ones conical, posterior ones more triangular, a few tiny teeth around the base of the larger ones; a single median series of 1–3 depressible teeth (3 in holotype), long, slender, needle-like, the posterior tooth the longest. Maxillary teeth in the two paratypes biserial, the inner row with two long, depressible teeth, the outer row with 14–17 shorter, fixed, triangular, slightly recurved teeth, the anterior and posterior ones smaller, those in the middle of the series larger, a distinct gap between maxillary and intermaxillary teeth. In holotype, maxillary teeth uniserial, inner row absent; outer teeth large, triangular, posterior ones smallest, middle and anterior ones larger; maxillary teeth continuous with peripheral intermaxillary teeth, without a noticeable gap, the teeth in the two series about equal in size, a combined total of 18 on each side. Vomerine teeth small, 3–12, in a staggered row. Mandibular teeth all fixed, the anteriormost nearly conical, the remainder triangular, recurved, 17–24 on each side (17–19 in holotype), the anterior teeth the largest; a few tiny teeth around base of large anterior teeth.

Head, body and tail brown, covered with moderate-sized pale spots. Spots discrete and irregularly rounded near end of tail, in approximately three irregular rows; anteriorly, the spots become more irregular in shape, with irregular borders, forming lichen-like or composite, rosette-like markings; the spots largest around midbody, becoming much smaller on head, inconspicuous or absent on snout and lower jaw; spots extend onto fins. Fins without a pale margin. Brown streaks in branchial area. Anterior nostril tube dark brown or black. Head pores narrowly outlined by dark rings. Gill opening somewhat darker than surrounding area. A dark slash at angle of jaw.

Sex and sexual dimorphism. The holotype is a male, with recognizable but not greatly enlarged testes. The HUI paratype has been gutted, and nothing remains of the viscera. The USNM paratype, intermediate in size, is immature, and its sex cannot be determined. It appears, then, that *Gymnothorax baranesi* matures at a relatively large size, larger than the specimens described here. Sexual dimorphism has been reported in the dentition of several moray eels (Collette, et al., 1991: 347). Adult males have larger and fewer maxillary and mandibular teeth than females and immatures, and the inner maxillary teeth are lost. The evidence indicates that *Gymnothorax baranesi* follows this pattern. In the adult male holotype the inner maxillary teeth are absent and the outer teeth are enlarged and continuous with those of the intermaxillary series. Both paratypes retain the inner maxillary teeth, and the outer maxillary teeth are smaller and more numerous. The holotype has 18 teeth in the combined outer maxillary and peripheral intermaxillary series, whereas the two paratypes have 19–21. The holotype has 17–19 mandibular teeth, whereas the paratypes have 19–24. One of the paratypes is sexually immature, thus conforming to the pattern of having more and smaller teeth than the adult male. The other paratype is indeterminate, but its dentition indicates that it is either a female or an immature male.



FIGURE 3. *Gymnothorax baranesi*, paratype, 762 mm, HUI 18975.

Distribution. Known only from the northern Red Sea (Gulf of Aqaba), in moderately deep water, ca. 200 m.

Etymology. Named for Dr. Albert (Avi) Baranes of the Hebrew University of Jerusalem, in recognition of his contributions to our knowledge of the fishes of the Red Sea.

Comparisons. *Gymnothorax baranesi* is one of an indeterminate number of moray species in the western Indian Ocean that are characterized by pale spots on a dark background. Of these, *Gymnothorax meleagris* Shaw in Shaw and Nodder, 1795 is the most distinct. The maxillary teeth are biserial, with the inner and outer series about equal in length, and the intermaxillary teeth are arranged in a peripheral series, a median series, and an intermediate series on each side between the median and peripheral series. *Gymnothorax eurostus* (Abbott, 1860), known in the western Indian Ocean only south of Mozambique, has similar dentition to that of *G. meleagris*, and it has small, simple, pale spots, but it also has dark spots underlying the pale spots.

In the remaining species, the maxillary teeth are either uniserial or with an inner series much shorter than the outer, and the intermaxillary teeth consist of a peripheral series on each side, continuous around the front of the jaw, and a single median series.

Gymnothorax nudivomer (Günther in Playfair and Günther, 1867) has simple spots, a relatively short, blunt snout, and the lining of the mouth is bright yellow in life. Larger specimens lack vomerine teeth and median intermaxillary teeth, and the largest teeth are finely serrate; the jaws are not arched, even in large specimens.

Gymnothorax sokotrensis Kotthaus, 1968 is known from a single specimen collected in the northwestern Indian Ocean. It differs from *G. baranesi* in having simple spots, serrate teeth and more preanal vertebrae (62 vs 52–55).

Gymnothorax johnsoni (Smith, 1962) was described from off South Africa and Mozambique, and *G. punctatus* Bloch and Schneider, 1801 was described from off southern India. Both these species have similar vertebral counts (and similar to that of *G. baranesi*). They appear to differ mainly in the size of the pale spots, with *G. johnsoni* having larger spots than *G. punctatus*. Smith (1962: pl. 56 C, D) presented photographs of both the holotype and paratype of *G. johnsoni*. Bloch and Schneider (1801: 526) did not illustrate *G. punctatus*, but Day (1878: pl 173, fig. 1) presented an illustration. Randall and Golani (1995) presented accounts, including photographs, of both species based on specimens collected in the Red Sea. Based on both Smith's and Randall and Golani's photographs, the spots in *G. johnsoni* decrease in size and increase in number with increasing size of the specimen. Two specimens from Somalia (USNM 301970) tentatively identified by the first author as *G. johnsoni* differ from these in having the spots larger and much more closely spaced anteriorly, with the interspaces reduced to narrow, dark reticulations. Whether all of these specimens belong to the same species is uncertain, and more material is needed to establish the range of variation. All of them, however, differ from *Gymnothorax baranesi* in having simple, discrete spots rather than the complex markings found in the latter.

Among extralimital species, *Muraena helena* Linnaeus, 1758 from the eastern Atlantic and Mediterranean has a similar color pattern of pale, irregular, rosette-like spots on a dark background. *Muraena helena*, however, has tubular posterior nostrils, and it has more vertebrae (142–148; Jiménez, et al., 2007).

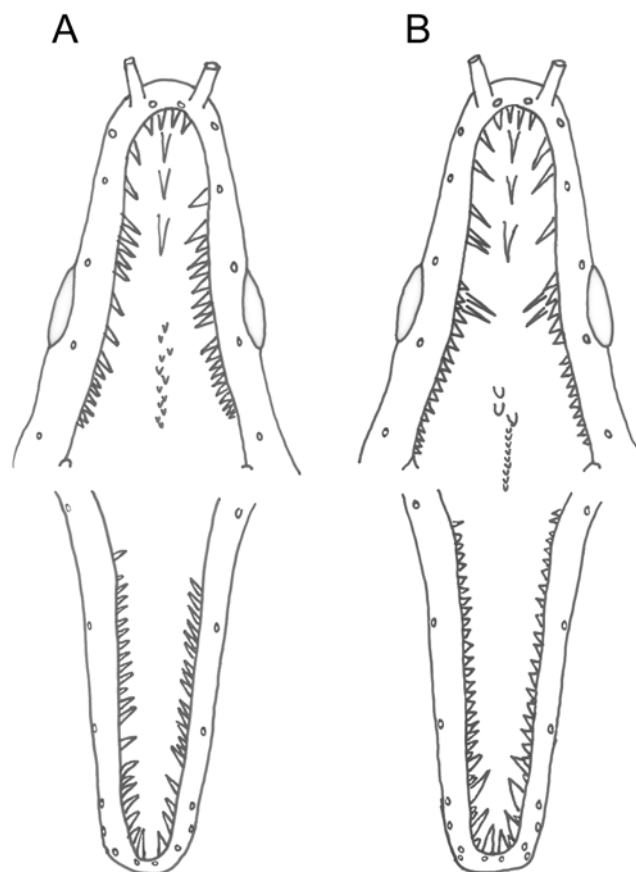


FIGURE 4. Dentition of holotype (A) and HUI paratype (B).

The condition of the jaws in *Gymnothorax baranesi*, highly arched in the middle and not closing completely, raises the question of why we have not placed this species in the genus *Enchelycore*, which is characterized by such arched jaws. The species of *Enchelycore*, however, have a distinctly different pattern of dentition. In *Enchelycore nigricans* Kaup, the type species of the genus, the intermaxillary teeth are arranged in a peripheral series, a median series, and on each side an intermediate series of long, depressible teeth more or less continuous with a long series of similar teeth on the inner row of the maxilla. The outer intermaxillary and maxillary teeth are more conical and less triangular. *Gymnothorax baranesi* has teeth typical of a large group of *Gymnothorax* species, i.e., a peripheral and a single median series of intermaxillary teeth, a short inner row of maxillary teeth, and the outer maxillary teeth distinctly triangular. In addition, *Enchelycore* species tend to be more slender in the snout and jaws. Individuals of other *Gymnothorax* species sometimes have arched jaws as well, and the genus *Enchelycore* probably needs to be defined more precisely than just on the condition of the jaws.

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