First record of *Gymnothorax zonipectis* from Japan
(Pisces: Muraenidae)

Kiyotaka HATOOKA* and Akihisa IWATA**

日本より初記録のヒレオピウツボ（新称）
（ウナギ目ウツボ科）

波戸岡清峰*・岩田明久**

Abstract: A barred moray eel, *Gymnothorax zonipectis* Seale, was collected from Kashiwajima Island, Kochi Prefecture. This species is characterized by having about 48 bars in the body, which extend onto the fins, two white speckles behind eye, and 128 vertebrae.

Key Words: Pisces; Muraenidae; *Gymnothorax zonipectis*; taxonomy; new record; Japan.

*Gymnothorax zonipectis* Seale, is widely distributed in Indo-Pacific, to Tahiti. As for its occurrence in Japanese waters, the senior author has already convinced by an underwater photograph (Fig.1), which was taken about twelve years ago in Iriomote Island, Yaeyama Islands by Mr. Korechika Yano. But the specimen has not yet been collected. Recently, the junior author collected one specimen referable to the present species from Kashiwajima Island, Kochi Prefecture and showed the senior author, who identified it *Gymnothorax zonipectis*. In Japan, the genus *Gymnothorax* consists of 29 species, and the present species is the 30th species in its fauna, and this record extends its northern boundaries. So we describe it here in detail.

The methods of measurements follow those of Hatooka and Yoshino (1982). Vertebraal counts were taken from a radiograph. Predorsal and preanal vertebral counts were taken using the definitions of Böhlke (1982). Specimen is deposited in Osaka Museum of Natural History (OMNH).

*Gymnothorax zonipectis* Seale, 1906
(New Japanese name: Hireobi-utsubo)

(Figs. 2 - 4)

*Gymnothorax zonipectis* Seale, 1906: 7, fig. 1-1362 (type locality; Tahiti). Herre, 1923: 224, pl. 11, fig. 3

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*Osaka Museum of Natural History, Nagai Park 1-23, Higashi-Sumiyoshi-ku, Osaka, 546 Japan

**Akasaka Imperial Palace, Motoakashaka 2-1-8, Minato-ku, Tokyo, 107 Japan
Gymnothorax indong: Seale, 1909: 491 (type locality; Zamboanga, Mindanao).
Muraena (Gymnothorax) zonipectis: Weber and de Beaufort, 1916: 381, fig. 181 (Wijnkoops Bay, South coast of Java).

Material examined. OMNH-P 2159, 170 mm TL (Total length), Kashiwajima-Island (132°38'E, 32°45'N), Kochi Prefecture, depth 25 m, 14 August 1992, collected by A. Iwata.

Description. Proportions as % of TL: pre anus length 42.4, head length 12.9, body depth at anus 4.7. Of head length: predorsal length 82.7, mouth length 41.3, snout length 18.1, eye diameter 10.0, interorbital width 10.9. Of body depth at anus: dorsal height at anus 36.3. Predorsal vertebrae 6, preanal vertebrae 49, abdominal vertebrae 56, caudal vertebrae 72, total vertebrae 128.

Dorsal fin moderately high, its origin a little before gill opening and arising above 6th vertebra. Anal fin low, its origin just behind anus and below 72nd vertebra. Gill opening nearly horizontal, situated in mid-body, and its length about half of eye diameter.

Anterior nostril, a slender tube on each side of tip of snout, moderate length, not extending to edge of upper lip when depressed. Posterior nostril over front edge of eye, without prominent raised rim.

Head pores in lateralis system conspicuous, arranged in typical Gymnothorax, and most pores situated in white colored patches (Fig. 3). Three pores in supraorbital canal: first at anteroventral tip of snout, second anterodorsal to anterior nostril, last at dorsal side of snout behind anterior nostril. Four pores in infraorbital canal, located along upper jaw: first just below posterior base of anterior nostril, last slightly behind posterior edge of eye. Six pores in mandibular canal: first rather small and situated near tip of lower jaw, last a little before rictus. Two pores in branchial section of lateral line, anterodorsal to gill opening.

Upper and lower jaws nearly equal each other or upper project slightly anterior to lower. Mouth closing completely. All teeth smooth, without any kind serrations (Fig. 4). Lateral teeth in upper jaw sharp and slightly retrorse. Peripheral premaxillary teeth relatively increase in size from anterior to posterior, and large and small teeth set alternately. Three large, slender, sharply pointed depressible fang on midline of premaxillary plate, increase in size from anterior to posterior; anteromost tooth the same size as adjacent peripheral larger teeth, last one largest in all of the jaw teeth. Maxillary teeth biserial anteriorly and uniserial posteriorly; outer row teeth, including those of following uniserial section, decreasing in size from anterior to posterior though anteromost two teeth a little smaller than following some
Fig. 1. *Gymnothorax zonipectis*, an underwater photograph, Unarizaki, north-western part of Irionomejima Island, Yaeyama Islands, 21 April 1981, taken by Mr. Korechika Yano.

Fig. 2. *Gymnothorax zonipectis*, OMNH-P 2159, 170 mm TL, Kashiwajima Island. A, whole view; B, anterior part of body; C, middle; D, posterior.
teeth, four to five slender, sharply pointed teeth in inner row. Seven small, pointed prevomerine teeth, set in one row. Teeth in lower jaw uniserial except anterior part, where teeth biserial: teeth in posterior uniserial section similar in size to outer teeth of maxillary, though decreasing posteriorly more progressively in size than in maxillary; teeth of outer series in anterior biserial section smaller than those of following uniserial section, teeth of inner series large, sharp, and similar in size to peripheral teeth of premaxillary.

Ground color in alcohol light brown, overlain with about 48 obscure dark bands (Fig. 2), extending onto fins; about 19 bands on head and trunk, and 29 on tail. Head with conspicuous white markings (Fig. 2-B).

**Remarks.** *Gymnothorax zonipectis* was described by Seale (1906), based on a specimen of 18 inches (46 cm) from Tahiti. Coloration, especially on head and fins, proportions, position of dorsal fin of our specimen agree well with the original description, so we identified it as *G. zonipectis*.

Some minor differences, which are found in the dentition and the shape of mouth, are attributed to size difference or sexuality. Most noteworthy difference is that found in dentition; maxillary teeth of the holotype uniserial and those of our specimen biserial anteriorly. Weber and de Beaufort (1916) reported the present species from Java, and described its maxillary teeth as following “Teeth conical, acute, 14-16 small ones in maxillaries, with 2-4 stouter ones anteriorly at inner side of them”. This description is different from original description and the dentition of our specimen is nearer this condition. Hatooka (1986) reported sexual dimorphism in the number of jaw teeth of *Gymnothorax richardsoni* Bleeker; the female having more teeth than the male on the premaxillary plate, maxilla, and mandible and additional inner tooth row on the maxilla. Recently, similar sexual dimorphism have been found in the other species of *Gymnothorax* (Collette et al., 1991; Hatooka and Randall, 1992) and sexual dimorphism in teeth may be wide-
spread among moray eels. Dentition of our specimen and Weber and de Beaufort (1916)'s specimen agree well with the female phase of *G. richardsoni*. Sexuality of Seale's type and Java specimen of Weber and de Beaufort (1916) are unknown and our specimen is immature, but the difference between them may be due to sexual dimorphism.

The shape of mouth is the other difference. In the original description, jaws of *G. zonipictis* are curved and cannot be completely closed and type of *G. indong* Seale (1909) which was synonymized with the present species by Weber and de Beaufort (1916), also has not completely closing jaws. Schultz (1953) collected 4 specimens of *G. zonipictis*, of which length are from 144 to 310 mm, from the Marshall Islands, and in his report he stated that jaws scarcely closing, tip of lower jaw curved dorsally. Sizes of his specimens are intermediate between Seale's type and ours. So jaws seem to become more slender with growth and the difference between original description and condition of ours is due to their size differences. In recent muraenid classification, eels with jaws not completely closing are tentatively included in *Enchelycore*. Jaws of all member of *Enchelycore* are so strongly curved that there is a clear gap between both jaws. Jaws of the present species are not of *Enchelycore* but rather similar to that of *G. fimbriatus* (Bennett) and *G. undulatus* (Lacepède).

Kotthaus (1965) reported one specimen identified as *Lycodontis zonipictis* from Mombasa, Kenya. His specimen, however, has neither characteristic white bars behind eye nor clear broad bands on vertical fins. So his identification is doubtful.

In Japan, *G. zonipictis* is closely related to *G. richardsoni* (Bleeker), *G. kidako* (Temminck and Schlegel), *G. chilospilus* Bleeker, *G. margaritophorus* Bleeker in having obscure bars on the body, but is distinguished from all of them in clear bars on the vertical fins and white markings behind eye.

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Literature Cited


