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A New Snake-eel, *Apterichtus orientalis*, from the Pacific Coast of Western Japan (Ophichthinae, Ophichthidae)

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Abstract A new finless ophichthid snake-eel, *Apterichtus orientalis*, is described on the basis of a single 318-mm specimen dredged from the Pacific coast of the Kii Peninsula, western Japan, at 79-81 m depths. This species is similar to *A. monodi* from the eastern Atlantic and the Mediterranean in having seven supratemporal pores, but differs from it in the numbers of vertebrae and lateral line pores, and in its body depth, head length, and preanal length.

The ophichthid snake-eel genus *Apterichtus* is distinguished from other genera of the subfamily Ophichthinae in having no fins, a tubular anterior nostril, and a posterior nostril opening outside of its mouth, and is found in all tropical and subtropical seas with ten valid described species and two undescribed Indo-Pacific species (McCosker et al., 1989). *Apterichtus moseri* (Jordan and Snyder, 1901), hitherto known only from the waters around Japan, is also valid (Machida and Ohta, 1993).

In 1984 the R/V *Tansei-Maru* of the Ocean Research Institute, University of Tokyo (ORIUT), dredged a finless snake-eel specimen, 318 mm in total length (TL), from the Pacific Ocean off the Kii Peninsula, western Japan (Fig. 1). Subsequent study of the specimen by us revealed that it represented a new species of the genus *Apterichtus*. It is described as *Apterichtus orientalis* in this paper.

Methods of counting and measuring generally follow McCosker (1979) except for the count of the cephalic sensory pores by McCosker et al. (1989). The holotype is deposited at the Department of Biology, Faculty of Science, Kochi University (BSKU).

Apterichtus orientalis sp. nov.
(New Japanese name: Kishu-goma-umihebi)
(Figs. 2-4)

Holotype. BSKU 81631, 318 mm TL, female with ripened eggs, 33°26.4′N, 135°43.8′E-33°26.2′N, 135°44.3′E, *Tansei-Maru* KT-84-12 cruise sta. 2-1, Pacific southeast off Kii Pen., Wakayama Pref., western Japan, depth 79-81 m, sandy mud, 1 m-span ORI biological dredge, Aug. 30, 1984.

Diagnosis. A species of *Apterichtus* with seven supratemporal pores, 133 vertebrae, 130 total lateral line pores, 57 lateral line pores before anus, body depth 2.2% TL, head length 8.1% TL, and preanal length 45.6% TL.

Description. *Measurements in mm* (in % of TL [318 mm] in parentheses).—Head length 25.8 (8.1), preanal length 145 (45.6), maximum body depth 6.9

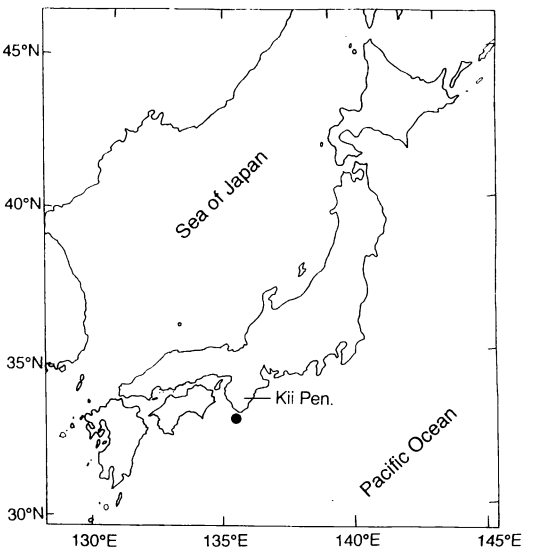

Fig. 1. Type locality (●) of *Apterichtus orientalis*.

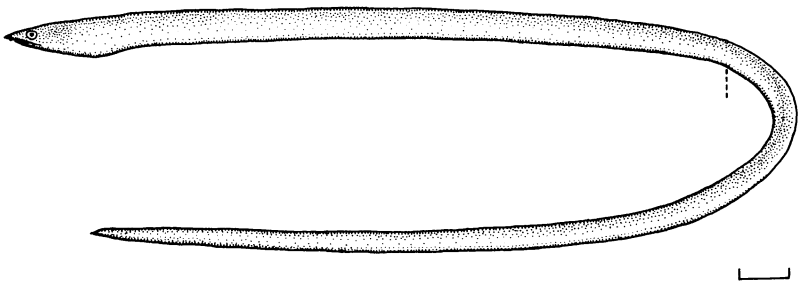

Fig. 2. *Apterichtus orientalis*, holotype, BSKU 81631, 318 mm TL, from the Pacific coast of western Japan. Scale bar indicates 1 cm.

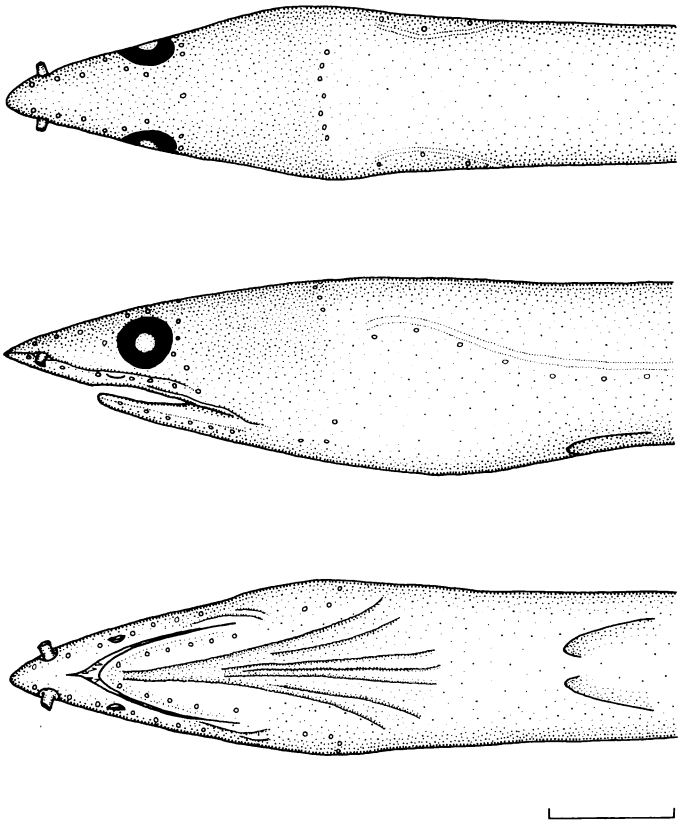

Fig. 3. Head of the holotype of *Apterichtus orientalis*: dorsal view (*top*), lateral view (*middle*), and ventral view (*bottom*). Scale bar indicates 5 mm.

(2.2), snout length 4.6 (1.4), eye diameter 2.35 (0.7), fleshy interorbital width 2.35 (0.7), snout tip to rictus 9.4 (3.0), length of gape 6.0 (1.9), length of gill opening 3.65 (1.1).

Counts.—Total vertebrae 133, preanal vertebrae 55. Lateral line pores 130, 7 on head, 57 before anus. Cephalic sensory pores: frontal 1; supraorbital 1+6; infraorbital 6+4; preoperculomandibular 5+4 (right) or 6+3 (left); supratemporal 7.

Body sturdy, greatly elongate (Fig. 2), cylindrical. All fins absent. Tips of snout and tail pointed. Head short, 12.3 in TL; tail 1.8 in TL; body depth 46 in TL. Snout subconical, overhanging lower jaw, with well-developed lateral ridges, grooved and flattened

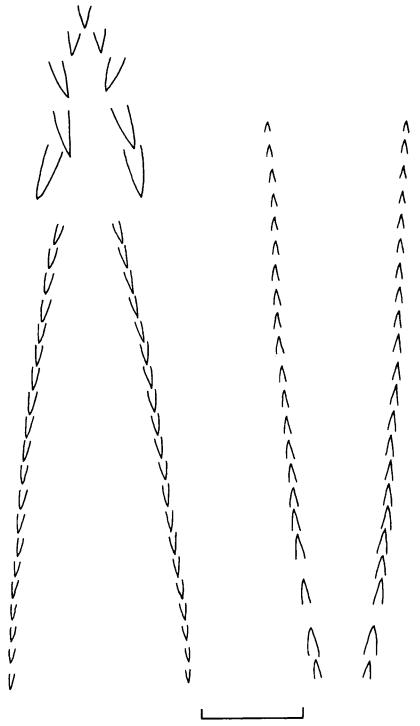

Fig. 4. Dentition on intermaxillary and maxillary (*right*) and dentary (*left*) of *Apterichtus orientalis*. Scale bar indicates 1 mm.

on underside (Fig. 3). Anterior nostril tubular, on underside of snout, closer to snout tip than to anterior margin of eye, placed in a shallow hollow. Posterior nostril a small, horizontally oval slit with a thin dermal flap, placed outside of mouth, along lower margin of upper lip below anterior margin of eye. Eye small, nearly circular, its diameter 2 times in snout length. Lips without barbels. Mouth large, extending backward 1.4 time eye diameter beyond posterior margin of eye. Sides of head below middle of eye, underside of snout, and lips with tiny papillae. Lower jaw included in upper jaw. Groove on underside of snout scarcely reaching to base of anterior nostril. Tips of some intermaxillary teeth visible when mouth is closed. Gill opening ventral, converging forward, slightly shorter than snout length.

Cephalic sensory pores numerous (Fig. 3). Seven pores in supraorbital canal, 1st pore in ethmoid section, on underside of snout before anterior nostril, 5th pore low in position, at level of mid-eye. A single pore in frontal commissure. Infraorbital pores 10, 2 between anterior and posterior nostrils, 4 between posterior nostril and rictus, 4 in postorbital canal, upper 3 postorbital pores close to posterior margin of eye, lowest pore slightly apart from posterior margin of eye, at level of lower margin of eye. Preoperculomandibular pores 9, 5 on mandible and 4 on preopercle (right), 6 on mandible and 3 on preopercle (left). Seven supratemporal pores.

Intermaxillary with 9 large conical teeth, becoming longer posteriorly (Fig. 4). Teeth on maxillary and dentary uniserial, all teeth conical, their tips recurved, closely set at their bases, about 20 teeth on maxillary, about 23 on dentary. Prevomer edentate.

Color in alcohol.—Head and body uniformly pale yellow with small brownish dots, head before supratemporal canal somewhat darker, belly lighter.

Etymology. The name of the new species refers to its type locality, the Far East.

Distribution. Known only from the type locality, the Pacific Ocean off the Kii Peninsula, western Japan.

Remarks. Following McCosker (1977) and McCosker et al. (1989), the present species clearly fits the genus *Apterichtus*: body elongate, pointed at both ends; all fins absent; head and trunk slightly shorter than tail; snout pointed, subconical, flattened and grooved on underside; lips without barbels; eyes moderately developed; anterior nostril tubular; posterior nostril a horizontally ovate slit, entirely outside of mouth; gill openings ventral, converging forward; preopercular pores four; and teeth uniserial in jaws.

Although McCosker (1977) recognized ten to 12 described and valid species in the genus *Apterichtus*, McCosker et al. (1989) considered ten species to be valid. Judging from their publications, these are *A. caecus* (Linnaeus, 1758), *A. gracilis* (Kaup, 1856), *A. anguiformis* (Peters, 1877), *A. kendalli* (Gilbert, 1891), *A. flavicaudus* (Snyder, 1904), *A. klazingai* (Weber, 1913), *A. equatorialis* (Myers and Wade, 1941), *A. monodi* (Roux, 1966), *A. ansp* (Böhlke, 1968), and *A. moseri*.

The number of supratemporal pores seems to be stable in each *Apterichtus* species. According to Blache and Bauchot (1972), the number is three in *A. anguiformis* and *A. kendalli*, five in *A. caecus* and *A. gracilis*, and seven in *A. monodi*. *Apterichtus gymnocelus*, originally described as *Caecula gymnocelus*, has three pores (Böhlke, 1953). Böhlke (1968) counted three pores in *A. kendalli*, and five in *A.*

ansp. Judging from the illustration of the species, there are three supratemporal pores in *A. equatorialis* (Myers and Wade, 1941: pl. 11) and *A. flavicaudus* (Gosline, 1951: fig. 14a). These species differ from *A. orientalis* in some morphometric characters. According to Myers and Wade (1941), eye diameter of the holotype of *A. equatorialis* is contained 3.4 times in snout length (vs. 2 in *A. orientalis*), or 16 times in head length (vs. 11). The holotype of *Sphagebranchus flavicaudus* has a shorter head contained 18.2 times in total length (vs. 12.3 in *A. orientalis*), and a smaller eye contained 3 times in snout length (vs. 2) (Snyder, 1904). There are five supratemporal pores in *A. moseri* (Jordan and Snyder, 1901: fig. 14) and *A. klazingai* (Weber, 1913: fig. 9). Machida and Ohta (1993) confirmed five supratemporal pores in the second specimen of *A. moseri*. *Apterichtus klazingai* has a head contained 13–14 times in total length and 136–140 vertebrae (McCosker and Castle, 1986), which differ slightly from those of *A. orientalis*.

Apparently, *A. monodi*, originally described as *Caecula* (*Sphagebranchus*) *monodi*, known from the eastern Atlantic and the Mediterranean was the only species possessing seven supratemporal pores in the genus, therefore *A. orientalis* represents a second species having this character.

Blache and Bauchot (1972) gave a detailed description of *A. monodi* (as *Verma monodi*) based on five specimens, including the type material. Table 1 compares meristic and morphometric characters of *A. orientalis* with those of *A. monodi* from Blache and Bauchot (1972). These species are clearly separable in their vertebral and lateral line pore counts, and in the following morphometric characters: body depth, head length, and preanal length (Table 1). Although the holotype (the only known specimen at present) of *A. orientalis* has no prevomerine teeth, it is not clear whether the absence of teeth from the prevomer is one of the diagnostic characteristics of this species, because the number of prevomerine teeth varies from zero to two in *A. monodi* (Blache and Bauchot, 1972).

Machida and Ohta (1993) suggested that the specimen of *A. moseri* in Suruga Bay, central Japan, reported by Doubilet (1990) may be a different species. Although it is hardly possible to count the number of supratemporal pores on the photograph, the fish has a smaller eye (contained about 4 times in snout length), three large, white spots on its head, and two postorbital pores, indicating clear difference between this form and *A. orientalis*.

Table 1. Comparison of *Apterichtus orientalis* and *A. monodi*

	A. orientalis	*A. monodi*
Counts		
Total lateral line pores	130	143–149
Lateral line pores before anus	57	63–68
Lateral line pores on head	7	6
Frontal pore	1	1
Supraorbital pores	1+6	1+6
Infraorbital pores	6+4	6+5
Preoperculomandibular pores	5+4 or 6+3	10
Supratemporal pores	7	7
Total vertebrae	133	142–151
Measurements (% TL)		
Body depth	2.2	1.4–1.6
Head length	8.1	5.0–6.1
Preanal length	45.6	39.8–42.6
Measurements (% head length)		
Body depth	26.7	23.8–29.6
Snout length	17.8	17.4–23.5
Eye diameter	9.1	7.4–10.0
Interorbital width	9.1	9.3–11.5
Length of gape	23.3	21.5–28.6
Length of gill opening	14.1	13.3–14.9

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紀伊半島沿岸産のウミヘビ科の新種キシュウゴマウミヘビ

町田吉彦・太田　秀

紀伊半島の西南部の水深 79–81 m でドレッジにより採集された 1 標本（全長 318 mm）に基づき，ウミヘビ科ウミヘビ亜科の新種 *Apterichtus orientalis* キシュウゴマウミヘビを記載した．本種は，鰭が全くない，尾部長は全長の半分よりやや長い，吻は尖り，その下面は平らで切れ込みがある，前鼻孔は管状，後鼻孔は口外に位置する，鰓孔は腹面に位置する，前鰓蓋骨の感覚孔は 4 個，両顎の歯は 1 列をなすことなどによりゴマウミヘビ属と同定された．本属には 10 の有効種が知られており，各種の上側頭管の感覚孔数は 3, 5, 7 のいずれかである．現在まで，7 個の上側頭管感覚孔を有する種としては，東部大西洋・地中海産の *A. monodi* のみが知られていた．キシュウゴマウミヘビはこの形質を有する第二番目の種である．本種は，*A. monodi* とは総脊椎骨数が 133（後者では 142–151），側線孔の総数が 130（143–149），肛門前方の側線孔数が 57（63–68），体高が全長の 2.2%（1.4–1.6%），頭長が全長の 8.1%（5.0–6.1%），肛門前長が全長の 45.6%（39.8–42.6%）であることで異なる．

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