

A New Genus and Species of Congrid Eel (Teleostei: Anguilliformes: Congridae) from Western Australia

DAVID G. SMITH

Smithsonian Institution,
PO Box 37012, MRC-159, Washington, DC 20013–7012, United States of America
smith.davidg@nmnh.si.edu

ABSTRACT. A new genus and species of congrid eel, *Castleichthys auritus*, is described from a single specimen collected from 396 m off northwestern Australia. It belongs to the subfamily Congrinae and is characterized by a slender and flexible tail, a free flange on the upper lip, no plicae or other ornamentation on skin of head, large eye, uniserial maxillary and mandibular teeth, and conspicuous black pectoral fins. The vertebral formula is 15–36–128.

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The Congridae constitute a diverse and speciose eel family (Anguilliformes) whose members inhabit mostly continental shelf and slope waters in tropical and subtropical latitudes worldwide. Congrid eels of the Atlantic (Blache & Bauchot, 1976; Smith, 1989) and Japan (Asano, 1962) are fairly well known, but other areas have not been adequately studied. The eel described here differs from all previously known species of Congridae to such an extent that it is placed in a new genus.

Materials and methods

Counts, measurements, and abbreviations are as given in Smith (1989: 461). The holotype is deposited in the CSIRO collection in Hobart, Tasmania.

Castleichthys n.gen.

Type species. *Castleichthys auritus* n.sp.

Diagnosis. Body moderately elongate; preanal length less than 40% TL; tip of tail slender and flexible, but not greatly attenuate or filiform; pectoral fin well developed; dorsal origin slightly behind tip of appressed pectoral fin; dorsal and anal-fin rays segmented; jaws equal, rictus below middle of eye; flange present on upper lip; skin of head without papillae or plicae; eye relatively large; posterior nostril at mid-eye level. Teeth small, not caniniform or molariform; maxillary teeth uniserial, mandibular teeth uniserial for most of length.

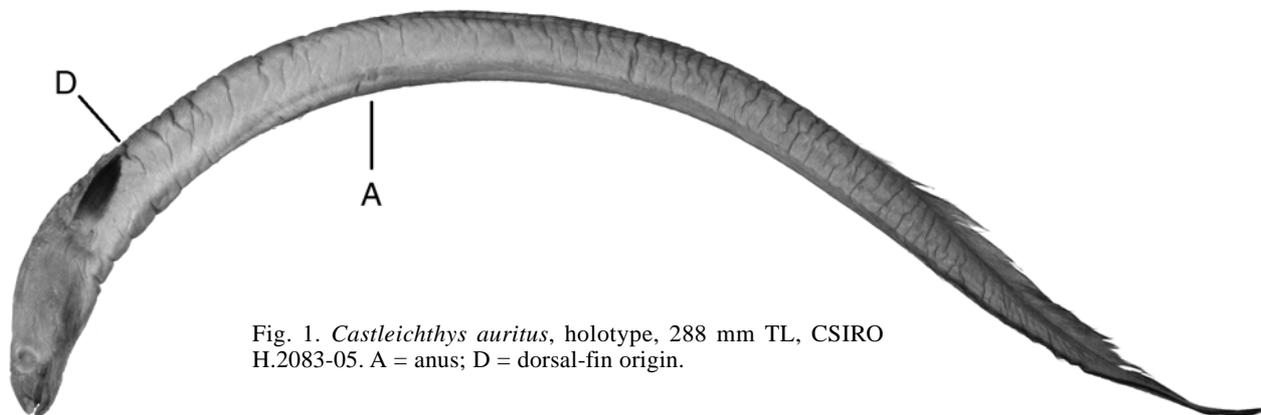


Fig. 1. *Castleichthys auritus*, holotype, 288 mm TL, CSIRO H.2083-05. A = anus; D = dorsal-fin origin.

Etymology. Named for the late P.H.J. Castle, who located the specimen described here and recognized its novelty, but was unable to complete the description himself; in recognition of his many contributions to our knowledge of eels and eel larvae. In combination with the Greek *ichthys*, fish; masculine.

***Castleichthys auritus* n.sp.**

Figs. 1–4

Type material. HOLOTYPE: CSIRO H.2083-05, female, 288 mm; Western Australia, northeast of Rowley Shoals, 16°53'S 120°21'E, depth 396 m, by prawn trawl, S. Morris (CSIRO), vessel "Striker", 11 April 1989.

Description. Measurements in mm, with proportions in parentheses: TL 288, preanal length 99 (34% TL), predorsal length 52.5 (18% TL), head length 34 (12% TL), depth at anus 15.5 (5.4% TL), snout length 7.9 (23% head), horizontal eye diameter 5.4 (16% head), snout to rictus 10.2 (30% head), gill opening 4.7 (14% head), interbranchial 9.1 (27% head), pectoral-fin length 16.0 (47% head). Meristic characters: preanal lateral-line (LL) pores 34, preoperculomandibular (POM) pores 8, infraorbital (IO) pores 5, supraorbital (SO) pores 2, supratemporal

commissure (STC) pores 0. Predorsal vertebrae 15, preanal vertebrae 36, total vertebrae 128.

Body moderately elongate, more or less uniform in depth over most of its length, round in cross section anteriorly, becoming compressed posteriorly; tip of tail slender and flexible but not greatly attenuate or filiform; anus near anterior third of total length. Dorsal-fin origin slightly behind tip of appressed pectoral fin, continuous around tip of tail with anal fin, which begins immediately behind anus; fin rays segmented. Pectoral fin well developed, long, broad, conspicuously black. Gill opening relatively large, nearly vertical, upper end opposite middle of pectoral-fin base. Abdominal cavity ending shortly posterior to anus. Myorhabdoi absent (from radiograph).

Head deepest at posterior end near gill opening, dorsal profile nearly flat from occiput to point slightly anterior to posterior nostril, then deflected ventrally to tip of snout. Mouth terminal, snout and lower jaw about equal, rictus below middle of eye. Eye well developed, relatively large. Anterior nostril tubular, at edge of lip; posterior nostril a simple round pore with a slightly raised rim, at mid-eye level, about 2–3 nostril diameters from anterior edge of eye. Upper lip with a free, upturned flange, beginning immediately behind first IO pore, which borders base of anterior nostril, and ending below anterior margin of eye. Lower lip with a downturned flange. Tongue free, long, and

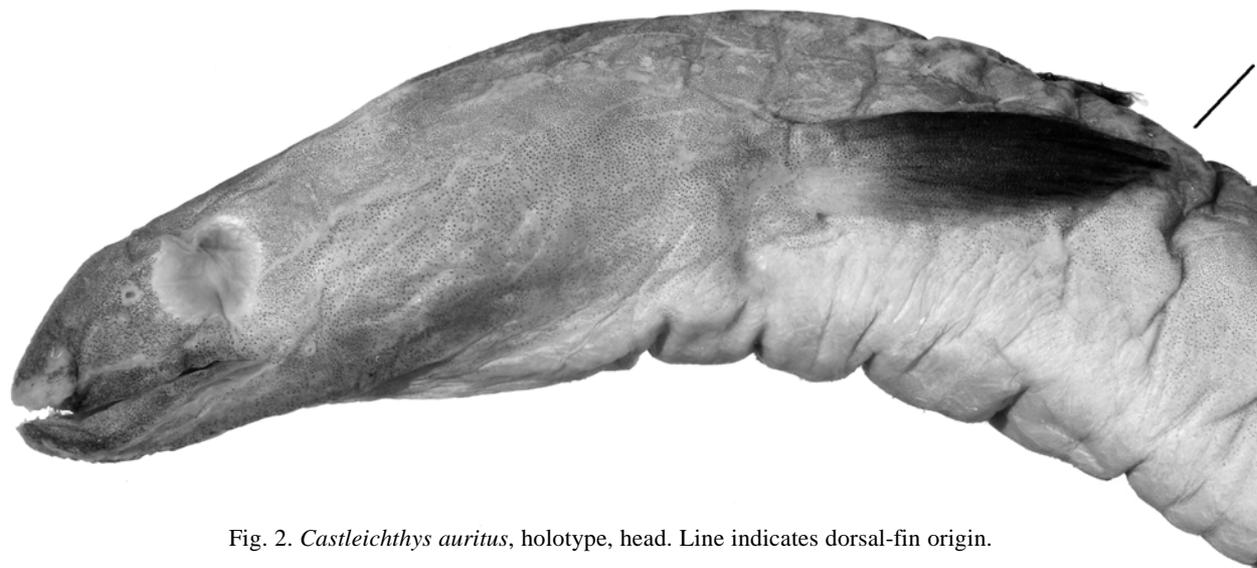


Fig. 2. *Castleichthys auritus*, holotype, head. Line indicates dorsal-fin origin.

broad, when raised filling nearly entire roof of mouth medial to teeth. Skin of head smooth, without papillae or plicae.

Lateral line complete, 34 pores before anus. Cephalic pores (Fig. 3) difficult to see, in part because of damage to head. Two SO pores visible, both relatively large: one on edge of upper lip before anterior nostril; one on side of head directly above anterior nostril; ethmoidal pore not apparent. IO canal with five pores: a conspicuous pore immediately adjacent to posterior edge of base of anterior nostril and immediately anterior to beginning of labial flange; a pore on side of jaw just above flange, about midway between anterior and posterior nostril; a pore on side of jaw just above flange, directly below posterior nostril; a pore on side of jaw at posterior end of flange, below anterior margin of eye; a pore behind rictus, under or slightly behind a vertical through posterior edge of eye; no pores behind eye. Eight pores visible in POM canal, five before rictus and three behind rictus. No STC pores visible.

Teeth (Fig. 4) small, conical to peg-like in appearance. Intermaxillary region damaged, number and placement of teeth somewhat uncertain; teeth conical, appear to be arranged in two transverse rows. Vomerine teeth smaller, conical, in a slightly elongate patch. Maxillary teeth peg-like in appearance, with bevelled edges, uniserial but not closely appressed or forming a cutting edge. Mandibular teeth conical anteriorly, peg-like laterally, mostly uniserial but biserial at anterior end of jaw.

Preserved coloration. Light gray-brown, paler ventrally. Dorsal and anal fins with body colour anteriorly, becoming dark toward posterior part of tail, progressively darker posteriorly, becoming black at tip of tail. Pectoral fins conspicuously black. Gill opening, inside of mouth, and peritoneum pale.

Remarks. The anterior end of the snout and lower jaw have been crushed and slightly caved in, pushing the tip slightly to the left. The main damage on the snout was to the tip of the intermaxillary plate and the teeth that it bears. The lower jaw has been broken at the tip. For that reason, the precise number and arrangement of teeth at the anterior end of both jaws are somewhat uncertain. The specimen is a female with enlarged gonads; the eggs are contained within the ovary.

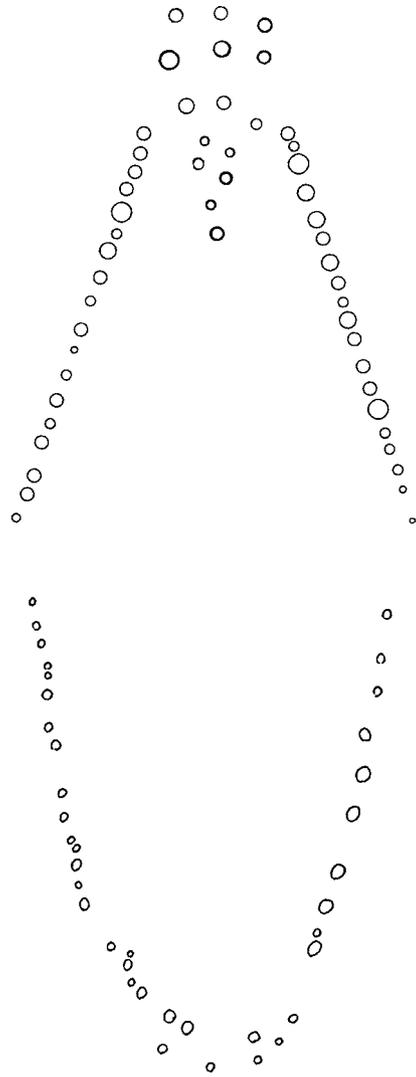


Fig. 4. Pattern of upper and lower teeth of *Castleichthys auritus*.

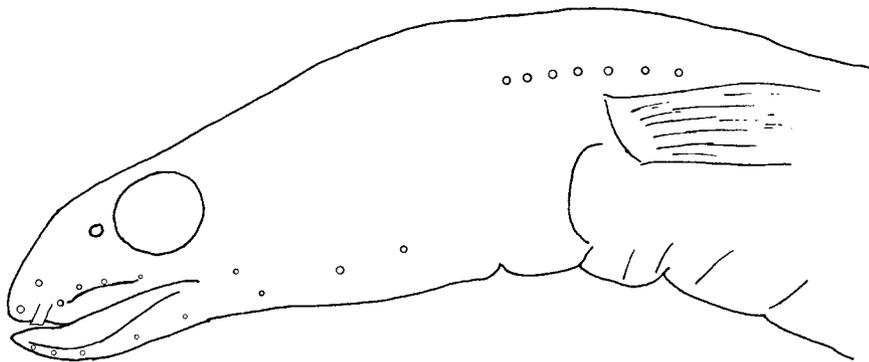


Fig. 3. Head of *Castleichthys auritus*, showing location of head pores.

Etymology. Latin *auritus*, eared; in reference to the large, conspicuous pectoral fins, which resemble the ears of a rabbit or a mule. An adjective.

Distribution. The only known specimen was collected on the continental slope off the northwestern coast of Australia, at a depth of 396 m.

Comparisons and relationships. The relatively short preanal length (less than 40% TL), slender and flexible tail, segmented dorsal- and anal-fin rays, and lack of myorhabdoi place this species within the subfamily Congrinae, as defined by Asano (1962) and Smith (1989). Superficially, it somewhat resembles members of *Macrocephenchelys* Fowler, 1934, especially in the relatively short snout and long postorbital region, and the large pectoral fins. The species of *Macrocephenchelys*, however, have no upper labial flange, and the lips are strongly plicate; in addition, they have multiserial teeth. The presence of a labial flange distinguishes the new species from most genera of Congrinae, except for *Congriscus* Jordan & Hubbs, 1925, *Conger* Bosc, 1817, *Gnathophis* Kaup, 1860, *Rhynchoconger* Jordan & Hubbs, 1925, and *Blachea* Karrer & Smith, 1980. *Congriscus* and *Gnathophis* have blunt, stiffened tail tips, quite unlike the slender tail in the new species. In *Conger*, the pectoral fin is smaller, usually 25–35% of head length, and not conspicuously black; the maxillary teeth are closely appressed and form a cutting edge; an adnasal pore (at the end of a short branch ascending dorsally from the anterior end of the IO canal) and at least one STC pore are present; the labial flange is more extensive, reaching nearly to the rictus; and the tongue is smaller. In *Rhynchoconger*, the flange is greatly reduced, often to a near vestige; the snout conspicuously overhangs the lower jaw, leaving the intermaxillary tooth patch exposed when the mouth is closed; the tail is greatly attenuate; and the teeth are in granular patches. *Blachea* has the snout distinctly overhanging the lower jaw, the tips of the branchiostegals protruding freely through the gill opening, and the lateral line enlarged and opening through a double series of pores.

If the new species is run through the key to genera of Congridae in the western central Pacific (Smith, 1999: 1682), it comes out closest to *Conger*, in couplet 13a. Although the maxillary and mandibular teeth are in one row (like *Conger*) rather than in bands, they do not form a cutting edge as they do in *Conger*. The specimen further differs from *Conger* in the characters mentioned in the previous paragraph, and its overall appearance is quite different. Based on the characters available for study, the new species does not fit into any of the existing congrid

genera. With only a single specimen available, osteological characters (besides those visible on the radiograph) could not be investigated. Further studies on the relationships of this species must await the capture of additional specimens.

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