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Occurrence of *Thalassenchelys coheni* (Anguilliformes; Chlopsidae) in the West Pacific Ocean

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A very large, extremely deep-bodied eel larva was first recorded as an unidentified leptocephalus from off the Pacific coast of North America (Aron, 1958; Cohen, 1959). On the basis of 39 eel larvae of this type (including two metamorphic specimens) Castle and Raju (1975) described *Thalassenchelys*, referring it to the Chlopsidae, at the same time describing two new species, *T. foliaceus* (the type species) and *T. coheni*. There are few subsequent records of these species and neither both adults nor additional species have been reported. *T. foliaceus* apparently occurs widely in tropical waters of the Indo-West Pacific, while *T. coheni* is distributed in temperate waters of the North Pacific, especially eastern area of the ocean (Castle and Raju, 1975; Matarese et al., 1989; Fisheries Agency, Government of Japan, 1994; P. H. J. Castle, pers. comm.).

In the summer of 1987 and 1988, during the mid-water trawl surveys of the T/S *Oshoro-Maru* and the T/S *Hokusei-Maru* of Hokkaido University, four specimens of *T. coheni* were collected in the western North Pacific. We herein provide the first description of *T. coheni* on the basis of the western North Pacific specimens, although Fisheries Agency, Government of Japan (1994) listed six specimens of the species in almost the same localities with the present specimens.

The four specimens are deposited in the larval collection of the Laboratory of Marine Zoology, Faculty of Fisheries, Hokkaido University (HUMZ-L). Methods for counts and measurements follow Castle (1963).

Thalassenchelys coheni Castle and Raju, 1975 (Fig. 1)

Material examined. Four specimens: HUMZ-L 6486, 146.4 mm in total length (TL), 37°00′N, 179°52′W, depth 0–50 m, beam trawl (*Oshoro-Maru* cruise No. 18), 11 June, 1987; HUMZ-L 6487, 250.0 mm TL, 38°00′N, 155°00′E, depth 0–600 m, beam trawl (*Hokusei-Maru* cruise No. 39), 7 June, 1988; HUMZ-L 6488, 121.5 mm TL, 39°28′N, 154°54′E, depth 0–600 m, beam trawl (*Hokusei-Maru* cruise No. 39), 26 June, 1988; HUMZ-L 6489, 131.3 mm TL, 38°30′N, 175°30′E, depth 0–350 m, NORPAC net (*Hokusei-Maru* cruise No. 39), 25 July, 1988.

Diagnosis. All diagnostic characters are shown in Table 1.

Description. Counts shown in Table 1 (mean in parentheses).

Measurements (morphometry in parentheses): Total length 121.5–250.0 mm (not including metamorphic specimen), head length (HL) 8.3–11.0 (4.4–7.1% of TL), predorsal length 59.7–116.5 (46.6–50.4), preanal length 63.6–125.0 (50.0–52.3), greatest body depth 40.8–102.0 (33.6–40.8), depth at anal origin 39.6–101.0 (32.6–40.4). Snout length 3.0–4.7 (36.1–47.0% of HL), eye diameter 1.7–2.2 (17.4–21.7), upper jaw length 5.0–6.7 (60.2–61.4), postorbital length 4.0–6.6 (46.5–60.0), pectoral length 2.1–3.0 (25.3–30.1), depth just before eye 3.1–5.2 (37.3–48.2), depth at pectoral origin 8.1–15.8 (95.3–143.6).

Body leaf-like, very deep and compressed, deepest at slightly behind anus, its depth more than 1/3 of its length (Fig. 1). Head relatively small and strongly compressed, its dorsal profile slightly convex. Snout short and acutely pointed. Nasal organ oval; anterior nostril tubular located at midpoint of snout, posterior one simple and larger located at anterodorsal corner of eye. Eye oval and relatively large, with its greatest diameter vertical. Gape relatively short and oblique, extending to below posterior margin of pupil. Jaws strong and beak-like; upper jaw just reaching tip of lower jaw. Teeth in a single row of small conical teeth on both jaws, first pair of maxillary and mandibular strong and largest, 1+8–9+6–8/1+7–9+6–8 in 121.5–146.4 mm TL specimens (1+11+10/1+13+10 in 250.0 mm TL specimen). Gill opening large, located at pectoral base. Branchiostegal rays recognizable externally, but indistinct in number. Origin of dorsal fin located at 69–70th myomere. Origin of anal fin located at 85–90th

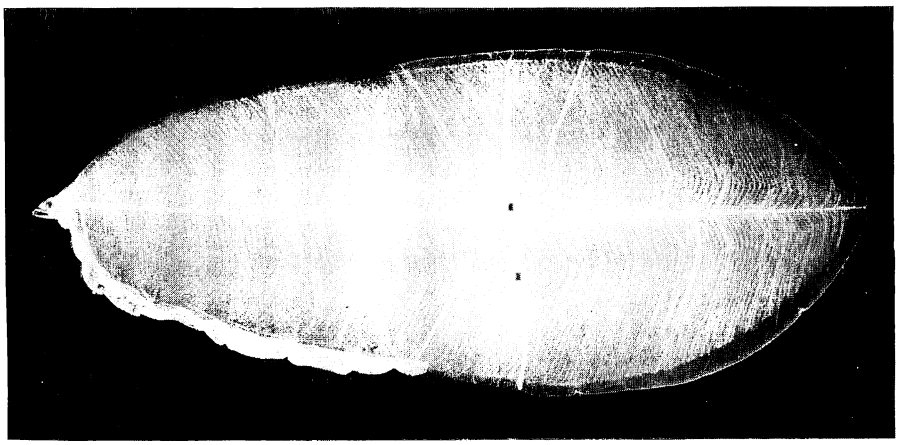

Fig. 1. *Thalassenchelys coheni* from the western North Pacific, HUMZ-L 6487, 250.0 mm TL.

myomere. Caudal fin broadly rounded and confluent with vertical fins. Pectoral fin developed, but short. Oesophagus short, extending to level of 10th myomere. Intestine short (less than 2.0 in TL), extending to 70–72nd myomere, without obvious thickenings or loops. Pancreas a long and thin ribbon shaped, extending to vent. Liver small, located at 8–15th myomere. Heart large and elliptic, bulging in the ventral profile. Nephros extending to beyond end of intestine. Body color in formalin light tan, without any other pigmentation.

Remarks. Leptocephali of *Thalassenchelys* Castle and Raju are clearly distinguished from all others in having a very deep body, a very broadly rounded tail, a moderately short head, a gut being about one-half of total length and lacking obvious thickenings or loops, a dorsal origin at about mid-body, well developed pectoral fins, sparse or no pigmentation, and a large body size (maximum size 300 mm) (Smith, 1979). Although *Thalassenchelys* was referred to the Chlopsidae (formerly the Xenocongridae) by Castle and Raju (1975) and Castle (1984), it was regarded as incertae sedis in the Anguilliformes by some authors (e.g., Smith, 1979; Lavenberg, 1988). We follow Castle's opinion here. Since the present leptocephali possess all the diagnostic characters of *Thalassenchelys* listed above, they are referred to this genus.

The two species, *T. foliaceus* and *T. coheni* are easily distinguishable by the characters listed in Table 1. The meristic counts and lack of pigmentation of the present leptocephali agree well with those of *T. coheni* (Table 1) and consequently they are identified as this species.

Table 1. Diagnostic characters of *Thalassenchelys coheni* and *T. foliaceus*

Characters	Present material (4 specimens)	*T. coheni** (18 specimens)	*T. foliaceus** (25 specimens)
Total length (mm)	121.5–250.0	147.0–304.0	34.5–228.0
Total myomeres	153–157 (154.3)	152–163 (156.4)	142–153 (147.8)
Preanal myomeres	69–71 (70.0)	67–74 (70.7)	55–62 (59.9)
Postanal myomeres	83–87 (84.5)	83–92 (85.9)	84–92 (87.1)
Position of FVBV	10–12 (10.5)	——	——
Position of LVBV	61–64 (62.3)	55–67 (61.2)	50–58 (54.7)
Position of anus	70–72 (71.0)	—— (70.8)	—— (60.4)
Dorsal rays	280–319 (298.5)	280–350 (321.6)	256–307 (290.5)
Anal rays	232–256 (240.3)	218–260 (237.8)	203–252 (231.2)
Caudal rays	4+3–4	4+3–4	4+4
Pigmentation	absent	absent	present

* Cited from Castle and Raju (1975). FVBV, First vertical blood vessel; LVBV, last vertical blood vessel.

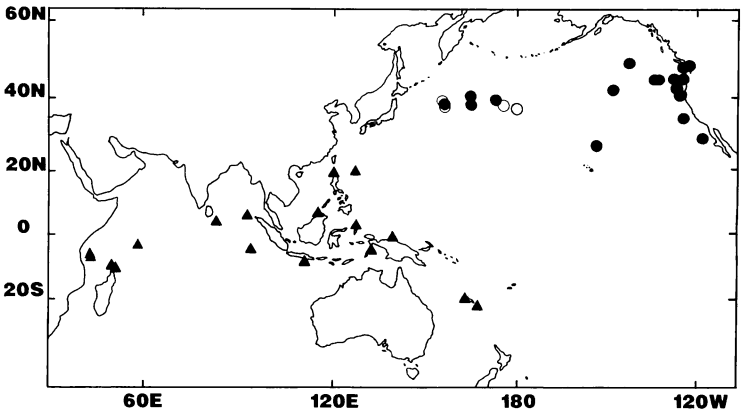

Fig. 2. Distribution of *Thalassenchelys coheni* and *T. foliaceus*. Solid marks are literature records of *T. coheni* (circle) and *T. foliaceus* (triangle) from Castle and Raju (1975), Matarese et al. (1989) and Fisheries Agency, Government of Japan (1994); open circles are present records.

Thalassenchelys coheni was originally recorded from a relatively restricted area of the eastern North Pacific i.e. from off the Pacific coast of North America southwards to the Guadalupe Islands and near the Hawaii Islands (27°24′–48°58′N, 118°30′–155°35′W), while *T. foliaceus* was collected in tropical waters of the Indo-West Pacific i.e. from the east coast of Africa to New Caledonia and the South China Sea (22°40′S–19°11′N, 41°27′–167°20′E) (Castle and Raju, 1975; Matarese et al., 1989; P. H. J. Castle, pers. comm.). Neither species is known from the Atlantic Ocean.

At present, little is known of the duration of early life stages in most eels (Castle, 1984), including *Thalassenchelys.*

The two specimens collected from near Hawaii suggested to Castle and Raju (1975) that *T. coheni* must be more widely distributed in the East Pacific. The occurrence of the species in the western North Pacific in the present report and Fisheries Agency, Government of Japan (1994) suggests a much wider distribution in temperate waters of the North Pacific. Even if that is so, the distributional range of *T. coheni* would not seem to overlap with that of *T. foliaceus* (Fig. 2).

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イワアナゴ科 *Thalassenchelys coheni* のレプトセファルス幼生の西部太平洋における出現

下川知毅・尼岡邦夫・梶原善之・巣山　哲

北海道大学水産学部練習船おしょろ丸と北星丸によって行われた西部太平洋海域におけるビームトロール調査により，ウナギ目イワアナゴ科の一種 *Thalassenchelys coheni* のレプトセファルス幼生が4個体 (121.5–250.0 mm TL) 採集された．本種は大型で体高が高いこと，腸管が全長の約 1/2 であり明瞭な膨出部をもたないことなどの形質により他のウナギ目レプトセファルス幼生と容易に区別できる．また同属の *T. foliaceus* とは，総筋節数，肛門前筋節数および分布域などにより識別される．*T. coheni* はこれまで東部太平洋（北米沿岸–ハワイ近海）からのみ報告されており，西部太平洋においては出現記録が示されているに過ぎない．本報告では本種の西部北太平洋産の標本を記載し，その出現を確認した．これにより本種が北太平洋海域に広く分布する可能性が示唆されたが，*T. foliaceus* の分布域との重なりは見られなかった．

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