

The First Record of Two Species of Leptocephali of the Genus *Saurenehelys* (Nettastomatidae, Anguilliformes) from Korea

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Received 5 September 2006; Revised 14 November 2006; Accepted 22 December 2006

Abstract – Leptocephali of the genus *Saurenehelys* in the family Nettastomatidae were collected from the coastal area of Pohang, Korea and described as the first record from Korean waters. *S. stylura* and *S. lateromaculatus* are characterized by two intestinal swellings, the pattern of pigments in the notochord, and by smaller pectoral fins than those of other genus. They are very similar to each other but they are distinguished by the pattern of pigments in the notochord and the intestinal swellings.

Key words – Nettastomatidae, *Saurenehelys stylura*, *Saurenehelys lateromaculatus*, first Korean record

The family Nettastomatidae in Anguilliformes have been known to include 30 species comprising 6 genera. They occur in Atlantic, Indian and Pacific Oceans (Nelson 1994).

The leptocephali of the family Nettastomatidae are transparent and shaped like a willow leaf. They are morphologically divided into three groups: 1) *Nettastoma* and *Nettenchelys*, deep-bodied anteriorly and sharply narrowed toward the tail, two intestinal swellings often reduced and a horizontally elongated pigment spot around the notochord posterior to the level of the vent, 2) *Saurenehelys* and *Hoplunnis*, having elongated body, a small head, smaller pectoral fins and two well-defined intestinal swellings, and 3) *Facciolella*, with elongated body, no intestinal swellings, long head, a short anterior extension of the rostral cartilage (Tabeta and Mochioka, 1988). They are cosmopolitan in warm seas; until now, however, only one species, *Nettenchelys gephyra*, has been reported in Korean waters (Kim *et al.* 2005).

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For the first time, we collected leptocephali of two species (*Saurenehelys stylura* (Lea) 1913 and *Saurenehelys lateromaculatus* (D'Ancona) 1918) in the genus *Saurenehelys* by IKMT net (Isaacs-Kidd Midwater Trawl; net mouth, 8.7 m²; mesh size, 417 μ m) in the coastal area of Pohang, Korea. In this paper, we describe two species as the first record from Korean waters. Counts and measurements are made following the criteria of Smith and Castle (1982) and Tabeta and Mochioka (1988). The examined specimens are deposited in the Korea Ocean Research & Development Institute (KILAB 2003122, KILAB 2003123).

Saurenehelys stylura (Lea) 1913

Leptocephalus stylurus Lea 1913: 29 (type locality: North Atlantic).

Saurenehelys stylurus Paxton *et al.* 1989: 114.

Saurenehelys stylura Smith in Bhlke 1989: 719.

Materials examined. The specimen examined in this study was collected at Pohang, Gyeongsangbuk-do, Korea with the IKMT net on the 3rd of December, 2003. It was transported to the laboratory and examined for its morphological characteristics. Then, the specimen was stored in ethyl alcohol (95%). KILAB2003122, 26.9 mm in total length (TL) (Fig. 1).

Description. The body is elongated and transparent. The head is small and the body depth is low. The mouth is big and its length is approximately two times longer than that of the eye. There are teeth in the mouth. The

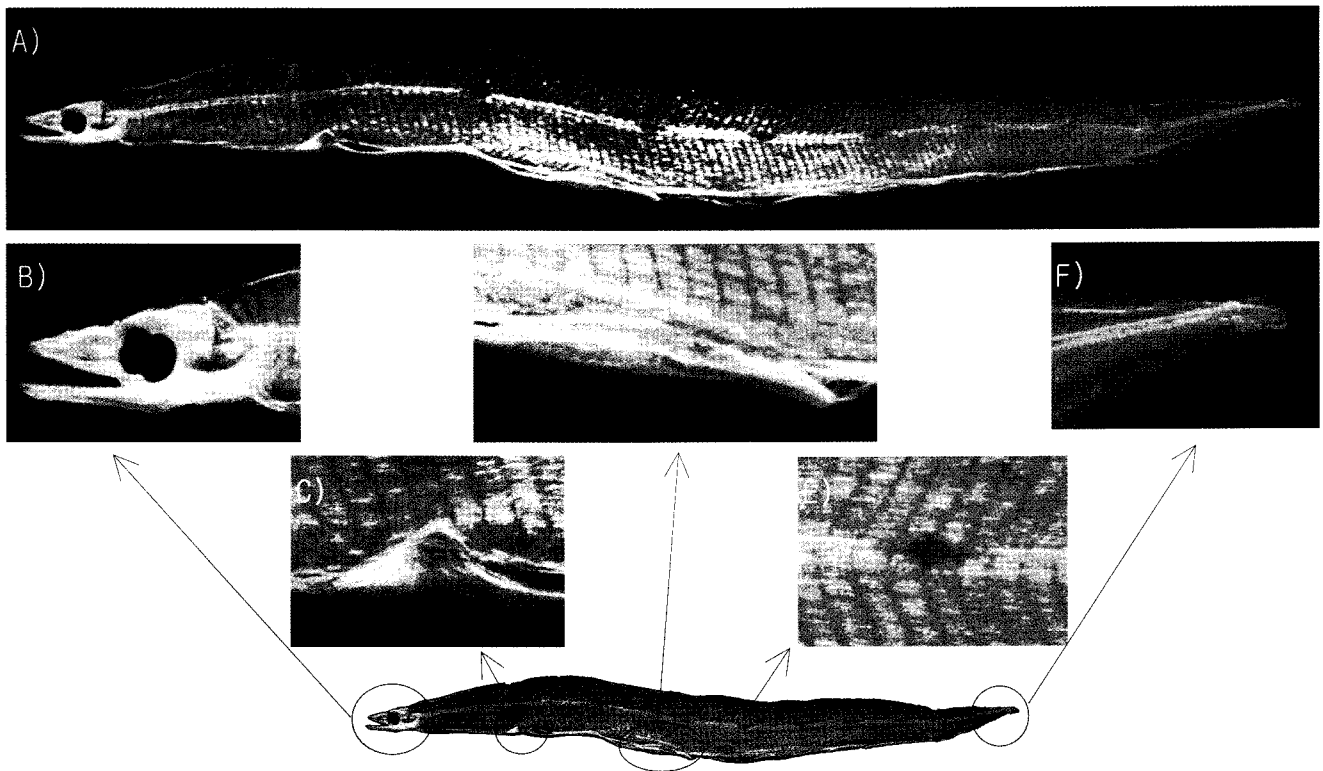


Fig. 1. A leptocephalus specimen of *Saurenehelys stylura*. A: The lateral view of the specimen, B: Head, C: Anterior intestinal swelling, D: Posterior intestinal swelling, E: Lateral pigment spot, F: Tail.

digestive tract is as long as the half of the body and has two intestinal swellings that are located at the liver (anterior) and the kidney (posterior). The posterior one is long and flat. The dorsal fin and the anal fin are connected with the caudal fin. The pectoral fin is very small. Pigment spots are below brain and in the nostril. Also there are melanophores laterally on the intestinal swellings. A series of spots are present internally around the notochord axis at equal intervals and the number of spots are nine. The spots are elongated horizontally. Total

number of myomeres (TM) is more than 190. Predorsal myomeres (PDM) can not be counted because it is difficult to find the beginning of the dorsal fin, but the base of the dorsal fin is located ahead of the body. The rest of the measurements are as in Table 1.

Distribution. Eastern Atlantic from the northwest coast of Africa to Gulf of Guinea. Tropical Indo-Pacific from Hawaii to East Africa, Taiwan to Australia. Southern East Sea (Japan Sea) (Smith and Castle 1982; Tabeta and

Table 1. Comparisons of meristic characters between the leptocephali of two species in the genus *Saurenehelys*

Measurement	<i>S. stylura</i>			<i>S. lateromaculatus</i>		
	present	A	B	present	A	B
TL (mm)	26.9	15-145	30-128	85.5	11-106	29-70
TM	> 190	209-243	212-235	221	192-256	203-225
PDM	-	12-18	11-14	14	14-24	12-15
PAM	55	52-59	51-57	59	50-66	53-61
VBV last	50	54-58	49-60	53	54-65	51-60
PHM	21	20-23	15-22	20	22-25	14-22

A : Smith and Castle (1982), B : Tabeta and Mochioka (1988).

TL: Total Length, TM: Total number of Myomeres, PDM: Predorsal Myomeres, PAM: Preanal Myomeres, VBV: Ventral Blood Vessel, PHM: Prehepatic Myomeres.

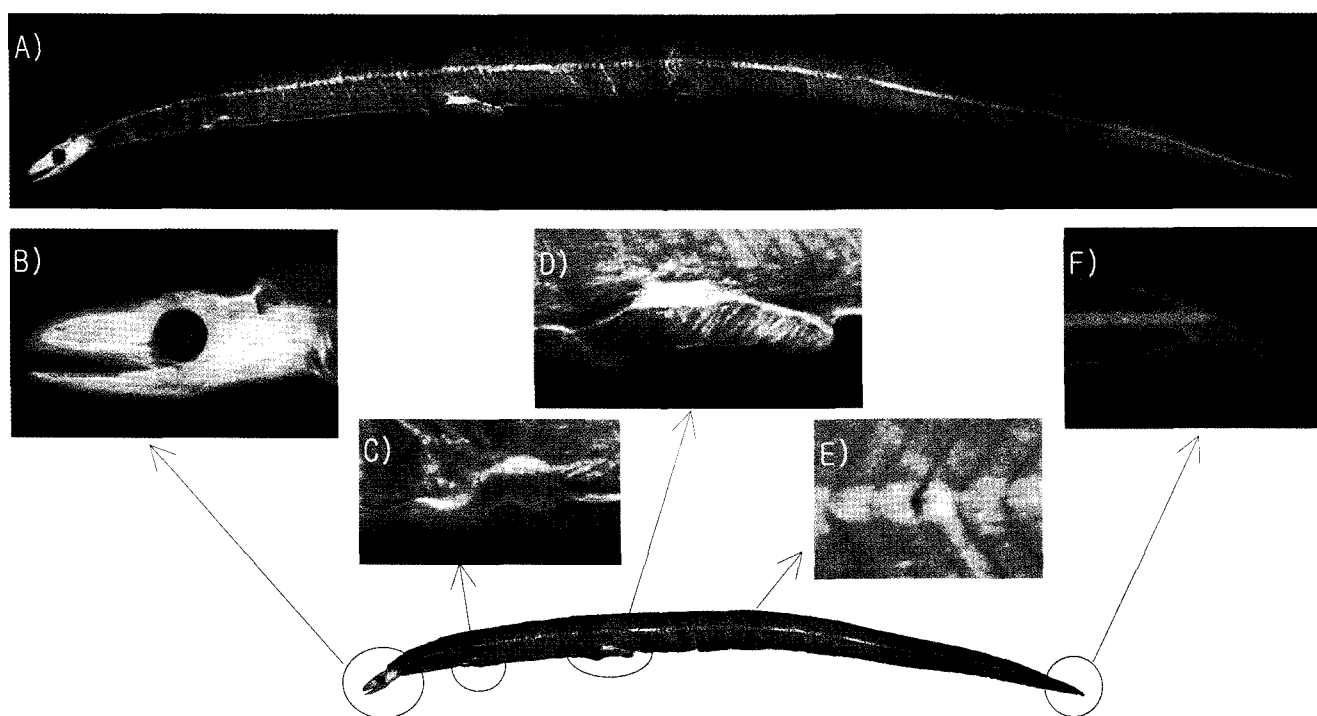


Fig. 2. A leptocephalus specimen of *Saurenehelys lateromaculatus*. A: The lateral view of the specimen, B: Head, C: Anterior intestinal swelling, D: Posterior intestinal swelling, E: Lateral pigment spot, F: Tail.

Mochioka 1988).

***Saurenehelys lateromaculatus* (D'Ancona) 1928**

Leptocephalus lateromaculatus D'Ancona 1928: 56 (type locality: Massawa, Eritrea, Red Sea)

Saurenehelys lateromaculatus Smith in Randall and Lim 2000: 587.

Materials examined. The specimen was collected at Pohang, Gyeongsangbuk-do, Korea by IKMT net on the 3rd December, 2003. The specimen was transported to the laboratory to examine of its morphological characters. Then, the specimen was stored in ethyl alcohol (95%). KILAB2003123, 85.5 mm in TL (Fig. 2).

Description. The body of this specimen is elongated and transparent. The preanal length of the body is a third of the body length. The head is small and the body depth is low. The eye is small. The mouth is big, having teeth. Two intestinal swellings each located at the liver and the kidney, each. The anterior intestinal swelling is shaped like a curve and the posterior one is moderately high. The dorsal fin and the anal fin are connected with the caudal

fin. The pectoral fin is very small. Pigments are present internally behind the brain and in the nostril, on the tip of the upper jaw, in front of the pectoral fin base. Also there are melanophores shaped like dots on the intestinal swellings. A series of spots are 20 internally around the notochord. They are vertically short. Total number of myomeres (TM) are 221 and the rest of the measurements are in Table 1.

Distribution. Indian Ocean from the Red Sea to South Africa, east to New Guinea, the Philippines, Taiwan, and southern East Sea (Japan Sea) (Smith and Castle 1982; Tabeta and Mochioka 1988; Goren and Dor 1994).

Remarks. Morphologically, *S. stylura* and *S. lateromaculatus* are very similar to species in the genus *Hoplunnis* except for the presence of the pectoral fins. They can also be easily distinguished from the other genus *Nettenchelys* and *Nettastoma* because of the more elongated body and the developed swellings. Therefore, the genus *Saurenehelys* is characterized by the two well-defined intestinal swellings and the smaller pectoral fins among the same family Nettastomatidae. At the species level, these two species are differentiated in that *S. stylura* has long and

horizontal spots, each lying around the notochord to the level of the vent, while *S. lateromaculatus* has short and vertical spots (Fig. 1).

The larvae of the genera *Nettenchelys* and *Saurenchelys* have been often found in warm waters such as East China Sea and Okinawa Island (Tabeta and Mochioka 1988; Miller *et al.* 2002). Recently, they have appeared in Korean waters such as Jeju Island, the Korean Strait and the East Sea (Oh 2005; Yoo 1991; Kim 1999; Kim *et al.* 2005). These areas will be the northern limit of distribution for the species in the northwest Pacific Ocean. The Tsushima Warm Current (TWC) is separated from the Kuroshio Warm Current in Kyushu of western Japan (Lie and Cho 2002). Lee and Myoung (2003) reported that tropical and subtropical species are transported into the East Sea following the TWC. We suppose that *S. stylura* and *S. lateromaculatus* collected off Pohang in the study must also have been introduced into the East Sea via the TWC.

Acknowledgements

This work was supported by “Pacific Ocean Study on Environment and Interactions between Deep Ocean and National Sea (POSEIDON) program” of “Korea Research Council of Public Science and Technology”, and “MarineBio21 program of Ministry of Marine Affairs and Fisheries, KOREA”, and “Basic Research Programs of Korea Ocean Research and Development Institute”.

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