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New Record of *Neoclinus nudiceps* (Perciformes: Chaenopsidae) from Hongdo Island, Southwestern Korea

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ABSTRACT A single specimen of *Neoclinus nudiceps*, belongs to the family Chaenopsidae, was first collected from Hongdo Island, Yellow Sea of Korea on June 13, 2012. This species is characterized by a lateral line reaching to below the 3rd∼4th spines of the dorsal fin, two pairs of supraorbital cirri arranged in one row, anterior supraorbital cirri with six tips, and posterior supraorbital cirri with one tip. The species is morphologically similar to *N. monogrammus*, but differs in the length of lateral line (reaching 3rd∼4th dorsal spines in *N. nudiceps* vs. reaching 6th∼9th dorsal spines in *N. monogrammus*, respectively). This study documents the first record of *N. nudiceps* in Korean waters and suggests the new Korean name "Jjalb-eun-teol-bi-neul-be-do-la-chi" for the species.

Key words: *Neoclinus nudiceps*, Chaenopsidae, new record, Hongdo Island, Korea

INTRODUCTION

The family Chaenopsidae (Perciformes) comprises 96 species and 14 genera worldwide (Froese and Pauly, 2022), and eight species of single genus occur in Japan (Aizawa and Doiuchi, 2013). Only three species have been reported in Korean waters (Kim and Kang, 1991; Myoung *et al*., 2021a, 2021b): *Neoclinus bryope* (Jordan and Snyder, 1902); *N. chihiroe* Fukao, 1987; *N. lacunicola* Fukao, 1980. The family member's bodies are usually compressed and elongated, with a large mouth compared with the body size, and supraorbital and nasal cirri are present or absent (Stephens and Springer, 1971; Fukao, 1980; Fukao and Okazaki, 1987; Murase *et al*., 2015).

Neoclinus nudiceps Murase, Aizawa and Sunobe, 2010 was reported as a new species on Oki Island in the East Sea (Murase *et al*., 2010), but its distribution is not precisely known because it is a recently reported. During a survey on the marine biodiversity, a single specimen of the genus *Neoclinus* was collected from around Hongdo Island in the Yellow Sea, and identified as *N. nudiceps*. We describe its morphological characteristics and report the first record of *N. nudiceps* based on a specimen from Korean waters.

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MATERIALS AND METHODS

A single specimen of *N. nudiceps* was collected from off Hongdo Island, Heuksan-myeon, Sinan-gun, Jeollanam-do, Korea, on 13 June, 2012 (Fig. 1). The specimen was preserved in 10% formalin for 48 hours and then transferred to 70% ethanol. Counts and measurements were made according to the method of Hubbs and Lagler (1958) to the nearest 0.1 mm using digital Vernier calipers. The specimen is deposited at the National Marine Biodiversity Institute of Korea (MABIK).

RESULTS AND DISCUSSION

***Neoclinus nudiceps* Murase, Aizawa and Sunobe, 2010**
(New Korean name: Jjalb-eun-teol-bi-neul-be-do-la-chi)
(Figs. 2∼3; Table 1)

Neoclinus nudiceps Murase *et al*., 2010: 66 (type locality: Oki Island, Shimane Prefecture, Japan).

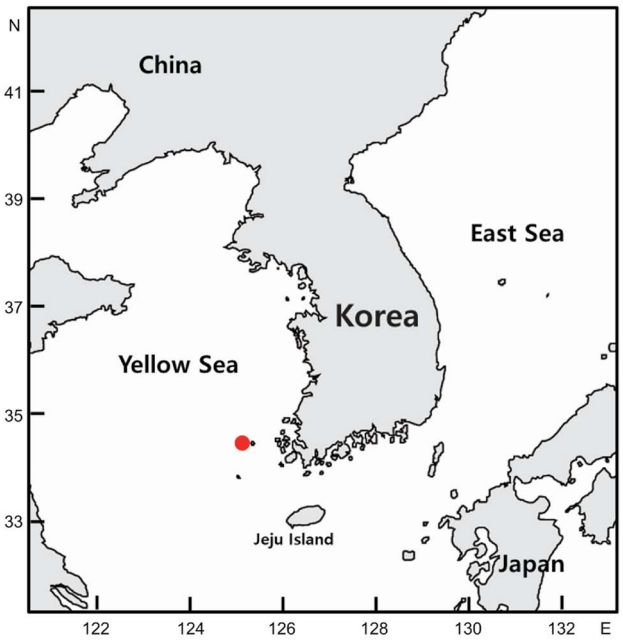

Fig. 1. Map showing the sampling site of *Neoclinus nudiceps* (red dot) from Hongdo Island, southwestern Korea.

Material examined. MABIK PI00045900, one specimen, 47.3 mm in standard length (SL), Hongdo Island, Heuksan-myeon, Sinan-gun, Jeollanam-do, Korea (34°43′11.79″N 125°11′53.17″E), June 13, 2012.

Description. All counts and measurements are shown in Table 1. Body elongated and compressed. Mouth large; posterior tip of upper jaw beyond the eyes. Snout short and eyes protruded. Anterior nostril tube short with nasal cirri divided into four tips. Two cirri on orbit, the front anterior cirri divided into six tips, and the posterior cirri with single tip (Fig. 3A). Nasal cirri longer than supraorbital cirri. Dorsal fin single, membrane shallowly notched; soft part of ray higher than spinous it. Length of soft part of dorsal fin base longer than spinous part. Origin of dorsal fin located forward of the origin of pelvic fins. Origin of soft part of dorsal fin ray located behind the middle of the body. Origin of anal fin located middle of spinous part of dorsal fin. Origin of pectoral fin located behind the origin of pelvic fins. Pelvic fin spines short. Caudal fin not connected to dorsal or anal fins. Caudal fin and pectoral fins rounded. Lateral line short, single row with three pores, and canal continuous from posterior end of posttemporal pores. Posterior end of lateral line canal reaching to below 3rd~4th dorsal fin spines (Fig. 3B). Cephalic sensory pores

Fig. 2. *Neoclinus nudiceps*, MABIK PI00045900, 47.3 mm SL, Hongdo Island, southwestern Korea.

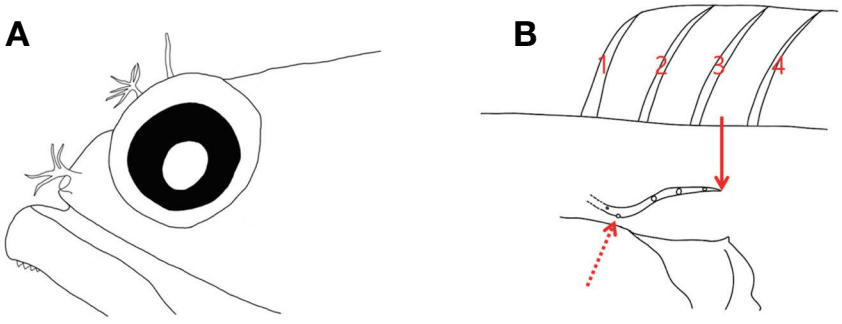

Fig. 3. Head and lateral line of *Neoclinus nudiceps*, MABIK PI00045900, Hongdo Island, southwestern Korea. (A) cirri of head; (B) lateral line, numbers indicate the sequence of the dorsal fin spines, the lined arrow mark the end of the lateral line, the dotted arrow mark the last posttemporal pore.

Table 1. Morphometric measurement of the *Neoclinus nudiceps* in comparison with previous record

	Present study	Murase *et al*. (2010)
Number of specimens	1	7
Standard length (mm)	47.3	40.1~46.6
Count		
Dorsal fin rays	XXIII, 16	XXI~XXIII, 17~18
Anal fin rays	II, 26	II, 26~28
Pectoral fin rays	13	13
Pelvic fin rays	I, 3	I, 3
Vertebrae	45	45~46
Measurements (% of standard length)		
Head length	24.5	22.6~24.3
Head depth	11.6	12.9~14.5
Snout length	5.3	4.3~5.4
Eye diameter	4.7	4.9~6.2
Interorbital width	2.3	1.1~2.4
Upper jaw length	12.1	12.0~13.4
Body depth	12.5	13.0~15.4
Predorsal length	17.5	16.1~18.5
Preanal length	45.2	41.4~44.0
Caudal peduncle length	6.6	4.3~5.2
Caudal peduncle depth	6.6	6.2~7.1
Dorsal fin base length	77.8	75.9~85.1
Anal fin base length	55.8	50.7~56.8
Pectoral fin length	15.2	12.9~14.7
Pelvic fin length	12.1	9.6~10.5
1st dorsal fin spine length	7.6	3.9~6.3
Longest dorsal fin spine length	8.2	7.6~9.7
Last dorsal fin spine length	7.4	6.3~8.7
1st dorsal fin soft-ray length	9.3	8.8~11.1
1st anal fin spine length	4.2	3.3~4.7
1st anal fin soft ray length	8.2	6.5~7.7
Measurements (% of eye diameter)		
Anterior supraorbital cirrus length	31.8	20.0~47.8
Posterior supraorbital cirrus length	22.7	12.0~43.5
Nasal cirrus length	40.9	40.0~81.8
Measurements (% of head length)		
Head depth	47.4	56.6~60.6

well developed on head. Scales scattered on center of lateral body, but head naked.

Coloration. When fresh, body uniformly reddish pink. Head with reddish reticulated pattern on jaws and cheek. Several small whitish spots on trunk running horizontally to caudal peduncle. All fin membranes semitransparent. Anterior dorsal and anal fin spines with reddish pink spots. Single darkish spot on 2nd membrane of dorsal fin. Basal parts of dorsal and anal fin membranes reddish pink. After preservation, head and body pale yellowish brown. All fin membranes transparent.

Distribution. Hongdo Island (Yellow Sea) in Korea (present study), Japan (Murase *et al*., 2010).

Remarks. In this study, a single specimen of chaenopsid fish was collected from off Hongdo Island, which was elongated and compressed body, and supraorbital and nasal cirri were variously present. It was identified as a *Neoclinus* species by its overall body morphological characters (Williams, 2002; Nelson *et al*., 2016). The meristic characters matched the original description well, with the

lateral line canal comprising a single row of three pores. Posterior end of lateral line reached to below 3rd~4th spines of the dorsal fin; two supraorbital cirri; anterior and posterior cirri with six tips and one tip, respectively (Murase *et al*., 2010; Aizawa and Doiuchi, 2013). According to the original description of *N. nudiceps*, the species has 17~18 dorsal fin rays, 13.0~15.4% body depth of SL and 56.6~60.6% head depth of head length, whereas the present specimen showed slight discordance (Table 1). However, these differences are assumed to be intraspecific variations. The Korean specimen was also consistent with the original description in its main features, with a short lateral line, correct number of cirri, other diagnostic characters (Murase *et al*., 2010; Aizawa and Doiuchi, 2013).

The morphology of *N. nudiceps* is extremely similar to that of *Neoclinus monogrammus* Murase, Aizawa and Sunobe, 2010, but distinctly different from in the number of its lateral line pores (3~5 in *N. nudiceps* vs. 9~15 in *N. monogrammus*), the extent of the lateral line (below 3rd~4th spines of the dorsal fin vs. below the 6th~9th spines, respectively), and the number of supraorbital cirrus tips (anterior cirri with 2~6 tips, posterior cirri with 1~2 tips vs. anterior cirri with 10~28 tips, posterior cirri with 3~14 tips, respectively) (Murase *et al*., 2010; Aizawa and Doiuchi, 2013). Also, three species have been reported in Korea (Kim and Kang, 1991; Myoung *et al*., 2021a, 2021b) but differ from *N. nudiceps* in the number of supraorbital cirri: three pairs in *N. bryope* and *N. chihiroe*; seven pairs in *N. lacunicola*. Therefore, this study documents the first discover of *N. nudiceps* in Korean waters and suggests the new Korean name of "Jjalb-eun-teol-bi-neul-be-do-la-chi" for the species.

Members of the family Chaenopsidae usually live in shallow rocky areas, especially in rock crevices, empty worm tubes, vacanted gastropod shells, and discarded bottles where they can hide (Stephens and Springer, 1971; McCleneghan and Ames, 1976; Fukao and Okazaki, 1987; Fukao, 1990). This characteristic of hiding, in small spaces restricts their mobility, and their distribution ranges are consequently narrow (Hongjamrassilp *et al*., 2020). In Japan, which is not far from Korea, eight species of chaenopsid fishes have been reported so far (Aizawa and Doiuchi, 2013), but only four species, including *N. nudiceps*, have been reported in Korea. Therefore, the number of species is expected to increase if various methods are undertaken in the future to collect chaenopsid fishes off the coast of Korea.

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대한민국 남서해 홍도에서 *Neoclinus nudiceps* (농어목: 비늘베도라치과)의 첫 기록

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요 약 : 농어목 비늘베도라치과에 속하는 *Neoclinus nudiceps* 1개체가 대한민국 서해의 홍도에서 2012년 6월 13일에 채집되었다. 본 종은 측선이 등지느러미 3~4번째 등지느러미 가시 사이에 이르며, 두부에는 2쌍의 피부돌기가 1열로 있고, 앞쪽 피부돌기의 끝부분은 6개, 뒤쪽 피부돌기의 끝부분은 1개인 특징이 있다. *N. monogrammus*와 형태적으로 비슷하지만 측선의 길이에서 차이를 보인다(*N. nudiceps*는 3~4번째 등지느러미 가시아래까지 vs. *N. monogrammus*는 6~9번째 등지느러미 가시아래까지). 본 연구는 우리나라 해역에서 *N. nudiceps*를 처음으로 기록하고 있으며, 새로운 국명으로 "짧은털비늘베도라치"를 제안한다.

찾아보기 낱말 : 짧은털비늘베도라치, 비늘베도라치과, 첫 기록, 홍도, 대한민국