

Record of a Juvenile Eyeshade Sculfin, *Nautichthys pribilovius* from Goseong, Korea

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ABSTRACT Based on a single juvenile specimen (32.3 mm SL) collected from the northeastern coastal waters of Goseong, Gangwon-do, *Nautichthys pribilovius* was described as the first juvenile record from Korea. This juvenile fish is characterized by having entire body covered with close-set villous prickles, a blunt triangular ridge above orbit with a palmate cirrus, two blunt occipital projections, preopercle with four blunt spines, and a blackish bar below eye reaching lower margin of preopercle. Some morphometric characters related with growth were also discussed.

Key words : *Nautichthys pribilovius*, new juvenile record, identification, Goseong

INTRODUCTION

During a survey on the biodiversity of the East Sea conducted by the National Institute of Biological Resources (NIBR), Korea in 2011, staffs of NIBR captured a small fish at about 20 m depth of the northeastern coastal waters of Goseong, Gangwon-do, Korea using SCUBA gears and a plastic bag. The small fish was identified initially as a member of the family Hemitriptidae by having a body densely covered with small prickles and anal fin without spine, and subsequently identified as a juvenile of *Nautichthys pribilovius* (Jordan and Gilbert in Jordan and Evermann, 1898) which was reported recently from the East Sea, Korea by Lee *et al.* (2013). Up to date, the species has been known from the North Pacific (Bering Sea, Okhotsk Sea, and northern sea of Japan) and adjacent Arctic (Yabe *et al.*, 1983; Balanov *et al.*, 2006). No ontogenetic information on the species, however, has been known except only Epur and Balanov (2009) reported finding of five larvae and juveniles (12.5 ~ 54.0 mm SL) of *N. pribilovius* from the Peter the Great Bay, Russia.

In this study, juvenile characteristics of *N. pribilovius* was described based on a single juvenile specimen collected from the coastal waters of Goseong, northern East Sea of Korea. Counts and measurements follow those of Hubbs and Lagler (1964) except last two rays as counted as two. Voucher specimen is deposited in the National

Institute of Biological Resources (NIBR-P), Korea.

Nautichthys pribilovius (Jordan and Gilbert, 1898)

(Korean name: Geo-eun-tti-nun-hoet-dae)

(Figs. 1, 2; Table 1)

Nauticus pribilovius Jordan and Gilbert in Jordan and Evermann, 1898: 2019 (type locality: off St. George Island, Pribilof Islands, Bering Sea).

Nautichthys pribilovius: Yabe *et al.*, 1983 (Hokkaido, Japan); Amoaka *et al.*, 1989: 265 (list, Hokkaido, Japan); Mecklenburg, 2003: 4 (North Pacific and adjacent Arctic); Balanov *et al.*, 2006: 257 (Peter the Great Bay); Epur and Balanov, 2009: 441 (Peter the Great Bay, Japan Sea); Amaoka *et al.*, 2011: 237 (Hokkaido, Japan); Lee *et al.*, 2013: 208 (Sokcho, Korea).

Material examined. NIBR-P20677, 32.3 mm in standard length (SL), juvenile, off Oho-ri, Jukwang-myeon, Goseong-gun, Gangwon-do, Korea, 20 m depth, 26 July 2011, collected by T.S. Park and Y. Eun, SCUBA gears with a plastic bag.

Description. Dorsal fin rays VIII, 23; anal fin rays 16; pectoral fin rays 14; pelvic fin rays I, 3, spine minute; caudal fin 11+9 (middle 5 clearly branched); branchiostegal rays 6; lateral line pores 40; vertebrae 37. Proportional measurements % of SL: head length 36.5; head width 30.0; snout length 11.5; upper jaw length 12.7; gape width 19.5; orbital diameter 11.1; interorbital width 7.7; body depth 27.9; body width 26.0; caudal peduncle depth 9.6; caudal peduncle length 16.4; predorsal length

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Fig. 1. Juvenile of *Nautichthys pribilovius*, NIBR-P20677 (32.3 mm SL) collected from off Goseong, Gangwon-do, Korea.

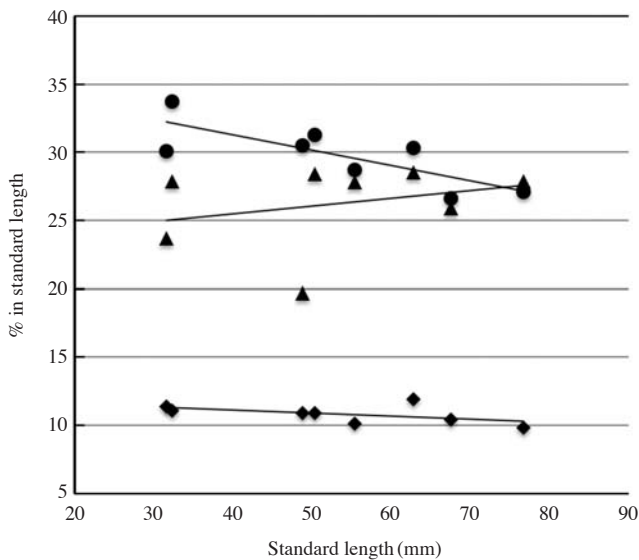


Fig. 2. Relationships of percentages in standard length/predorsal length (●), / body depth (▲), and / orbital diameter (◆) of *Nautichthys pribilovius* examined in this study.

33.7; preanal length 53.9; prepectoral length 34.1; pre-pelvic length 33.1; pectoral fin length 35.6; pelvic fin length 22.0; caudal fin length 21.7; length of second spine of first dorsal fin 19.8; length of first anal ray 13.6; length of second anal ray 9.3.

Body rather elongate, compressed and caudal peduncle rather low. Head short, slightly compressed with a orbit projecting well above dorsal profile. Snout rather pointed and anterior propile steep; a nasal spine prominent. Eye rather large with a blunt triangular ridge above orbit and a well-developed palmate cirrus. Interorbital space narrow and deeply concave. Nape rather depressed with

two projections dorsally on occiput. Mouth nearly horizontal, lower jaw included; a short simple cirrus at end of maxilla; both jaws with a villiform teeth, in five to six irregular rows; vomer and palatines with teeth. Preopercle with four blunt short spines; upper one longer and more spine-like. A short branched opercular cirrus, shorter than pupil, present. Gill membranes broadly united to isthmus. Head and body entirely covered with close-set villous prickles. Lateral line conspicuous, plates with short spines directed backward. Dorsal fins separate, first one not notched and comparatively high with narrow base; second dorsal and anal fins low. Pectoral fin large and its posterior margin pointed. Pelvic fin thread-like. Caudal fin slightly round.

Color when fresh. Head brownish yellow with a prominent black band through eye, reaching lower margin of preopercle. A palmate cirrus on eye reddish brown. Upper and lower lips with five and three brownish markings, respectively. Body light yellowish with three blackish blotches along base of dorsal fin, anterior one darker, posterior one nearly connected to last blotch on anal base via a same-sized blotch on lateral midline; five blackish dots including faint small ones along base of anal fin. Eight dark spots along lateral line, a conspicuous pink blotch, its size larger than pupil, between first and second spots. All fins except caudal fin yellowish. Caudal fin transparent with two backish vertical bars, anterior one at near caudal base and posterior one at two thirds of caudal fin, and its uppermost and lowermost rays small dotted.

Color after preservation. Nearly same as color when fresh except faded yellowish or pinkish colors out of body. First dorsal fin and a bar below eye intensively darkish. Pectoral fin darkish marginally.

Distribution. Known from the North Pacific and its

Table 1. Comparison of major meristic characters of *Nautichthys pribilovius*

Locality	Present study			Jordan and Evermann (1898)	Epur and Balanov (2009)
	East Sea Korea		Hokkaido Japan	Bristol Bay North America	Peter the Great Bay Russia
Standard length (mm)	32.3 (n=1)	63.5 (n=1)	31.6~67.6 (n=6)	–	15.2~65.0 (n=5)
Dorsal fin rays	VIII, 23	VIII, 23	VII~IX, 22~24	VIII, 23	VII~IX, 22~25
Anal fin rays	16	16*	14~17	15	17~20
Pectoral fin rays	14	14*	14~15	15	15~17
Pelvic fin rays	I, 3	I, 3	I, 3	I, 3	–
Branched caudal fin rays	5	8	4~9	–	–
Lateral line scales	40	39	38~38	39	–
Vertebrae	37	38	–	–	37~38

*, re-examined of Lee *et al.* (2013).

adjacent Arctic: Chukchi and Bering seas to eastern Gulf of Alaska and to Peter the Great Bay (Balanov *et al.*, 2006; Epur and Balanov, 2009), Okhotsk, around Hokkaido, Japan (Yabe *et al.*, 1983; Amaoka *et al.*, 1989, 2011), and northern coastal waters (off Goseong and Sokcho) of the East Sea, Korea (Lee *et al.*, 2013; present study).

Identification. The present specimen collected from the northern coastal waters of the East Sea, Korea was readily identified as a member of the genus *Nautichthys* (Hemipteryidae) by having all diagnostic characters of the genus, especially several blunt protuberances on head, depressed nape with first dorsal base abruptly raised, and four blunt spines on preopercle. The genus comprising three valid species of *N. oculo-fasciatus* (Girard, 1858), *N. robustus* Peden, 1970, and *N. pribilovius* (Jordan and Gilbert in Jordan and Evermann, 1898). Among them, the present specimen collected from Korea is well accordance not only with the original description of *N. pribilovius* but also with the previous works of the species including comparative materials collected from Japan and Bering Sea (Table 1) with some exception of body proportion compared to Lee *et al.* (2013) Therefore, this Korean specimens of *Nautichthys* was finally identified as a juvenile of *N. pribilovius*.

According to Lee *et al.* (2013: 209), there seems to be some geographical variation in body shape of *N. pribilovius*, *i.e.*, orbit diameter, predorsal length, and body depth. However, examination of those characters in the present study showed that it was infraspecific variation with growth rather than geographical variation: predorsal length becomes longer, depth of body tends to be lower, and eye is inclined to become slightly larger with growth (Fig. 2). In addition, although the black bar below eye is one of the most prominent color characteristics in *N. pribilovius*, it was not confirmed the presence of conspicuous black bar on both gill membrans and isthmus in the juvenile specimen collected from Goseong, Korea, there is a broad V-shape black band on both gill membrane and isthmus in adult fresh specimen by Lee *et al.*

(2013, fig. 1) meaning color variation of the species is also showed with growth.

Comparative materials. *Nautichthys pribilovius* (seven specimens): HUMZ 94111, 48.8 mm SL, off Yobetsu, Shakotan Peninsula, Hokkaido, Japan, 22 January 1982; HUMZ 133493, 55.4 mm SL, Shiretoko Peninsula, Hokkaido, Japan, 20 May 1995; HUMZ 200245, 31.6 mm SL, Chashikotsu-saki, Shiretoko Peninsula, Hokkaido, Japan, 28 August, 2007; HUMZ 200257, 67.6 mm SL, Sashirui-hama, Shiretoko Peninsula, Hokkaido, Japan, 28 August, 2007; HUMZ 203366, 50.4 mm SL, Chukchi Sea, 11 July 2008; HUMZ 203380, 76.7 mm SL, Chukchi Sea, 13 July 2008; NIBR-P20388, 63.5 mm SL, Sokcho-si, Gangwon-do, Korea, 11 March 2013.

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강원도 고성 연안에서 출현한 검은띠눈횃대 *Nautichthys pribilovius*의 유어

김병직

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요 약 : 강원도 고성 연안에서 채집된 삼세기과 검은띠눈횃대 유어 1개체 (32.3 mm SL)를 국내 최초 유어 출현 기록으로 기재·보고한다. 본 종은 몸 전체가 미소한 융모형 비늘로 덮여 있는 점, 안와 상부에 삼각형의 융기연과 잘 발달된 피변이 있는 점, 후두부에 2개의 끝이 무딘 흑 모양의 돌기가 있는 점, 전새개골에 4개의 뿔뿔한 가시가 있는 점, 그리고 눈의 하방에 전새개골의 하단까지 도달하는 흑색 띠가 있는 점 등이 특징이며, 일부 계층형질과 채색에서는 성장에 따른 변이가 관찰되었다.

찾아보기 낱말 : *Nautichthys pribilovius*, 유어, 기재, 고성