

First Record of the Eyeshade Sculpin *Nautichthys pribilovius* (Hemitripteridae: Pisces) from the East Sea, Korea

Soo Jeong Lee¹, Yeon-Soo Jung², Seon-Man Kweon³ and Jin-Koo Kim^{1*}

¹Department of Marine Biology, Pukyong National University, Busan 608-737, Korea

²Hye-In's Live Fish Center, Sokcho 217-100, Korea

³National Institute of Biological Resources, Incheon 404-170, Korea

Abstract

A new record of the eyeshade sculpin *Nautichthys pribilovius* is described on the basis of a single specimen collected from the East Sea, Korea. The species has 23 second dorsal fin rays, rounded spines on the occiput, a black band through the eye and across the cheek, branched caudal fin rays and a branchiostegal membrane attached to the isthmus. The new Korean name “Gum-eun-tti-nun-hoet-dae-sok” is proposed for the genus *Nautichthys*, and “Gum-eun-tti-nun-hoet-dae” is proposed for the species *N. pribilovius*.

Key words: *Nautichthys pribilovius*, First record, Hemitripteridae, East Sea, Korea.

Introduction

The Hemitripteridae, of the order Scorpaeniformes, consists of eight species and three genera worldwide (*Hemitripterus*, *Blepsia*, *Nautichthys*) (Nelson, 2006), four species and three genera in Japan (Nakabo, 2002), and three species and two genera in Korea (Kim et al., 2005; Kim, 2011). Members of the family, which is characterized by having minute spines covering the body, no basihyal, and no anal fin spines (Nelson, 2006), inhabit shallow waters on continental shelves in the northwestern Atlantic and North Pacific oceans (Kim et al., 2005; Mecklenburg et al., 2011). Among the Hemitripteridae, the genus *Nautichthys* has been poorly studied, with the exception of Yabe (1985), who stated that this genus is clearly distinguished from other two genera in the family by having branched caudal fin rays and a branchiostegal membrane attached to the isthmus. Worldwide, the genus *Nautichthys* consists of three species: *N. pribilovius* (Jordan and Gilbert, 1898), *N. oculofasciatus* (Girard, 1858), and *N. robustus* (Peden, 1970), which are clearly distinguished by the number of dorsal fin rays.

During a survey of the fish fauna in the East Sea, a single specimen belonging to the genus *Nautichthys* was collected. The description of the specimen collected and its identification as *N. pribilovius* are in good agreement with previous descriptions of the species (Peden, 1970; Yebe et al., 1983; Jordan and Evermann, 1898; Nakabo, 2002). This species has not been reported previously from Korea. In this study, we describe its morphological characteristics and provide a new Korean name for the species *Nautichthys pribilovius*.

Methods and Materials

In March 2013, a single specimen of *Nautichthys pribilovius* was collected between 35-50 m depth by a set net in Sokcho, Korea. The specimen was preserved in 10% formalin and then in 70% ethanol. Counts and measurements were performed according to Hubbs and Lagler (1964). The specimen is catalogued in the National Institute of Biological Resources

Open Access <http://dx.doi.org/10.5657/FAS.2013.0207>

This is an Open Access article distributed under the terms of the Creative Commons Attribution Non-Commercial License (<http://creativecommons.org/licenses/by-nc/3.0/>) which permits unrestricted non-commercial use, distribution, and reproduction in any medium, provided the original work is properly cited.
pISSN: 2234-1749 eISSN: 2234-1757

Received 14 June 2013; Accepted 3 July 2013

*Corresponding Author

E-mail: taengko@hanmail.net



Fig. 1. *Nautichthys pribilovius* (Jordan and Gilbert, 1898), NIBR-0000020388, 63.5 mm in standard length.

(NIBR), Korea.

Results and Discussion

Nautichthys Girard, 1858

(new Korean genus name: Geom-eun-tti-nun-hoet-dae-sok)

Nautichthys Girard, 1858: 74 (type species: *Blepsias oculo-fasciatus* Girard, 1858).

Upper surface of head spinous. Mouth moderate; the jaws subequal; teeth on jaws, vomer and palatines. Dorsal fins contiguous at their base; first one shorter than the second. Three soft rays on pelvic fin. Caudal fin rays branched; caudal fin

rounded. Body covered with minute spines. Diagonal black band present through the eye and across cheek. Branchiostegal membranes attached to the isthmus (Girard, 1858; Eschmeyer and Herald, 1983; Yabe, 1985).

Nautichthys pribilovius (Jordan and Gilbert, 1898)

(new Korean name: Geom-eun-tti-nun-hoet-dae) (Table 1, Fig. 1)

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

Nautichthys pribilovius: Peden, 1970: 3; Eschmeyer and Herald, 1983: 177; Yabe et al., 1983: 461; Yabe, 1985: 4; Nakabo in Nakabo, 2002: 627; Mecklenburg et al., 2011: 125; Knope, 2013: 343.

Table 1. Comparison of counts and measurements of *Nautichthys pribilovius*

Characters	Present study	Jordan and Evermann (1898)	Yabe et al. (1983)
Standard length (mm)	63.5 (n = 1)	60.0 (n = 1)	17.0-67.8 (n = 10)
Dorsal fin rays	VIII-23	VIII-23	VIII-IX-22-26
Anal fin rays	15	15	16-19
Pectoral fin rays	16	15	14-16
Pelvic fin rays	1,3	-	1,3
Lateral line pores	40	39	37-40
Vertebrae	38	-	37-38
Standard length (%)			
Head length	33.5	33.3	30.3-35.7
Body depth	29.3	27.8	21.7-27.0
Predorsal length	21.6	-	28.6-32.3
Preanal length	53.9	-	43.5-55.6
Caudal peduncle length	11.7	-	11.2-15.9
Caudal peduncle depth	8.8	-	7.9-9.5
Head length (%)			
Snout length	19.7	-	20.4-31.3
Orbit length	40.3	30.8	25.0-33.3
Orbit length (%)			
Interorbital width	33.3	-	41.7

Material examined

NIBR-0000020388, one specimen, 63.5 mm in standard length (SL), Sokcho-si, Gangwon-do, Korea, 11 Mar, 2013, collected by Yeon-Soo Jung, 35-50 m depth, set net.

Description

Counts and measurements are given in Table 1. Dorsal fin rays, III-23; anal fin rays, 15; pectoral fin rays, 16; pelvic fin rays, I, 3. Body proportions, expressed as percentages of SL: head length, 33.5; body depth, 29.3; predorsal length, 21.6; preanal length, 53.9; caudal peduncle length, 11.7; caudal peduncle depth, 8.8.

Body deep and compressed; eye large; interorbital space narrow and deeply concave; interorbital length ~30% of eye diameter; upper margin of orbit protruding well above dorsal profile of head as a blunt triangular ridge; dorsal origin elevated; branchiostegal membranes attached to the isthmus; the gill slit extending a little below the lower edge of the pectoral fin; nasal spine present; large multiple filament on upper part of each eye; slender filament present on nasal base, lower margin of suborbital and posterior end of maxillary; posterior end of maxillary reaching to the middle of the eye; teeth on jaws, vomer and palatines; four preopercular spines, short and blunt;

the lateral line noticeable, lateral line plates with short spines directed backward; dorsal fins separate, the first dorsal spine highest; the posterior end of pectoral fin reaching to the ninth soft ray of the second dorsal fin and passing the origin of anal fin; minute spines covering the body, except for the pectoral axilla, anterior region of anal origin, jaws, and ventral face of head; caudal fin rays branched.

Coloration

When fresh, head and body yellowish brown, ventral body white, three dark bands present below the soft dorsal fin rays; black band present through the eye and across cheek, extending onto branchiostegal membranes and isthmus; first dorsal fin dusky, first dorsal spine very dark; second dorsal, anal, and pectoral fins dotted; caudal fin faint yellowish brown, with a line across base of caudal fin and a broader line across caudal fin towards its tip. After alcohol fixation, head and body pale brown. Three dark bands present below dorsal soft rays; two ambiguous dark bands present below dorsal spines; noticeable dark band present through the eye and across cheek; first dorsal fin dark, and other fins dotted, except for pelvic fin; caudal fin with faint dark lines across at its base and posterior.

Distribution

Known from the Bering Sea, northern Okhotsk Sea, west coast of Sakhalin, the northern East Sea, Arctic Ocean (Neylov, 1976; Mecklenburg et al., 2011) and the East Sea, Korea (the present study).

Remarks

Based on the meristic characters (Table 1), our single specimen clearly matches *N. pribilovius*, by comparison with the original description (Jordan and Evermann, 1898) and other comparative data (Peden, 1970; Yabe et al., 1983). However, we found some differences between our specimen and *N. pribilovius* in term of morphometric characteristics, such as body depth, predorsal length and orbit length (see Table 1). These differences suggest that geographic variation may be present within the species, especially in relation to body shape. A more precise delineation of the population and species characteristics will require detailed morphological and molecular studies of geographic populations of *N. pribilovius*. According to Peden (1970), *N. pribilovius* and *N. robustus* are well distinguished from *N. oculoasciatus* by having fewer second dorsal fin rays, and *N. pribilovius* is distinguished from *N. robustus* by having rounded spines on the occiput and a larger number of second dorsal fin rays (22-26 in *N. pribilovius* vs. 19-21 in *N. robustus*). The present specimen has rounded spines on the occiput and 23 second dorsal fin rays. We propose the new Korean name 'Geom-eun-tti-nun-hoet-dae-sok' for the genus *Nautichthys*, and 'Geom-eun-tti-nun-hoet-dae' for the species *N. pribilovius*.

Acknowledgements

This research was supported by the project on survey and excavation of Korean indigenous species of the National Institute of Biological Resources (NIBR) under the Ministry of Environment, Korea.

References

- Eschmeyer WN and Herald ES. 1983. A Field Guide to Pacific Coast Fishes of North America from the Gulf of Alaska to Baja California. Houghton Mifflin Company, Boston, US, pp. 1-336.
- Girard CF. 1858. Fishes. In: General Report upon Zoology of the Severeal Pacific Railroad Routes. Reports of Explorations and Surveys, to Ascertain the Most Practicable and Economical Route for a Railroad from the Mississippi River to the Pacific Ocean. Beverley Tucker, Washington, DC, US, pp. 1-400.
- Hubbs CL and Lagler KF. 1964. Fishes of the Great Lakes Region. University of Michigan Press, Ann Arbor, MI, US.
- Jordan DS and Evermann BW. 1898. The fishes of North and Middle America: a descriptive catalogue of the species of fish-like vertebrates found in the waters of North America, north of the isthmus of Panama. Part II. Bull US Natl Mus 47, 1241-2183. <http://dx.doi.org/10.5962/bhl.title.46755>.
- Kim BJ. 2011. Fish species of Korea. In: National List of Species of Korea: Vertebrates. National Institution of Biological Resources, ed. National Institution of Biological Resources, Incheon, KR, pp. 86-87.
- Kim IS, Choi Y, Lee CL, Lee YJ, Kim BJ and Kim JH. 2005. Illustrated Book of Korean Fishes. KyoHak Publisher, Seoul, KR.
- Knope ML. 2013. Phylogenetics of the marine sculpins (Teleostei: Cottidae) of the North American Pacific coast. Mol Phylogenet Evol 66, 341-349. <http://dx.doi.org/10.1016/j.ympev.2012.10.008>.
- Mecklenburg CW, Møller PR and Steinke D. 2011. Biodiversity of arctic marine fishes: taxonomy and zoogeography. Mar Biodivers 41, 109-140. <http://dx.doi.org/10.1007/s12526-010-0070-z>.
- Nakabo T. 2002. Fishes of Japan with Pictorial Keys to the Species. English ed. Tokai University Press, Tokyo, Japan.
- Nelson JS. 2006. Fishes of the World. 4th ed. John Wiley and Sons, Edmonton, Canada.
- Neylov AV. 1976. Review of the genus *Porocottus* Gill and its relative genera (Cottidae, Myoxocephalinae). In: Zoogeography and Systematics of Fishes. Korovina VM, ed. Akad Nauk SSSR Zool Inst, Leningrad, RU, pp.78-112.
- Peden AE. 1970. A new cottid fish, *Nautichthys robustus*, from Alaska and British Columbia. Publ Biol Oceanogr 2, 1-10.
- Yabe M. 1985. Comparative osteology and myology of the superfamily Cottoidea (Pisces: Scorpaeniformes), and its phylogenetic classification. Mem Fac Fish Hokkaido Univ 32, 1-130.
- Yabe M, Maruyama S and Amaoka K. 1983. First records of five cottid fishes and a psychrolutid fish from Japan. Jpn J Ichthyol 29, 456-464.