KOREAN JOURNAL OF ICHTHYOLOGY, Vol. 28, No. 2, 121-124, June 2016
ISSN: 1225-8598 (Print), 2288-3371 (Online)

Received: May 19, 2016
Revised: June 23, 2016
Accepted: June 26, 2016

New Record of *Ariosoma meeki* (Anguilliformes: Congridae) from Korea

*By Sooeun Yeo and Jin-Koo Kim**

Department of Marine Biology, Pukyong National University, Yongso-ro 45, Nam-gu, Busan 48513, Korea

ABSTRACT A single specimen of *Ariosoma meeki*, belonging to the family Congridae, was collected for the first time from Jinhae-gu, Changwon-si, Gyeongsangnam-do, Korea, on June 10, 2015. *Ariosoma meeki* is characterized by an absence of scales on its whole body, dorsal and anal fin connected to the caudal fin, blackish margins of the dorsal and anal fin, posterior nostrils not covered with a dermal flap, 60 preanal lateral-line pores, 15 pectoral fin rays, no cephalic sensory pore between the interorbital region and dorsal fin origin, and two dark brown dots behind the eyes. We described it as the new Korean record, and proposed the Korean name "nun-te-bung-jang-eo" for this species *A. meeki*.

Key words: New record, *Ariosoma meeki*, Congridae, Korea

INTRODUCTION

The family Congridae of the order Anguilliformes is widely distributed throughout the world, with 194 species in 30 genera recognized worldwide (Nelson, 2016). Ten species in seven genera occur in Korea (NIBR, 2011) and 25 species in 13 genera in Japan (Hatooka, 2013). The family Congridae is characterized by a lack of scales on the whole body (Masuda, 1984), a well-developed branchial aperture, the presence of pectoral and caudal fin, anterior nostrils located at the tip of the snout, and posterior nostrils located on the upper lip (Asano, 1962). Within the family, three species of the genus *Ariosoma* Swainson, 1838 occur in Korea (*A. anagoides*, *A. major*, *A. shiroanago*) (Kim *et al*., 2005; NIBR, 2011), five species in Taiwan (Ho, 2015), and four species in Japan (Hatooka, 2013). The genus *Ariosoma* is characterized by a pointed snout, nostrils forming an elevated tubercle, the origin of the pectoral fin located before or just below the origin of the dorsal fin, the dorsal and anal fin connected to the caudal fin, a brownish body, and a reddish pectoral fin (Swainson, 1838). We describe the morphological characteristics of *Ariosoma meeki* collected from Korea and suggest its Korean name.

*Corresponding author: Jin-Koo Kim Tel: 82-51-629-5927, Fax: 82-51-629-5931, E-mail: taengko@hanmail.net

MATERIALS AND METHODS

On June 10, 2015, a single specimen of *A. meeki* (Jordan and Snyder, 1900) was collected for the first time in Jinhae-gu, Changwon-si, Gyeongsangnam-do, Korea. The morphological characteristics of *A. meeki* are described based on this specimen. Its identification was according to Toshio (2002) and Hatooka (2013). Counts and measurements were made with digital Vernier calipers according to Smith (2003), and rounded to 0.1 mm. The fin rays and vertebrae were counted with radiography (Sehwa Medical System SMS-CM, Korea) and the specimen was deposited in the Ichthyology Laboratory Collection, Pukyong National University (PKU).

***Ariosoma meeki* (Jordan and Snyder, 1900)**

(Fig. 1)

(Korean name: nun-te-bung-jang-eo)

Congrellus meeki Jordan and Snyder, 1900: 347 (type locality: Tokyo Bay, Japan).

Ariosoma meeki: Yamada *et al*., 2009: 78 (East China Sea); Hatooka, 2013: 279 (Japan); Shinohara *et al*., 2014: 236 (Japan).

Materials. PKU 12278, one specimen, 485.2 mm in total length (TL), Jinhae-gu, Changwon-si, Gyeongsangnam-do, Korea, 10 June 2015, collected by Jin-Koo Kim,

Fig. 1. The photograph (A) and illustration (B) of *Ariosoma meeki*, PKU 12278, 485.2 mm TL. Scale bar: 30 mm. Arrows indicated dark brown dots on upper and lower part just behind eye.

Table 1. Comparison of the morphological characters of *Ariosoma meeki*

	Present study	Jordan & Snyder (1900)	Toshio (2002)	Hatooka (2013)
Total length (TL, mm)	485.2	530.0	382.6	–
Counts				
Pectoral fin rays	15	–	15	12~16
Preanal lateral line pores	60	–	60	58~64
Vertebrae	156	–	153	149~159
Dorsal + upper caudal fin	222	–	232	–
Anal + lower caudal fin	165	–	159	–
Measurement (% of TL)				
Head length	16.0	15.4	15.8	–
Body depth	7.0	6.2	6.8	–
Body width	5.0	–	5.8	–
Predorsal length	17.2	–	17.6	–
Preanal length	49.3	–	49.0	–
Trunk length	31.5	–	32.3	–
Eye diameter	3.4	–	2.9	–
Interorbital width	3.2	–	2.4	–
Snout length	3.1	3.1	2.9	–
Upper jaw length	5.3	–	4.9	–
Pectoral fin length	5.8	5.5	5.4	–
Snout to anterior nostril	0.8	–	1.0	–
Snout to posterior nostril	2.5	–	2.5	–

fish trap.

Description. Counts and measurements are shown in Table 1.

Body elongated (Fig. 1). Dorsal fin and anal fin clearly connected with caudal fin, pectoral fin present but pelvic fin absent, origin of dorsal fin behind pectoral fin; anus located in front of anal fin and in the middle of the body; 60 preanal lateral-line pores; upper jaw slightly longer than lower jaw; upper and lower lips with well-defined upturned labial flange; tubular anterior nostril located on tip of snout, small and elliptical posterior nostril located in front of eye at mid-eye level; teeth anteriorly arranged in narrow band on maxillary and mandibular; no sensory pores between the interorbital region and dorsal fin origin.

Color. When fresh, dorsal part brown; ventral region whitish; pectoral fin reddish; margins of the dorsal and anal fin blackish, but tip of caudal fin not black; head brown with small dots but not on lips; two dark brown

dots behind the eye. After fixation, body and head overall dark beige; all fins opaque, margins of dorsal and anal fin blackish, tip of caudal fin not black, pectoral fin light brown.

Distribution. Indo-western Pacific: Jin-hae in Korea (present study), Japan (Hatooka, 2013), and Peng-hu Islands in Taiwan (Chen, 2004).

Remarks. The present specimen was identified as belonging to the genus *Ariosoma* Swainson, 1838 by its moderately stout body, its dorsal fin inserted near the level of the pectoral fin base, a preanal length greater than 40% of total length, a small anterior nostril located on the snout, and a posterior nostril located below the mid axis of the eye, with no covering dermal flap (Shen, 1998). It was identified as *A. meeki* by its lack of sensory pores on the head, 15 pectoral fin rays, 60 preanal lateral-line pores, and 156 vertebrae (Toshio, 2002; Hatooka, 2013). The morphological characteristics of this specimen correspond to those of the original description by Jordan and Snyder (1900). However, there are some differences between the present specimen and that described by Toshio (2002); e.g., the eye diameter and interorbital width of the present specimen are slightly larger than those of Toshio's specimen (2002) (Table 1). This may be attributable to ontogenetic changes or geographic variations. To clarify these differences between the Korean and Japanese specimens, further research is required based on more specimens. *Ariosoma meeki* is distinguishable from the congeneric species, *A. anagoides* and *A. major*, by the number of vertebrae (156 in *A. meeki* vs 143 in *A. anagoides* vs 144∼147 in *A. major*) and the number of preanal lateral-line pores (60 in *A. meeki* vs 53∼54 in *A. anagoides* vs 51∼53 in *A. major*) (Masuda, 1984). *Ariosoma meeki* also differs from *A. shiroanago* in the number of pectoral fin rays (15 in *A. meeki* vs 11∼13 in *A. shiroanago*) (Asano, 1958). In this study, we identified our specimen as *A. meeki* based on its morphological characters, and propose the Korean name "nun-te-bung-jang-eo" for this species, following Yamada *et al*. (2009).

ACKNOWLEDGMENTS

The authors are grateful to anonymous reviewers for valuable advice and suggestions for improvement of the paper. This research was supported by the project on Institute of Marine Bio-resources of Marine-Bio Technology Programme under the Ministry of Oceans and Fisheries, Korea.

REFERENCES

Asano, H. 1958. Studies on the conger eels of Japan. I. Description of two new subspecies referable to the genus *Alloconger*. Zool. Meg., 67: 191-196. (in Japanese)

Asano, H. 1962. Studies on the congrid eels of Japan. Bull. Misaki Mar. Biol. Inst. Kyoto Univ., 1: 1-143.

Chen, C. 2004. Checklist of the fishes of Penghu. Special Publication of Fisheries Research Institute, 4: 1-175.

Hatooka, K. 2013. Congridae. In: Nakabo, T. (ed.), Fishes of Japan with pictorial keys to the species. 3rd ed. Tokai Univ. Press, Kanagawa, pp. 279-287. (in Japanese)

Ho, H.-C., D.G. Smith, J.E. McCosker, Y. Hibino, K.-H. Loh, K. Tighe and K.-T. Shao. 2015. Annotated checklist of eels (orders Anguilliformes and Saccopharyngiformes) from Taiwan. Zootaxa, 4060: 140-189.

Jordan, D.S. and J.O. Snyder. 1900. List of fishes collected in Japan by Keinosuke Otaki, and by the United States steamer Albatross, with descriptions of fourteen new species. Proc. US Natl. Mus., 23: 335-380.

Kim, I.S., Y. Choi, C.L. Lee, Y.J. Lee, B.J. Kim and J.H. Kim. 2005. Illustrated book of Korean fishes. Kyohak Publishing Co. Seoul, p. 90. (in Korean)

Masuda, H., K. Amaoka, C. Araga, T. Uyeno and T. Yoshino. 1984. The fishes of the Japanese Archipelago. Tokai Univ. Press., Tokyo, p. 27.

Nelson, J.S. 2016. Fishes of the world. 5th ed. John Wiley and Sons, Inc., Hoboken, NJ, pp. 147-148.

NIBR (National Institute of Biological Resources). 2011. National list of species of Korea. Vertebrate Natl. Inst. Biol. Res., Incheon, p. 22. (in Korean)

Shen, S.C. 1998. A review of congrid eels of the genus *Ariosoma* from Taiwan, with description of a new species. Zool. Stud., 37: 7-12.

Shinohara, G., M. Nakae, Y. Ueda, S. Kojima and K. Matsuura. 2014. Annotated checklist of deep-sea fishes of the Sea of Japan. National Museum of Nature and Science Monographs, 44: 225-291.

Smith, D.G. and E.S. Karmovskaya. 2003. A new genus and two new species of congrid eels (Teleostei: Anguilliformes: Congridae) from the Indo-west Pacific, with a redescription and osteology of *Chiloconger dentatus*. Zootaxa, 343: 1-19.

Swainson, W. 1838. The natural history and classification of fishes, amphibians, and reptiles, or monocardian animals. Longmans, London, 1: 220.

Toshio, K., I. Hisashi, I. Yoshio and N. Kazuhiro. 2002. Records of a conger eel, *Ariosoma meeki* (Anguilliformes) and a berycid, *Beryx decadatylus* (Beryciformes), from the Pacific coast of Aomori prefecture, northern Japan. Bull Fish Sci. Hokkaido Univ., 53: 83-86.

Yamada, U., K. Hoshino, M. Tokimura, S. Deng, Y. Zheng, S. Li, Y.S. Kim and J.K. Kim. 2009. Names and illustrations of fishes from the East China Sea and the Yellow Sea. Overseas Fishery Cooperation Foundation, Tokyo, JP, p. 78.

한국산 붕장어과 어류 1 미기록종, *Ariosoma meeki*

여수은 · 김진구

부경대학교 자원생물학과

요 약 : 뱀장어목 붕장어과에 속하는 *Ariosoma meeki* 1개체(전장 485.2 mm)가 2015년 6월 경상남도 창원시에서 처음으로 채집되었다. 본 종은 몸 전체에 비늘이 없고, 등지느러미와 뒷지느러미가 꼬리지느러미와 연결되어 있으며, 후비공이 피판으로 덮여 있고, 60개의 항문 전 측선공 및 15개의 가슴지느러미 연조를 가지며, 두부에 감각공이 없고, 눈 뒤쪽에 2개의 검은 점을 가진다. 한국에서 새롭게 보고되는 *A. meeki*의 국명으로 “눈테붕장어”를 제안한다.

찾아보기 낱말 : 눈테붕장어, 미기록종, 붕장어과, 한국