

New Record of the Stone Cockscomb *Alectrias alectrolophus* (Perciformes: Stichaeidae) from off Gangneung City, East Sea, Korea

By Hyun-Geun Cho and Seon-Man Kweon*

Animal Resources Division, National Institute of Biological Resources

ABSTRACT A single specimen of the stone cockscomb, *Alectrias alectrolophus* (Pallas, 1811) was collected from off Gangneung-si, East Sea, Korea. The present Korean specimen is characterized in having a dermal crest on dorsal median line of head, LXIII dorsal fin rays, I, 44 anal fin rays, 68 vertebrae, slender and flexible dorsal spines in its anterior parts, and scales on the posterior portion of body, and fused gill membranes forming a free fold across the isthmus. We report *A. alectrolophus* based on a single specimen collected from the Korean water as the first record from Korea.

Key words : *Alectrias alectrolophus*, first record, East Sea

INTRODUCTION

The genus *Alectrias* Jordan and Evermann, 1898, being characterized by having a dermal crest on head, posterior free fold of the gill membrane, and scales in the posterior part of the body has been considered as comprising nominal six species i.e., *A. alectrolophus* (Pallas, 1814), *A. benjamini* (Jordan and Snyder, 1902), *A. cirratus* (Lindberg, 1938), *A. gallinus* (Lindberg, 1938), *A. mutsuensis*, Shiogaki, 1985, *A. markevichi*, Sheiko, 2012, (Sheiko, 2012).

In Korean waters, since the *Alectrias* species, *A. benjamini* was firstly recorded from Shinan-gun, southern Sea, Korea (Kim and Kang, 1991), there have been no report of the others in the genus (Kim *et al.*, 2011). However, in November 2013, a single specimen of *A. alectrolophus*, only known from the coast of the Tartary Strait to East Alaska through the Okhotsk and Bering Seas (Shiogaki, 1985) was caught from the shallow waters at about 15 m depth off Gangneung, East Sea, Korea, using SCUBA gears (Fig. 1). Because this is the first record of the species from Korea, the specimen is described here.

Specimen examined for this paper was deposited in fish collection of National Institute of Biological Resources (NIBR-P), Korean as voucher. Counts and measurements

were generally followed Hubbs and Lagler (2004) and Shiogaki (1985). Counts and terminology of cephalic sensory pores follow Makushok (1958). Vertebrae and vertical fin rays were counted from radiographs.

Alectrias alectrolophus (Pallas, 1814)

(New Korean name: "Ga-neun-byeo-seul-be-do-ra-chi")
(Figs. 2, 3A; Table 1)

Blennius alectrolophus Pallas, 1814: 174, fig. 1 (type locality: Okhotsk Sea, Russia).

Alectrias alectrolophus: Jordan and Evermann, 1898: 2421 (Tareinsky bay, Russia); Makushok, 1958: 96 (Russia); Shiogaki, 1985: 305 (Russia and Japan); Lindberg and Krasnyukova, 1989: 128 (Okhotsk Sea, Russia); Kolpakov and Miroshnik, 2007: 194 (Shtormovaya Bight, Russia); Sheiko, 2012: 308 (Russia and Japan).

Material examined. NIBR-P19805, 52.2 mm in standard length (SL), 6 Nov. 2013, Yeongjin-ri, Yeongok-myeon, Gangneung-si, Gangwon-do, East Sea, Korea.

Comperative materials. *Alectrias benjamini*: NIBR-P3852, 2 specimens, 59.7~68.5 mm SL, 9 Jan. 2008, Sowon-myeon, Taean-gun, Chungcheongnam-do, Korea.

Description. Dorsal fin rays LXIII; anal fin rays I, 44; pectoral fin rays 10; total vertebrae 68.

Body elongate and greatly compressed, its depth 10.0 in SL; body depth at anal origin 11.3. Head small without filament, its length 7.5 in SL. Eye moderate, its diameter 5.8 in HL. Snout short, equal to eye diameter; its

*Corresponding author: Seon-Man Kweon Tel: 82-32-590-7151
Fax: 82-32-590-7250, E-mail: Kweonsm@korea.kr

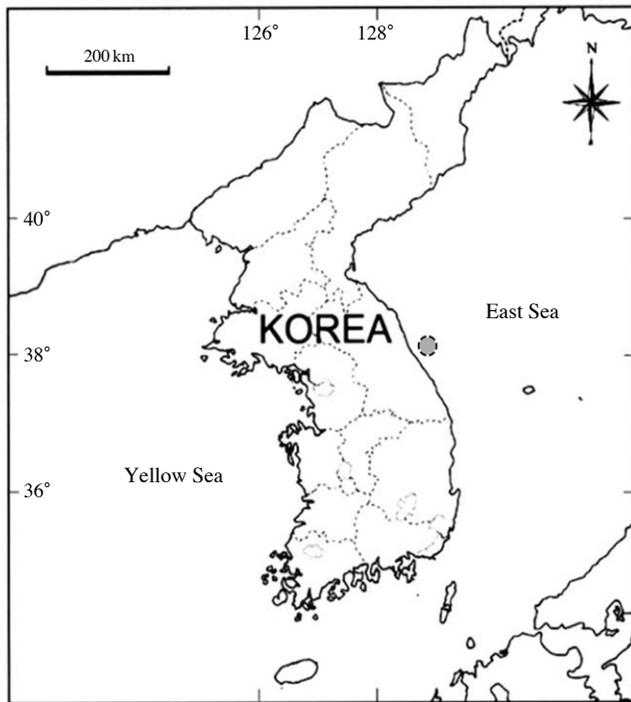


Fig. 1. A map showing sampling site of *A. alectrolophus* from the East Sea of Korea.

length 5.4. Bony interorbital space narrow, its width 1.4 in eye diameter. Nostril paired, anterior nostril short tube; posterior nostril small pore. Mouth oblique; posterior margin of upper jaw nearly reaching posterior end of iris. Lower jaw slightly extend forward upper jaw. Dermal crest on head well developed. Dermal crest base moderate, its length 1.7 in HL. Crest-dorsal origin length short, smaller than eye diameter, 0.7 in eye diameter. Gill membranes fused to each other, forming a free fold across isthmus. Dorsal fin very long and confluent to caudal fin base, but notched. Length of dorsal spine gradually increasing toward posterior and abruptly decreasing at last 4 spine; longest spine length 3.9 in HL. Anterior dorsal spines very slender and flexible to 11th, but strong toward posterior (Fig. 3A). Anterior flexible spines elongated and very weak, buried under skin. Anal fin low, its length gradually increasing toward posterior; longest spine length 4.3 in HL. Origin of anal fin located in front of midpoint of dorsal fin base. End of anal fin confluent to caudal fin base, but notched. A single of anal spine very short and embedded in skin. Anal rays branched. Pectoral fin small, its length 3.0 in HL. Pelvic fin absent. Caudal fin small and rounded, its length 2.4 in HL, 10 branched ray. Caudal peduncle depth low, 3.1 in body depth. Anterior body and head without scales. Posterior body cov-



Fig. 2. *Alectrias alectrolophus*, NIBR-P23336, 52.2 mm SL, from the East Sea, Korea.

Table 1. Comparison of counts and measurements between *Alectrias alectrolophus* and *A. benjamini*

	<i>A. alectrolophus</i>				<i>A. benjamini</i>		
	Present study	Pallas (1814)	Makushok (1958)	Shiogaki (1985)	Present study	Jordan and Snyder (1902)	Shiogaki (1985)
Number of specimens	1	—	—	67	2	—	58
Standard length (mm)	52.2	—	—	71.8 ~ 108.4	59.7 ~ 68.5	—	66.3 ~ 91.0
Dorsal fin rays	LXIII	63	LXI ~ LXIII	LX ~ LXV (mean 62.0)	LVII	LV	LVII ~ LIX (57.8)
Anal fin rays	I, 44	44	I, 44	I, 42 ~ 45 (43.3)	I, 40	I, 41	I, 39 ~ 42 (40.7)
Pectoral fin rays	10	—	—	9 ~ 11 (10.0)	10 ~ 11	—	10 ~ 11 (10.1)
Vretrbrae	19+49=68	—	18 ~ 19+47 ~ 48 =65 ~ 67	17 ~ 19+47 ~ 50 =65 ~ 69 (18.0+48.5=66.5)	16+44 ~ 45 =60 ~ 61	—	15 ~ 17+45 ~ 47 =60 ~ 63 (16.0+45.7=61.7)
End of anal fin	Confluent to caudal fin	—	Confluent to caudal fin	Confluent to caudal fin	Confluent to caudal fin	Confluent to caudal fin	Confluent to caudal fin

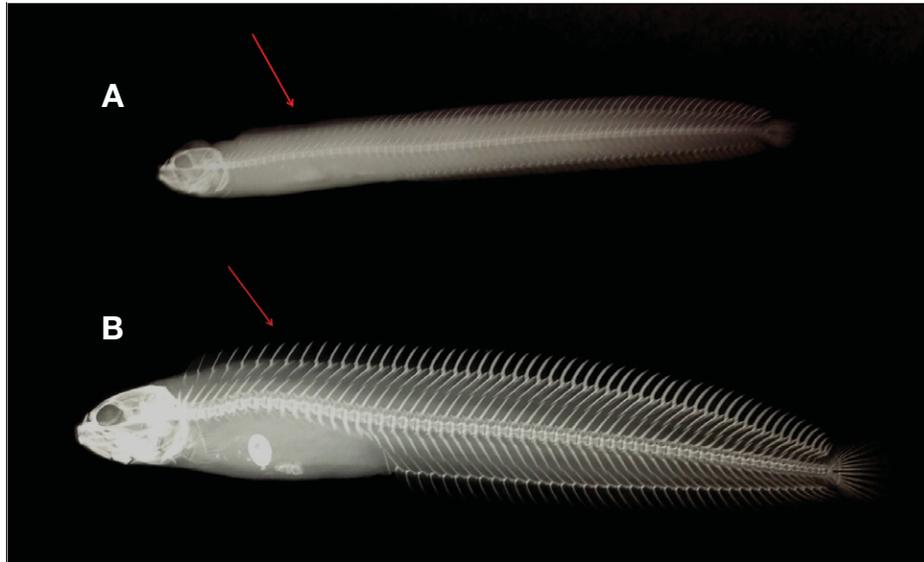


Fig. 3. X-ray photograph of the two *Alectrias* species from Korea, A. *Alectrias alectrolophus*, NIBR-P23336, 52.2 mm SL; B. *A. benjamini*, NIBR-P3852, 59.7 mm SL. Arrows indicate anterior dorsal spines.

ered with very small cycloid scales embedded in the skin and arranged irregularly. Teeth on both jaws, small and conical. Head sensory canals well developed and number of openings in each canal consistent to all known species of *Alectrias* (Shiogaki, 1985). Number of openings in each canal: nasal 2, interorbital 4, infraorbital 6, postorbital 7, occipital 5, preopercular 6 and mandibular 4.

Coloration when fresh. Head and body reddish brown. Small blown dots on head and dermal crest densely scattered. Crossbars on lower jaw and cheek finely arranged. Obvious vertical white stripe descending from lower margin of each eye to lower cheek. Dorsal parts of body light brown with irregular white speckle. Dorsal and anal fin reddish brown with many yellowish white blotches. Pectoral fin translucent color, its Inner parts relatively big white spot. Membrane of caudal fin translucent color, its rays reddish color with two transverse white stripes.

Coloration in ethanol. Head and body uniformly light brown, darker dorsally. Small dark brown dots on head and cheek scattered. Dark brown stripe on cheek. Membrane of all fins with light brown blotches translucent color.

Ecological notes. The stone cockscomb species growing to the maximum 150 mm SL is known that it inhabits pebbles surfaces primarily from 50 to 100 m depth in littoral zone (Kolpakov and Miroshnik, 2007). The present specimen was found between pebbles and stones substrates about 15 m depth in the East Sea's costal area.

Distribution. Known from North Pacific: Bering and Okhotsk Sea (Shantarskie Islands, Yerinei and Tauí bays), southern Kuriles (Kunashir, Shikotan) southeastern Kamchatka, and southern Sakhalin, Primorskii Krai, Shatormovaya Bight (Russia), Hokkaido (Japan) (Hatooka, 2002;

Mecklenburg and Sheiko, 2004; Kolpakov and Miroshnik, 2007), and North eastern coast of Korea (Fig. 1).

Remarks. Morphological characteristics of the present Korean specimen well agree to those of original description as well as the previous records of *Alectrias alectrolophus* given by Makusok (1958) and Shiogaki (1985) (Table 1). Therefore, we identified the specimen collected from Korea as *A. alectrolophus*, and proposed a new Korean name of *A. alectrolophus* as “Ga-neun-byeo-seul-be-do-ra-chi”.

Although the present specimen collected from Gangneung-si, Korea is closely related to the other congener *A. benjamini* in having the gill membranes forming a fold across the isthmus and end of anal fin, confluent to caudal fin, the former is easily distinguished from the latter as having very elongated body, LXIII dorsal fin rays, I, 44 anal fin rays, 68 vertebrae, slender and flexible dorsal spines in its anterior parts (Table 1; Fig. 3A).

A. alectrolophus have been reported to occur from DeKastri Bay to Peter the Great Bay, Russia along the continental coast of the East Sea (Kolpakov and Miroshnik, 2007). However, the findings of the Korean *A. alectrolophus* species extends the distributional range of the species to the southward.

The Korean name “Ga-neun-byeo-seul-be-do-ra-chi” means elongated species of the genus.

ACKNOWLEDGMENTS

We thank to Dr. Eun-Ye and Mr. Tae-Seo Park for collecting the specimen.

This research was supported by a grant from the Na-

tional Institute of Biological Resources, funded by the Ministry of Environment of the Republic of Korea (NIBR No. 201401101).

REFERENCES

- Hatooka, K. 2002. Stichaeidae. In: Nakabo, T. (ed.), Fishes of Japan with pictorial keys to the species, English edition. Tokai University Press, Tokyo, 1046-1054.
- Hubbs, C.L. and K.F. Lagler. 2004. Fishes of the Great Lake region. University of Michigan press, Ann Arbor, 332pp.
- Jordan, D.S. and B.W. Evermann. 1898. The fishes of North and Middle America. Bulletin United States National Museum, 47: v-xxiv+2183-3136.
- Jordan, D.S. and J.O. Snyder. 1902. A review of the blennoid fishes of Japan. Proceedings of the United States National Museum, 25: 44-504.
- Kolpakov, E.V. and V.V. Miroshnik. 2007. Stone Cockcomb *Alectrias alectrolophus* (Stichaeidae) a New Representative of Cold-Water Ichthyofauna in the Waters of Northern Primorskii Krai. Journal of Ichthyology, 47: 194-197.
- Kim and Kang. 1991. Taxonomic Revision of the Suborders Blennioidei and Zoarcoidei (Pisces, Perciformes) from Korea. Korean Journal of Zoology, 34: 500-525.
- Kim, B.J., S.G. Lee and J.H. An. 2011. Fish species of Korea. In: National List of species of Korea (Vertebrates), National Institute of Biological Resources, 2011: 3-189. (in Korean)
- Lindberg, G.U. and Z.V. Krasnyukova. 1989. Fishes of the Sea of Japan and Adjacent Areas of the Sea of Okhotsk and Yellow Sea. 4. Part 4. Teleostomi. XXIX. Perciformes. 2. Blennioidei - 13. Gobioidae. (CXLV. Fam. Anarhichadidae - CLXXV. Fam. Periophthalmidae). I-xxxvi+602pp.
- Makushok, V.M. 1958. The morphology and classification of the northern blennoid fishes (Stichaeoidea, blennioidei, Pisces). Proceedings Zoological Institute Academy Nauka SSSR., 25: 3-129. (in Russian)
- Mecklenburg, C.W. and A. Sheiko. 2004. Family Stichaeidae Gill 1864, Pricklebacks. California Academy of Sciences Annotated Checklists of Fishes, 35: 1-36.
- Pallas, P.S. 1814. Zoographia Rosso-Asiatica, sistens omnium animantium in extenso Imperio Rossico et adjacentibus maribus observatorum recensionem, domicilia, mores et descriptiones anatomien atque icones plurimorum. Officina Caes. Academiae Scientiarum Impress, Petropoli, Vol. 3. 428pp.
- Sheiko, B.A. 2012. *Alectrias markevichi* sp. Nov. A New Species of Cockcombs (Perciformes: Stichaeidae: Alectriinae) from the Sublittoral of the Sea of Japan and Adjacent Waters. Journal of Ichthyology, 52: 308-320.
- Shiogaki, M. 1985. A New Stichaeid Fish of the Genus *Alectrias* from Mutsu Bay, Northern Japan. Japanese Journal of Ichthyology, 32: 305-315.

*Alectrias*속 어류의 1 미기록종, *Alectrias alectrolophus*

조현근 · 권선만

국립생물자원관 동물자원과

요 약 : 우리나라 강릉 연안에서 채집된 벼슬베도라치속 어류 1개체(체장 52.2 mm SL)의 표본을 근거로 *Alectrias alectrolophus*를 한국미기록종으로 기재하였다. 본 종은 등지느러미 기조수 LXIII, 뒷지느러미 기조수 I, 44, 척추골수 68이고, 가늘고 긴 체형을 가진다는 점에서 동속의 다른 종과 쉽게 구별된다. 본 종의 신한국명으로 “가는벼슬베도라치”를 제안한다.

찾아보기 낱말 : *Alectrias alectrolophus*, 한국미기록종, 강릉, 기재