

A New Species of the Genus *Sebastes* (Pisces; Scorpaenidae) from the Yellow Sea, Korea

Ik-Soo Kim and Wan-Ok Lee

Department of Biology, College of Natural Sciences, Chonbuk National University, Chonju, 560-756, Korea

A new scorpionfish, *Sebastes koreanus* is described from ten specimens collected in the Yellow Sea of Korea at depths ranging from two to 30 meters. *Sebastes koreanus* is easily distinguishable from the other members of this genus, in having 14 dorsal spines, 30-31 lateral line pores and in having no dark spots at the isthmus and at base of pectoral fins.

KEY WORDS: Pisces, Scorpaenidae, *Sebastes*, Yellow Sea, Korea, New species

The scorpionfishes of *Sebastes* are the largest genus in the family Scorpaenidae with about 100 species, with almost all of them occurring in the North Pacific (Chen, 1975; Nelson, 1984). Many of them are morphologically similar to each other and found together apparently in mixed aggregations (Moyle and Cech Jr., 1982). Eschmeyer (1969) studied the systematics of the fishes of the family Scorpaenidae in the Atlantic Ocean, and Eschmeyer and Randall (1975) provided the synopsis of all scorpaenid species of the Hawaiian Islands. Chen (1975) described and compared with seven species of *Sebastes* of the Gulf of California. And Chen (1986) reported meristic data for nearly all known species of *Sebastes*. Amaoka (1984) listed 28 species of the genus from the Japanese Archipelago and Nakabo (1993) provided available informations to identify all 31 species or subspecies of *Sebastes* from Japan with illustrated keys and diagnosis of characters for each species.

The latest treatment of the genus *Sebastes* of Korea was that of Kim and Lee (1993) who listed 18 species from waters around the Korean Peninsula. In preparing the description of the Korean species of *Sebastes*, some specimens collected from the west coast of Korea were found to be an undescribed species of *Sebastes* which is

to be described herein as new to science. This species had been collected from the Yellow Sea at two to 30 m depths by hook and bottom trawl net.

The specimens examined were deposited in Department of Biology, Chonbuk National University, Chonju, Korea (CNUC). The terminology of head spines is followed after that of Eschmeyer (1969). Counts and measurements of the body parts are followed after those of Hubbs and Lagler (1958). Vertebral counts and some of the fin ray counts were made from soft X-ray radiograph.

***Sebastes koreanus*, n. sp.**

(New Korean name: Hwanghae-bolnak 황해볼낙) (Figs. 1, 2 A)

Holotype. CNUC 19324, male, 130.4 mm SL, Munyae Island, Okdo-myon, Okku-gun, Chollabuk-do, Korea, 35°48' N, 126°27' E, Lee, Wan-Ok, 15 August 1993, hook at 20 m.

Paratypes. CNUC 19075-19077, 3 specimens, 118.9-139.5 mm SL, with the same locality at the holotype, 23 September 1990; CNUC 19078, 1 specimen, 118.2 mm SL, with the same locality at the holotype, 20 June 1993; CNUC 18169-18173, 5 specimens, 98.4-115.7 mm SL, Sorae-up, Shihung-gun, Kyonggi-do, Korea, 37°30' N,

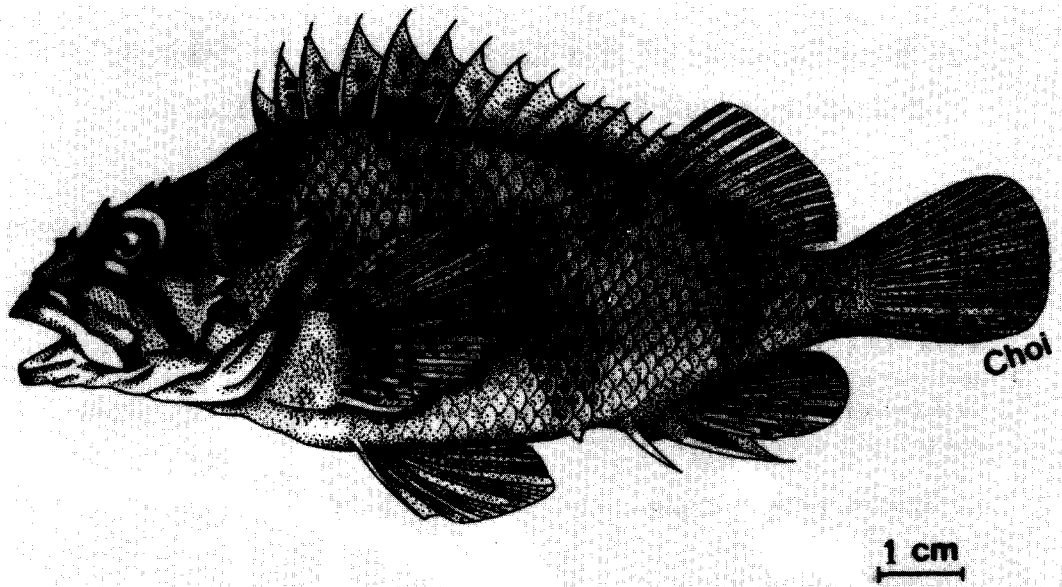


Fig. 1. *Sebastes koreanus* n. sp. CNUC 18169, paratype, female, 102.7 mm SL.

126°40' E, Kang Eon-Jong, 5 January 1991. bottom trawl net at 15 m.

Diagnosis. A species of *Sebastes* with dorsal fin rays XIV, 12 (12-13); anal fin rays III, 6 (5-6); pectoral fin rays 16 (16-17); gill rakers 19-21, and lateral line pores 30-31. Dorsal and lateral body brown or grayish mottled with black, and isthmus pale or light pink without spots. Dorsal, anal, ventral, pectoral and caudal fin pale grayish with small black spots.

Description. Proportional measurements of type specimens are shown in Table 1. Dorsal fin rays XIV, 12 (12-13), all rays branched, last to base; anal fin rays III, 6 (5-6), all ray branched, last to base; pectoral fin ray 16 (16-17) (unbranched 8, branched 8), caudal fin rays I,12,I, gill raker 19-21 (6-7+13-14), lateral line pores, 30-31, vertebrae 26, pyloric caeca 9.

Body deep, moderately compressed, its depth more than 36.6% of its length. Mouth terminal, jaw equal, maxilla not reaching posterior margin of orbit. Eye large, orbit diameter same as or smaller than snout length. Villiform teeth on jaw, prevomer, palatines and pharyngeal bones. Gill rakers short, increasing in size to angle. Interorbital region concave. Frontal ridge well developed and sharp. Nasal, preocular,

supraocular, postocular, supracleithral and cleithral spines sharp and strong. Lachrymal with 2 lobes over anterior half of maxilla, posterior lobe forming a blunt spine directing posteroventrally and slightly backward. Preopercular with 5 spines; lowermost blunt and directing downward. Opercular with 2 flat but sharp spines, neither extending beyond its posterior margin. Margin of soft dorsal, anal and caudal fins rounded. Margin of pectoral fin wedge-shaped, ninth ray longest; lower 8 unbranched rays slightly fleshy. Pelvic fin reaching midway of anus and first anal spine. Interorbital region, cheek, opercle, basal membrane of spinous and soft dorsal fin, basal part of pectoral fin, basal part of caudal fin and side of body covered with ctenoid scales. Anterior part of snout, premaxilla, mandible, interopercle and branchiostegals naked.

Color. When alive ground color of body pale brown dorsolaterally with dark small spots. Base of pectoral fin and isthmus brownish pink ventrally without dark small spots. 4-5 vertical indistinct dark bands on sides of body. Dorsal fin brown, with dark small spots in rays and white large spots in 2-4 spine base. Pectoral, ventral, anal, caudal fin light brown, and lower margin weakly pinkish with dark spots. Cheek with 3 oblique black bars,

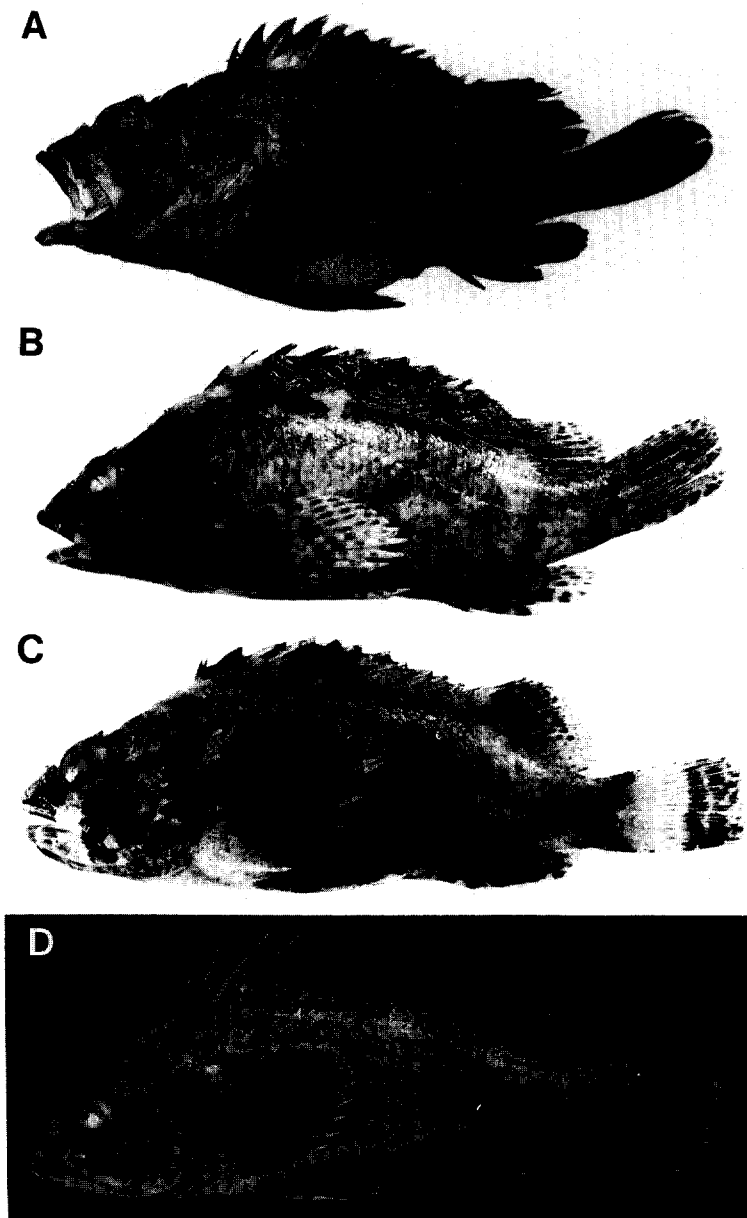


Fig. 2 **A.** *Sebastes koreanus* n. sp., CNUC 19324, holotype, male, 130.4mm SL; **B.** *Sebastes hubbsi* (Matsubara), CNUC 18074, 133.3mm SL; **C.** *Sebastes longispinis* (Matsubara) CNUC 18133, 104.5mm SL; **D.** *Sebastes schlegeli* Hilgendorf CNUC 18273, 155.0mm SL.

one extends from lower posterior edge of orbit across first preopercular spine to edge of gill cover, another extends from below orbit to fourth preopercular spine, the other runs along mid-line of maxillary to posterior end of maxillary.

In formalin color of head and body uniformly light brown with dark small spots and 4-5 indistinct brown bands on sides. Belly pale or light brown without dark small spots. Opercular with large black spots (Fig. 2 A).

Table 1. Proportional measurements and counts of type specimens of *Sebastes koreanus* n. sp. expressed as a percentage of the standard length.

Locality	Holotype		Paratypes	
			Munye-do	Sorea-up
Standard length(mm)	130.4		118.2-139.5	98.4-115.7
No. of specimens	1		4	5
In % of SL				
Head length	42.4		39.6-40.7	37.2-40.8
Snout length	11.9		9.7-11.7	10.5-11.5
Orbit length	11.7		10.5-10.8	9.9-11.1
Interorbital width	6.2		4.2-5.2	4.3-5.1
Upper jaw length	18.8		16.8-18.9	16.9-18.5
Predorsal length	36.2		33.9-35.1	33.9-36.8
Body depth	41.2		38.4-40.9	36.6-38.9
Pectoral fin length	26.1		28.0-31.7	27.4-31.2
Pelvic fin length	24.2		21.6-24.0	22.3-23.5
1st dorsal spine	7.0		5.9-7.3	6.2-7.7
3rd dorsal spine	13.1		9.6-12.4	12.5-14.0
2nd dorsal soft-ray	14.9		15.8-16.3	13.8-16.3
1st anal spine	9.6		7.9-8.5	7.5-9.1
2nd anal spine	18.3		14.5-17.5	16.8-19.5
3rd anal spine	15.3		12.5-15.0	11.7-16.2
Caudal peduncle length	16.2		16.8-18.2	15.7-18.8
Caudal peduncle depth	10.7		9.9-11.1	9.5-10.7

Table 2. Counts of dorsal spine and soft ray of *Sebastes koreanus*, *S. hubbsi*, *S. longispinis* and *S. schlegeli* from Korea

	Dorsal spines		Dorsal soft rays				
	13	14	10	11	12	13	14
<i>S. koreanus</i>		10			8		2
<i>S. hubbsi</i>		11	1	10			
<i>S. longispinis</i>		5			4		1
<i>S. schlegeli</i>		27			26		1

Table 3. Counts of pectoral fin ray and anal soft ray of *Sebastes koreanus*, *S. hubbsi*, *S. longispinis* and *S. schlegeli* from Korea

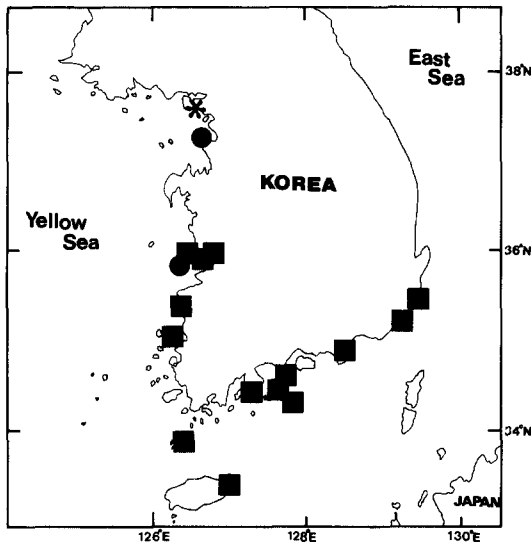
	Pectoral fin rays				Anal soft rays		
	16	17	18	19	5	6	7
<i>S. koreanus</i>	9	1			1		9
<i>S. hubbsi</i>	1	10					11
<i>S. longispinis</i>	4	1					5
<i>S. schlegeli</i>		1	25	1		3	24

Table 4. Counts of lateral line pores of *Sebastes koreanus*, *S. hubbsi*, *S. longispinis* and *S. schlegeli* from Korea.

	Lateral line pores																						
	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
<i>S. koreanus</i>					5	5																	
<i>S. hubbsi</i>		4	5	2																			
<i>S. longispinis</i>		2	3																				
<i>S. schlegeli</i>																4	10	6	2	4	1		

Table 5. Counts of gill raker of *Sebastes koreanus*, *S. hubbsi*, *S. longispinis* and *S. schlegeli* from Korea.

	Gill rakers										
	18	19	20	21	22	23	24	25	26	27	
<i>S. koreanus</i>		3	4	3							
<i>S. hubbsi</i>		8	3								
<i>S. longispinis</i>	3	2									
<i>S. schlegeli</i>							10	15	2		

**Fig. 3.** Localities and species of the genus *Sebastes* collected together with *S. koreanus* n. sp. from Korea. *S. koreanus* (●); *S. schlegeli* (■); *S. pachycephalus* and *S. trivittatus* (*) (Mori, 1952).

Distribution. This species were distributed only the west coast of Korea.

Etymology. The species name “*koreanus*” refers to the type locality of this species, Korea.

Remarks. Chen (1986) reported the meristic variations of the 100 species in the genus *Sebastes*, and pointed out that the dorsal spine number is a conservative character available in separating species. Although most species of *Sebastes* have 13 dorsal spines, the three species, *S. koreanus*, *S. hubbsi*, and *S. owstoni* are distinguished from the other by having 14 dorsal spiny rays. The distinction between *S. koreanus* and *S. owstoni* is much more apparent in the

external shape and coloration. On the other hand *S. koreanus* resembles *S. hubbsi* and *S. longispinis* in head spines and shape, but it is distinguished from the latter two in the number of dorsal spines or soft rays, lateral line pores, and gill rakers (Tables 2-5, Fig. 2A-C). Both *S. hubbsi* and *S. longispinis* occurs in the Cheju Island, South Sea and southern part of East Sea of Korea. Although two species, *S. koreanus* and *S. schlegeli*, have been collected in the Korean side of Yellow Sea, the differences between them are conspicuous in the head spine structure, shape and several meristic counts (Tables 2-5; Fig. 2A, D and 3).

S. pachycephalus and *S. trivittatus* recorded from Incheon in the west coast of Korea (Mori, 1952)(Fig. 3) are also separable from *S. koreanus* having 14 dorsal spines and 30-31 lateral line pores.

Comparative material. *Sebastes hubbsi*: CNUC 18070-18071, 2 specimens, 72.5-98.9 mm SL, Songjung-dong, Pusan-shi, Korea, 10 February 1989; CNUC 18075-18078, 4 specimens, 103.3-109.7 mm SL, Songjung-dong, Pusan-shi, Korea, 19 November 1989; CNUC 18121-18123, 3 specimens, 91.6-132.2 mm SL, Sungsan-up, Namcheju-gun, Cheju-do, Korea, 18 August 1991; CNUC 18074, 1 specimens, 133.3 mm SL, Kujwa-up, Pukcheju-gun, Cheju-do, Korea, 14 January 1990; CNUC 18090, 1 specimens, 88.3 mm SL, Kijang-up, Yangsan-gun, Kyongsangnam-do, Korea, 2 November 1990.

***Sebastes longispinis*:** CNUC 18091, 1 specimens, 96.1 mm SL, Kijang-up, Yangsan-gun, Kyongsangnam-do, Korea, 2 November 1990; CNUC 18118, 1 specimens, 99.5 mm SL, Namsan-dong, Yosus-shi, Chollanam-do, Korea, 26 September 1990; CNUC 18135, 1 specimens,

88.6 mm SL, Chinhae-shi, Kyongsangnam-do, Korea, 20 July 1991; CNUC 18133-18134, 2 specimens, 101.0-104.5 mm SL, Songjung-dong, Pusan-shi, Korea, 19 November 1989.

Sebastes schlegeli: CNUC 18080-18082, 3 specimens, 80.9-122.3 mm SL, Chinha, Yangsan-gun, Kyongsangnam-do, Korea, 24 December 1989; CNUC 18072, 1 specimen, 80.3 mm SL, Songjung-dong, Pusan-shi, Korea, 26 January 1989; CNUC 19781-19783, 3 specimens, 110.2-134.5 mm SL, Songjung-dong, Pusan-shi, Korea, date unknow; CNUC 19775, 1 specimen, 160.8 mm SL, Songjung-dong, Pusan-shi, Korea, 20 July 1991; CNUC 18069, 1 specimen, 96.9 mm SL, Tongyong-gun, Kyongsangnam-do, Korea, 31 December 1989; CNUC 19784, 1 specimen, 104.0 mm SL, Dolsan-do, Yochon-gun, Chollanam-do, Korea, 23 September 1993; CNUC 19785, 1 specimen, 42.2 mm SL, Kumodo, Nam-myon, Yochon-gun, Chollanam-do, Korea, 4 August 1993; CNUC 18227, 1 specimen, 125.1 mm SL, Namsan-dong, Yosun-shi, Chollanam-do, Korea, 17 April 1992; CNUC 18141, 1 specimen, 187.7 mm SL, Toyang-up, Kohung-gun, Chollanam-do, Korea, 18 November 1990; CNUC 18127-18132, 6 specimens, 89.4-110.2 mm SL, Toyang-up, Kohung-gun, Chollanam-do, Korea, 18 April 1990; CNUC 18158-18159, 2 specimens, 116.6-132.5 mm SL, Toyang-up, Kohung-gun, Chollanam-do, Korea, 10 May 1990; CNUC 18272-18274, 3 specimens, 80.5-186.1 mm SL, Toyang-up, Kohung-gun, Chollanam-do, Korea, 18 November 1991; CNUC 19773-19774, 2 specimens, 92.8-115.4 mm SL, Hongnong, Yonggwang-gun, Chollanam-do, Korea, 28 October 1991; CNUC 17766, 1 specimen, 104.5 mm SL, Komso, Puan-gun, Chollabuk-do, Korea, 30 March 1990; CNUC 18039, 1 specimen, 147.8 mm SL, Munyae-do, Okdo-myon, Okku-gun, Chollabuk-do, Korea, 29 May 1992; CNUC 19780, 1 specimen, 77.2 mm SL, Munyae-do, Okdo-myon, Okku-gun, Chollabuk-do, Korea, 23 September 1990; CNUC 19776-19779, 4 specimen, 64.2-86.8 mm SL, Ungpo-myon, Iksan-gun, Chollabuk-do, Korea, 20 April 1985; CNUC 17767, 1 specimen, 108.9 mm SL, Haemang-dong, Kunsan-shi, Chollabuk-do, Korea, 14 March

1990.

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黄海에서 채집된 볼낙屬(양볼낙과) 어류 1신종
김익수·이완옥(전북대학교 자연과학대학 생물학과)

황해 중부의 2-30m 깊이의 연안 암초지대에서 채집된 *Sebastes*속 어류는 등지느러미의 극조가 14개이고, 측선공이 30-31개이며, 가슴지느러미 기부와 협부에 흑색 반점이 없어 볼낙속의 다른 유연종과는 잘 구별되었다. 본 조사에서 채집된 10개체의 표본을 기준으로 신종 *Sebastes koreanus* n. sp.로 기재하고, 국명은 “황해볼낙”으로 명명한다.