

# First Record of the Carangid Fish, *Seriola rivoliana* from Korea

Young Seop Kim\*, Yong Uk Kim and Geon Ahn

\*National Fisheries Research and Development Institute, Pusan 626 - 900, Korea

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

A specimen of carangid fish, *Seriola rivoliana* Valenciennes belonging to the family Carangidae was collected for the first time in Pusan, Korea. It was similar to *Seriola dumerili* (Risso) by appearance, but differed in some morphological characters having the deeper body, the higher lobes of the second dorsal and anal fins, becoming straight line below 23 - 24th ray of second dorsal fin, the configuration of the first haemal spine. A new Korean name "Nat Jaet bang - eo" is proposed for this species.

## Introduction

The family Carangidae belonging to the order Perciformes includes a large number of tropical and temperate marine waters of the world, of which 140 species were described by Nelson (1994) from the world oceans, 54 species were recognized by Nakabo (1993) from Japanese waters. But only 20 species of the carangid fishes were described by Chyung (1977) from Korean waters, and Kim *et al.* (1995) added one unrecorded species, *Megalaspis cordyla*. Therefore, 21 species have been recorded in Korea up to date. An actual revision of the Japanese carangid fish was first made by Wakiya (1924), in which 74 species were recorded from Japan and Formosa, and were placed in 9 subgenera and 14 genera under 4 subfamilies. Suzuki (1962) established a system of 34 species, 17 genera and 5 subfamilies on the anatomical basis Smith - Vaniz (1984) worked ontogeny and

systematics of the fishes including the family Carangidae. Gushiken (1983) reported phylogenetic relationships of the genera in the family Carangidae. Despite the various research, none of these have dealt with the carangid fishes occurred in Korean waters. Therefore, in this study we illustrate and describe one specimen of *Seriola rivoliana* which was collected for the first time in Korea.

## Materials and Methods

A specimen of the carangid fish, *Seriola rivoliana* Valenciennes, was caught by purse seine net in Sea block 234 - 6, southeast of Chejudo, on October 28, 1995, which has never been reported in Korea. Measurements and counts of diagnostic external characters of specimen was followed Gushiken (1983). The morphology of first haemal spine was taken from radiography. The examined specimen was

deposited in the Taxonomical Laboratory, Coastal & Offshore Resources Division, National Fisheries Research and Development Institute (NFRDI).

***Seriola rivoliana* Valenciennes, 1833**

(New Korean name : Nat - jaet - bang - eo)

(Fig. 1)

*Seriola rivoliana* Valenciennes in Cuvier et Valenciennes, 1833 : 207.

*Seriola falcata* Valenciennes in Cuvier et Valenciennes, 1833 : 210 ; Günther, 1860 : 464.

*Seriola bonariensis* Valenciennes in Cuvier et Valenciennes, 1833 : 211 ; Günther, 1860 : 464 ; Poey, 1860 : 232 ; Smith, 1949 : 222, fig. 538 ; Necrassov, 1970 : 135, fig. 37.

*Seriola songoro* Smith, 1959 : 258, fig. 3.

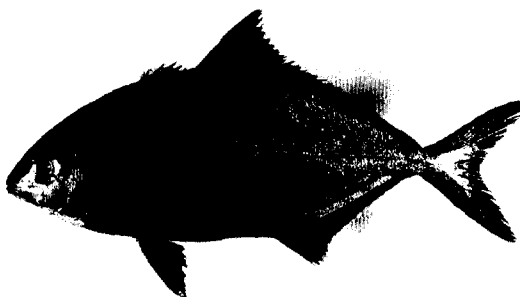


Fig. 1. *Seriola rivoliana* Valenciennes, NFRDI 2191, 265.4 mm SL.

**Material** : NFRDI 2191, one specimen, 265.4 mm SL. Chejudo, Korea, Oct. 28, 1995.

**Diagnosis** : For diagnostic characters of *Seriola rivoliana* see Table 1. D. VII - I, 29 ; A. II - I, 20 ; P. i, 20 ; gill rakers 8+16 ; vertebrae 10+14 (Fig. 2)

**Description** : Body fusiformed and compressed, especially, dorsal profile convex, ventral less so. Head profile slightly curved. Snout blunt. Jaws about equal. Maxilla extending border of pupil with round dorso - posterior corner. Villiform teeth in arhomboidal patch on

prevomer, palatines and tongue. Pectoral fin shorter than pelvic. Its posterior origin 2nd dorsal fin. Caudal fin forked. Lateral line slightly curved, becoming straight below 23 - 24th ray of second dorsal. It is more higher than first dorsal fin. The posterior tint of second dorsal and anal fin elongate and falcate. Two small detached spines in front of anal fin. No finlets on caudal peduncle. Caudal peduncle with a longitudinal cutaneous keel. No scutes. Scales finely cycloid and small.

**Color** : Purplish gray above, pale below. Black bar through eye. Fins yellowish gray, but the tint of anal with white margin. When fixed in formalin, dark above, lighter below. Short bar through eye distinct. Fins dark gray except anal margin.

**Distribution** : The southern waters of Korea and widely distributed in tropical and subtropical waters of the Indo - Pacific and Atlantic Oceans.

**Remarks** : This species was first recorded as *Seriola rivoliana* by Valenciennes (1833). As his paper goes, Duke Rivoli gave a amberjack the king of Roi. It was caught in Archipel sea, which differs from existing species. Maybe the specific name of *S. rivoliana* was given by the name of Duke Rivoli. And he treated *S. falcata* as variety of *S. rivoliana* from Gulf of Mexico. The latter differs from the former in part of the second dorsal fin, the number of fins, and location of anus. When see the color of *S. falcata*, blue above, silver below. The case of *S. bonariensis* is same thing of *S. falcata*. The characters of the former are as follow : having more compressed body, color - brown above, silver below. Gushiken (1983) believed that *S. falcata* and *S. bonariensis* were various species of the genus *Seriola*. Jordan (1905) described that, the high - finned *S. rivoliana* was taken in the

West Indies, and species very similar to these occur in Hawaii and Japan, where they are known as Ao or bluefishes.

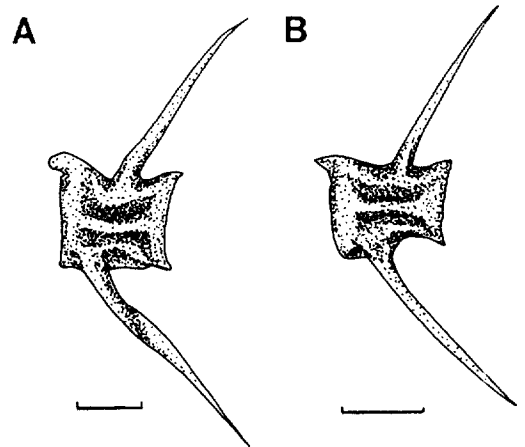
This species closely resembles *S. dumerili*, but differs from it in having deeper body and higher lobes of the second dorsal and anal fins (Gushiken, 1983). Smith (1959) set a name of *S. songoro* to this species for reason that detailed description or reliable illustrations of it were not available. The configuration of first haemal spine of this species differentiates it from *S. dumerili* and other species (Gushiken, 1983). It

is straight in *S. rivoliana* and is distinctly bend- ed in *S. dumerili* and others (Fig. 2).

**Table 1. Comparison of meristics and body data between *S. rivoliana*, *S. dumerili* and present specimen**

Characters	Present study	Gushiken (1983)	
		<i>S. rivoliana</i>	<i>S. dumerili</i>
Number of specimens	1	7	9
Dorsal fin rays	VII - 1, 29	VII - 1, 26-29	VII - 1, 30-33
Anal fin rays	II - 1, 20	II - 1, 19-21	II - 1, 19-21
Pectoral fin rays	20	20	19-20
Pelvic fin rays	1, 5	1, 5	1, 5
Gillrakers			
upper limb	8	7-8	6-7
lower limb	16	17-19	15-16
Branchiostegal rays	7	7	7
Vertebrae	10+14	10+14	10+14
Standard length (mm)	265.4	164-388	130-290
In standard length			
Head length	3.7	3.4-3.5	3.3-3.4
Body depth	2.7	2.8-2.9	3.2-3.4
In head length			
Snout length	2.8	2.8-2.9	2.9-3.0
Eye diameter	5.5	4.7-4.8	4.3-4.6
Upper jaw length	2.4	2.4-2.5	2.2-2.3
Interorbital width	3.2	3.2-3.3	3.1-3.2
Postorbital length	2.1	2.2-2.3	2.3
3DSL	5.1	4.8-5.4	4.6-4.7
2DFH	1.4	1.6-1.7	2.2
2DFL	0.6	0.6-0.7	0.7
AFH	1.7	2.0-2.1	2.5-2.6
AFL	0.9	1.0	1.1-1.2
PFL	1.8	1.9	2.0
VFL	1.5	1.6-1.7	1.6-1.7
UCLL	1.1	1.2-1.4	1.1-1.3

\* 3DSL, length of 3rd dorsal spine ; 2DFH, height of 2nd dorsal fin ; 2DFL, basal length of 2nd dorsal fin ; AFH, height of anal fin ; AFL, basal length of anal fin ; PFL, length of pectoral fin ; VFL, length of ventral fin ; UCLL, length of upper caudal lobe



**Fig. 2. Lateral aspect of first haemal spine of two *Seriola* species.**  
**A. *S. dumerili*, 346.4 mm SL.**  
**B. *S. rivoliana*, 265.4 mm SL.**  
**Scale bars : 1cm.**

**Key to the species of *Seriola* from Korea**

1a. Snout pointed. The center of pupil exists on the line that is from tint of snout to the caudal fin. No black bar through eye.

2a. Maxilla with acute dorso - posterior corner. Pectoral fin subequal to pelvic fin . . . . . *S. quinqueradiata*

2b. Maxilla with round dorso - posterior corner. Pectoral fin shorter than pelvic fin . . . . . *S. lalandi*

1b. Snout blunt. The center of pupil exists upper the line that is from tint of snout to the point of caudal fin. Black bar through eye.

3a. Anterior rays of second dorsal barely falcate, lower than length of pectoral fin. Gill rakers 12~16. The tint of lower caudal lobe with white margin . . . . . *S. dumerili*

3b. Anterior rays of second dorsal falcate, higher than length of pectoral fin. Gill rakers 17~19. The tint of anal fin with white margin . . . . . *S. rivoliana*

## References

- Chyung, M. K. 1977. The Fishes of Korea. Iljisa Pub. Co. Seoul. 727 pp.
- Gushiken, S. 1983. Revision of the carangid fishes of Japan. Galaxea Publ. Sesoko Mar. Sci. Cent. Univ. Ryukyus. 2 : 135~364.
- Günther, A. 1860. Catalogue of fishes in the British Museum. Taylor and Francis. London. 2 : XXI+548 pp.
- Kim, Y. U., C. B. Kang, J. K. Kim, G. Ahn and J. G. Myoung. 1995. New Records of two species, *Megalaspis cordyla* and *Champsodon snyderi* (Pisces : Perciformes) from Korea. Korean J. Ichthyol. 7(2) : 101~108.
- Jordan, D. S. 1905. A guide to the study of fishes. Henry Holt and Company. 2 : 272~274.
- Nakabo, T. 1993. Fishes of Japan with pictorial keys to the species. Tokai Univ. Press Tokyo. 1474 pp.
- Necrassov, V. V. 1970. Revision of the species of the family Carangidae found in the Indian ocean. Azovo - Black Sea Inst. 29 : 89~138, 38 figs (in Russian).
- Nelson, J. S. 1994. Fishes of the world(3rd ed). John Wiley & Sons, New York. 600 pp.
- Poey, F. 1860. Poissons de Cuba. Memorias a sobre la historia natural de la isla de Cuba. 2 : 97~336, pls. 10 - 14.
- Smith, J. L. B. 1949. The sea fishes of Southern Africa. Central New Agency, Cape Town. X VII +580 pp., 111 pls.
- Smith, J. L. B. 1959. Serioline fishes (Yellowtails ; Amberjacks) from the western Indian Ocean. Rhodes Univ. Grahamstown. Ichthyol. Bull. 15 : 254~261, 6 figs.
- Smith - Vaniz, W. F. 1984. Carangidae : Relationship, Ontogeny and systematics of fishes. Amer. Soc. Ichthyol. Herpetol., Spec. Publ. 1, pp. 522~530.
- Suzuki, K. 1962. Anatomical and taxonomical studies on the carangid fishes of Japan. Rep. Fac. Fish. Pref. Univ. Mie. 4 (2) : 43~232.
- Cuvier, G. and A. Valenciennes. 1833. Histoire naturelle des poissons. Tome neuvième  
Suite du livre neuvième Des scombérôdes. V. 9 : 522 pp. plsé 246~279.
- Wakiya, Y. 1924. The carangid fishes of Japan. Ann. Carnegie Mus. 15 (2~3) : 139~293, pls. 15~38.

## 한국산 전갱이과 어류 1미기록종

김영섭\* · 김용억 · 안 건

\*국립수산진흥원 연근해자원과 · 부경대학교 해양생물학과

1995년 10월 28일 전갱이과, Carangidae, 방어속, *Seriola*에 속하는 *Seriola rivoliana*가 국내에서 처음으로 제주도 남동쪽 234 - 6해구에서 선망어구에 어획되었던 것을 부산공동어시장에서 채집하였기에 이를 보고한다. *Seriola rivoliana*는 방어속 어류 중 잭방어 *Seriola dumerili*와 형태적으로 닮았지만, 체고, 제2등지느러미와 뒷지느러미의 형태, 새파수 등과 뒷지느러미의 연조수, 첫번째 혈관극의 형태에서 구별이 된다. 특히, 첫번째 혈관극의 형태가 방어속 어류의 다른 종들과 달리 직선인 것이 특징이다. 본 종은 외부형태적으로 제 2등지느러미와 뒷지느러미가 낮모양을 하고 있어 *Seriola rivoliana*의 국명을 "낮 잭방어"로 명명한다.