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New Record of the White Trevally, *Pseudocaranx dentex* (Carangidae, Perciformes) from Korea

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ABSTRACT A single specimen of *Pseudocaranx dentex* (115.8 mm in standard length), belonging to the family Carangidae, was firstly collected by a set net in the coastal waters of Jeju Island on July 14, 2014. This species was characterized by a yellow stripe presented along both sides, a single series of canine teeth arranged on jaws, a black spot on upper margin of opercle, and snout length longer than eye diameter. We newly add this species to the Korean fish fauna and propose its Korean name "Heuk-jeom-jul-jeon-gaeng-i-sok" and "Heuk-jeom-jul-jeon-gaeng-i" for the genus and species, respectively.

Key words : *Pseudocaranx dentex*, Carangidae, first record, Jeju Island, Korea

INTRODUCTION

The family Carangidae comprises about 140 species in 25 genera of three subfamilies worldwide (Nelson, 2006). It is characterized by having following characteristics: two dorsal fins (the second dorsal fin with a single spine and 18 to 44 soft rays), anal fin with two anterior spines; scutes present and prominent, or reduced in some species and absent in some genera (Smith-Vaniz, 1999; Nelson, 2006). Fifty-nine species in 24 genera have been reported from Japan (Senou, 2013) and 30 species in 16 genera from Korea up to the date (Kim *et al*., 2005; Lim *et al*., 2010).

Within the family Carangidae, the genus *Pseudocaranx* consists of six species (four valid species) worldwide (Smith-Vaniz and Jelks, 2006; Randall, 2007; Froese and Pauly, 2014). Among them, only one species (*P. dentex*) inhabits both Japan and Taiwan and is characterized by having both jaws with a band of teeth and breast naked ventrally to completely scaled (Lin and Shao, 1999; Senou, 2013). This species is very important industrial fish which can grow up to 82 cm in maximum fork length and 10.7 kg in maximum weight (Smith-Vaniz, 1999). The Korean name and a brief description of *P. dentex* was previously reported with a sample collected in Japan (NFRDI, 1999), but this species has not been caught in Korean waters so far.

We firstly collected a single specimen of *P. dentex* by using a set net from the eastern coastal waters of Jeju Island in Korea, and the morphological characteristics of *P. dentex* were described in order to be added to the list of Korean fish fauna.

MATERIALS AND METHODS

Counts and measurements are followed by the methods of Gushiken (1983) and Hubbs and Lagler (1964). The examined specimen is deposited at the Fish Genetics and Breeding Laboratory, Jeju National University (JNU), Korea.

***Pseudocaranx* Bleeker, 1863**
(New Korean genus name: Heuk-jeom-jul-jeon-gaeng-i-sok)

Pseudocaranx Bleeker, 1863: 82 (type species: *Scomber dentex* Bloch and Schneider, 1801).

Both of jaws with a single series of short, conical teeth row; height of first dorsal fin spines equal to or longer than that of the second dorsal fin; pectoral fin long and falcate; adipose eyelid feeble; snout larger then eye diam-

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Fig. 1. *Pseudocaranx dentex*, JNU-1384, 115.8 mm SL, Jeju Island, Korea.

eter; lips covered with fine pailae; breast scaly except for a very small naked patch at mid-ventral; dorsal fin rays with 23～27; anal fin rays with 21～23; scutes present in straight part of lateral line, but not curved part (Gushiken, 1983; Smith-Vaniz, 1999; Gomon *et al*., 2008).

***Pseudocaranx dentex* (Bloch and Schneider, 1801)**

(Korean name: Heuk-jeom-jul-jeon-gaeng-i)

(Fig. 1; Table 1)

Scomber dentex Bloch and Schneider, 1801: 30 (type locality: Rio de Janeiro, Brazil).

Pseudocaranx dentex: Gushiken, 1983: 192 (Japan); Smith-Vaniz in Smith and Heemstra, 1986: 654 (the Atlantic, Mediterranean and Indo-West Pacific); Lin and Shao, 1999: 59 (Taiwan); Smith-Vaniz, 1999: 2730 (Western Central Pacific); Randall and Lim, 2000: 616 (listed, South China Sea); Heemstra and Heemstra, 2004: 304 (southern Africa); Mundy, 2005: 371 (Hawaii).

Material examined. JNU-1384, one specimen, 115.8 mm in standard length (SL), Sinsan-ri, Seongsan-eup, Jeju-do, Korea, set net, about 20 m in depth, 14 July 2014.

Description. Counts and measurements of the present specimen are shown in Table 1. Proportion of measurements as a percentage of SL: body depth 42.6; head length 30.0; snout length 11.3; orbit diameter 7.4; interobital width 8.9; upper jaw length 9.8; first predorsal fin length 37.6; second predorsal fin length 46.5; prepectoral fin length 33.3; prepelvic fin length 34.1; preanal length 50.5; pectoral fin length 23.2; pelvic fin length 14.2; curved lateral line scale length 41.6; straight part of lateral line scale length 31.7; depth of caudal peduncle 4.9; length of caudal peduncle 4.6.

Body elongate, moderately deep, compressed and covered with ctenoid scales; dorsal profile evenly and gently curving down from second dorsal fin to tip of snout; eye diameter smaller than snout length; eye with adipose eyelid poorly developed; both jaws with an inner series of conical teeth anteriorly; villiform teeth in a triangular patch on vomer and in a band on palatines; posterior tip of maxilla not reaching a vertical at anterior margin of eye; chord of curved part of lateral line longer than straight part of lateral line and straight part start from the twelfth of second dorsal fin; scutes in straight line well developed; two separate dorsal fins with the heigh of first dorsal fin slightly longer than that of second dorsal fin; pelvic fin positioned below at origin of first dorsal fin; anal fin with two detached spines followed by a single spine and 21 soft rays; breast completely scaly; well forked caudal fin.

Color when fresh. Body bluish green above, silver below; a yellow stripe present along sides with under on curved part of later line and above on straight part; dorsal, anal and caudal fins dusky yellow; pelvic fins white; a diffuse black spot on upper margin of opercle.

Color after preservation. Head and dorsal part of the body brown; ventral part of the body silver-white; all fins white; no yellow stripe on both sides of the body: a dark spot on upper margin of opercle.

Distribution. Known from subtropical and temperate waters of the Indo-Pacific Ocean: Japan, Taiwan, Australia, New Zealand, South Africa, eastward to the Hawaiian Islands, and Korea (present study). Also occurs on both sides of the Atlantic Ocean (Simth-Vaniz, 1986, 1999).

Remarks. When morphological characters of the pre-

Table 1. Comparison of the meristic characters of *Pseudocaranx dentex*

Meristic characters	Present study	Bloch and Schneider (1801)	Gushiken (1983)*	Lin and Shao (1999)
Number of specimens	1	1	9	2
Total length (mm)	139.1	–	–	–
Fork length (mm)	123.3	–	–	244 ~ 266
Standard length (mm)	115.8	–	114 ~ 385	
In % of standard length				
Head length	24.8	–	28.3 ~ 47.2	–
Body depth	42.6	–	–	–
First predorsal fin length	37.6	–	–	–
Second predorsal fin length	46.5	–	–	–
Prepectoral fin length	33.3	–	–	–
Prepelvic fin length	34.1	–	–	–
Preanal fin length	50.5	–	–	–
In % of head length				
Snout length	37.8	–	24.6 ~ 38.2	–
Eye diameter	24.8	–	15.8 ~ 29.7	–
Upper jaw	32.7	–	27.6 ~ 44.0	–
Interorbital width	29.7	–	23.2 ~ 39.1	–
Pectoral fin length	108.5	–	79.4 ~ 136.9	–
Counts				
Dorsal fin rays	VIII-I, 25	VIII, 24	VIII-I, 23 ~ 26	VIII-I, 25
Pectoral fin rays	22	19	i+19 ~ 20	i+20
Pelvic fin rays	1, 5	6	–	–
Anal fin rays	II-I, 21	II, 23	II-I, 21 ~ 23	II-I, 21 ~ 22
Scutes	26	–	24 ~ 28	23 ~ 28
Gill rakers	12+25	–	11 ~ 14+24 ~ 26	12 ~ 13+25 ~ 26
Vertebrae	10+15	–	–	10+15

*measurements were based on two specimens (202 and 249 mm in SL).

sent specimen were examined and compared with those previously reported on *P. dentex*, all morphological taits were well matched with each other (Smith-Vaniz and Berry, 1981; Smith-Vaniz, 1996; Smith-Vaniz, 1999; Senou, 2002; Gomon *et al*., 2008; Table 1). Thus, we identified our specimen to be *P. dentex* based on the morphological characters.

The fishes of the genus *Pseudocaranx* are morphologically similar to those of the genus *Caranx* proposed by Lacepède (1801), but the former is easily distinguished from the latter by having the first dorsal fin spines higher than the second dorsal fin (vs. lower dorsal fin for *Caranx*) and a single row of blunt conical teeth in upper jaw of adult fishes (vs. canine-like teeth and an inner band of small teeth for *Caranx*) (Smith-Vaniz and Berry, 1981; Smith-Vaniz, 1999).

Due to the morphological resemblance, thirteen different scientific names had been erroneously used for *P. dentex* collected at various regions of the world although they turned out to be a junior synonym of *P. dentex* (Eschmeyer, 2014). Among six species of *Pseudocaranx*, four species (*P. dentex*, *P. chilensis*, *P. dinjerra*, and *P. wrighti*) have been considered to be a valid speices, but taxonomic positions of two species (*P. georgianus* and *P. cheilio*) are still controversial, which is whether *P. georgianus* (Cuvier in Cuvier and Valenciennes, 1833) and *P. cheilio* (Snyder, 1904) are a junior synomym of *P. dentex* or not. Froese and Pauly (2014) considered these two species as a junior synomym of *P. dentex*, whereas others insisted that they were valid species (Smith-Vaniz and Jelks, 2006; Randall, 2007). Thus, further detail researches on their taxonomy would be needed in the future.

In Korea, *P. dentex* is morphologically similar to *Kaiwarinus equula* (Temminck and Schlegel, 1844) which inhabits the coastal waters of Jeju Island, but the former is easily distinguishable from the latter by having a yellow stripe on body sides (no stripe for *K. equula*), teeth on jaws in a single row (teeth on jaws in band) and gill rakers with 11 ~ 14+24 ~ 27 (vs. 7 ~ 10+18 ~ 23) (Senou, 2013). When the Korean name for *P. dentex* was given, we used "Heuk-jeom-jul-jeon-gaeng-i" which was previously suggested by NFRDI (1991) with a specimen collected in Japan.

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한국 제주도에서 채집된 전갱이과(Carangidae) 어류 1미기록종, *Pseudocaranx dentex*

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요 약 : 농어목 전갱이과에 속하는 *Pseudocaranx dentex* 1개체가 2014년 7월 14일 제주도 성산해역의 정치망에서 채집되었다. 이 종은 체측에 1개의 노랑줄무늬가 있는 점, 양턱에는 송곳니가 일렬로 줄지어 있는 점, 주새개골 위부분에는 1개의 선명한 검은색 반점을 가지는 점 그리고 주둥이는 눈지름보다 길게 돌출되는 점이 특징이다. 이 미기록종의 속명과 종명은 각각 “흑점줄전갱이속”과 “흑점줄전갱이”로 제안한다.

찾아보기 낱말 : 흑점줄전갱이속, 흑점줄전갱이, 미기록종, 제주도