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First Record of the Two Driftfish, *Psenes maculatus*, and *Psenes cyanophrys* (Nomeidae: Perciformes), from Korea

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***Psenes maculatus* and *P. cyanophrys* of family Nomeidae were collected for the first time off the coast of Tongyeong, Kyongsangnam-do, Korea. Specimens were catched with drifting seaweed patches on June and July, 1998.**

Young *Psenes maculatus* has six black bands ('<' shape) on the body, and 'Tti-mul-reung-dom' is proposed as the Korean name.

***Psenes cyanophrys* differs from *P. pellucidus* in having a compressed oval body shape scales on the check, and 16 longitudinal lines on the body. 'Jul-mu-nui-mul-reung-dom' is proposed as the Korean name.**

Key words : Nomeidae, *Psenes maculatus, P. cyanophrys*

Introduction

Nomeidae have three genus such as *Nomeus*, *Cubiceps* and *Psenes* and widely distributed in tropical-subtropical waters of Indian, Pacific and Atlantic Ocean (Abe, 1959; Ahlstrom *et al*., 1976; Masuda *et al*., 1984). In the Korean water, 3 species (*Cubiceps squamiceps* (Lloyd), *Psenes pellucidus* Lütken and *Psenes arafurensis* Günther) were recorded (The Korean Society of Systematic Zoology, 1997; Lee *et al*., 2000).

Young *Psenes maculatus* and young *P. cyanophrys* live beneath of drifting seaweed patches or jellyfish and move to mid or bottom layer with growth (Haedrich, 1967; Nakabo, 2000).

In the study of fish fauna associated with drifting seaweed in the coastal area of Tongyeong, we collected two unrecorded species of the family Nomeidae. In this paper, we provide morphological information of these two species, and present the key to the species the family Nomeidae in Korea waters.

Specimens of these species were collected off the coast of Tongyeong-si, Gyeongsangnam-do, Korea (Fig. 1). Specimens were measured by stereo microscope and caliper (1/10 mm). Counts and measurements follow Chyung (1977). The

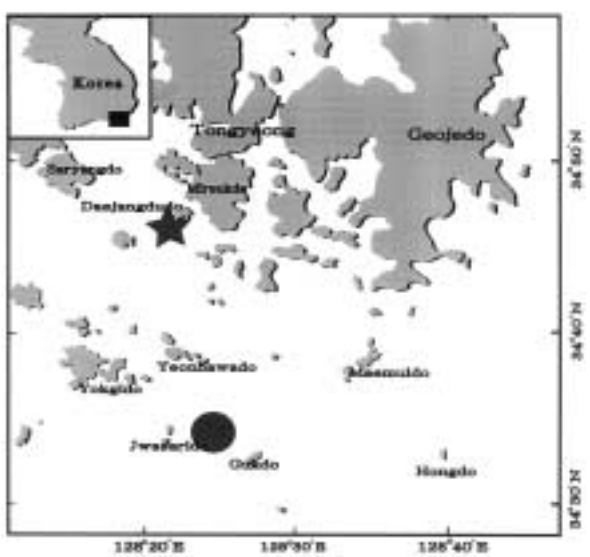

Fig. 1. A sampling sites of *Psenes maculatus* (★) and *Psenes cyanophrys* (●).

examined specimens were deposited at the Department of Marine Biology, Pukyong National University (MBPNU), Busan, Korea.

Psenes maculatus Lütken, 1880

(New Korean name: Tti-mul-reung-dom)
(Fig. 2)

Psenes maculatus Lütken, 1880: 409-603, 5pls. (Central Atlantic Ocean)
Psenes nigrescens Lloyd, 1909: 139-180, 7pls.

Material examined : MBPNU 980617, 1 specimen 46.7 mm in total length (TL), collected by the surrounding net (length 30 m, depth 7~10 m) with the drifting seaweeds. Tongyeong-si, Gyeongsangnam-do, Korea (34° 43′19″N, 128° 21′07″E), June 17, 1998 (Fig. 1).

Description : Dorsal fin rays X-I, 22; anal fin rays III, 22; pelvic fin rays I, 5; pectoral fin rays 20; caudal fin rays 17.

In percentage to body length, head length 37.4%; body depth 46.0%; preanal length 61.1%; caudal peduncle length 8.0%; caudal peduncle depth 10.1%; eye diameter 11.9%.

In percentage to head length, eye diameter 31.7%; snout length 15.1%; interorbital space 34.9%; upper jaw length 35.7%; caudal peduncle depth 27.0% (Table 1).

Body compressed ellipse in shape with vertical bands ('<'shape) on trunk and tail in young stage. Head large with big eyes and small mouth. Scales very small. Lateral line high along sides following dorsal profile. Pelvic fins are large in young stage. This species has rows of melano-

Fig. 2. *Psenes maculatus* Lütken, 46.7 mm in total length, collected from Tongyeong-si, Gyeongsangnam-do, Korea, lateral view.

Table 1. Morphometric and meristic characters of *Psenes maculatus* collected from Tongyeong-si, Gyeongsangnam-do, Korea in June, 1998

Characters	Present study	Lütken (1880)	Ahlstrom *et al.* (1976)	Nakabo (2000)
Number of Specimens	1		1	
Total length (mm)	46.7			50.0
Fork length (mm)	42.9			
Body length (mm)	33.7		22.8	
% of Body length				
Head length	37.4		33.8	
Body depth	46.0		50.4	
Preanal length	61.1		57.0	
Caudal peduncle length	8.0			
Caudal peduncle depth	10.1			
Eye diameter	11.9		13.6	
% of Head length				
Eye diameter	31.7		40.3	
Snout length	15.1		22.1	
Interorbital space	34.9			
Upper jaw length	35.7			
Caudal peduncle depth	27.0			
Meristic characters				
Dorsal fin rays	X, I-22	IX-XI, I-22~24	XI, I-22	X, I-22
Anal fin rays	III, 22	III, 21~23	III, 22	III, 21~22
Pelvic fin rays	I, 5		I, 5	I, 5
Pectoral fin rays	20	20~21	22	21~22
Caudal fin rays	17		9+8	
Scales in lateral series				67~70
Vertetrae		15+18~20	12+23	16+19
Gill rakers			10+1+17	10+19

phores followed the origin of dorsal fin rays and melanophores at the base of pectoral fin.

Body color in 5% formalin : Brown with darken brown vertical bands on the body.

Distribution : South sea of Korea (Tongyeong), Pacific ocean, Atlantic ocean and Indian ocean. From this study, *Psenes maculatus* extended the species geographical range to the southern Korean waters.

Remarks : During young stage of this species residents in the drifting seaweeds or lives with jelly fish. Young *P. maculatus* is similar to *P. arafurensis* and *P. pellucidus*. But this species is distinguished from *P. arafurensis* by having 6 vertical bands on the body and *P. pellucidus* is differ from *P. maculatus* in having large number of dorsal fin rays (D. IX~XII-I~II, 27~32), lower number of anal fin rays (A. III, 20~21), smaller melanophores scattered on the body and none pigment at the base of pectoral fin (Kimura and Suzuki, 1982).

Body form changes from rounded ellipse in young stage to elongate ellipse in adult stage. Pelvic fins large in young, small in adult (Nakabo, 2000).

Psenes cyanophrys Cuvier and Valenciennes, 1833

(New Korean name: Jul-mu-nui-mul -reung-dom) (Fig. 3)

Psenes cyanophrys Cuvier and Valenciennes, 1833: 193~196, fig. 265 (New-Irlande)

Fig. 3. *Psenes cyanophrys* Cuvier and Valenciennes, 179.0 mm in total length, collected from Tongyeong-si, Kyungsangnam-do, Korea, lateral view.

Table 2. Morphometric and meristic characters of *Psenes cyanophrys* collected from Tongyeong-si, Gyeongsangnam-do, Korea in July, 1998

Characters	Present study	Cuvier and Valenciennes (1833)	Kamohara (1942)	Nakabo (2000)
Number of Specimens	1		1	
Total length (mm)	179.0	103.0	130.0	
Fork length (mm)	147.0			
Body length (mm)	124.0			
% of Body length				
Head length	30.0		33.3	
Body depth	55.2		52.6	
Preanal length	48.5			
Caudal peduncle length	10.2			
Caudal peduncle depth	10.7			
Eye diameter	8.3			
% of Head length				
Eye diameter	27.3		23.8	
Snout length	25.2		23.8	
Interorbital space	35.0		32.3	
Upper jaw length	33.4			
Caudal peduncle depth	35.3		32.3	
Meristic characters				
Dorsal fin rays	IX, I-26	IX, I-25	X, I-27	IX~XI-I, 23~28
Anal fin rays	II, 25	III, 25	III, 28	II~III, 24~28
Pelvic fin rays	I, 5	I, 5		
Pectoral fin rays	16	19		
Caudal fin rays	17	17		
Scales in lateral series	62		60	60~63
Gill rakers	10+18			

Psenes champmani Fowler, 1906: 114～122
Psenes cyanophrys Kamohara, 1942: 165～166
Psenes kamoharai (Abe, Kojima & Kosakai), 1963: 31～35

Material examined : MBPNU 980717, 1 specimen, 179.0 mm in total length (TL), collected by the surrounding net (length 30 m, depth 7～10 m) with the drifting seaweeds. Jwasari Islands, Tongyeong-si, Gyeongsangnam-do, Korea (34° 33′93″N, 128° 24′66″E), July 17, 1998 (Fig. 1).

Description : Dorsal fin rays IX-I, 26; anal fin rays II, 25; pelvic fin rays I, 5; pectoral fin rays 16; caudal fin rays 8+7; scales in lateral series 62; gill rakers 10+18.

In percentage to head length, eye diameter 27.3%; snout length 25.2%; interorbital space 35.0%; upper jaw length 33.4%; caudal peduncle depth 35.3% (Table 2).

Body deep, oval and compressed. Shape surface of body had about 16 longitudinal lines. Scales very small. Scales on top of head anterior to eyes. Small mouth located the anterior of snout. Eye relatively smaller than young *P. maculatus* and post-orbital distance more than eye diame-ter.

Body color in life : Body uniform green, abdomen slightly paler than back. *P. maculatus* had lomgitudinal dark-green line which were formed by the spots on each scales under lateral line. Color of dorsal and anal fin are dark-green. Body color changed from green to yelloish-grey in 10% formalin.

Distribution : South sea of Korea (Tongyeong), southern Japan, Pacific Ocean involved Hawaii, Atlantic Ocean, Indian Ocean.

Remark : This species is differ from '*Psenes pellucidus*' in having scales on the interorbital of the head and 62 scales on the lateral line (120 scales in *Psenes pellucidus*) (Fig. 4). Young *P. cyanophrys* is usually resident in the drifting seaweeds or lives with jelly fish. This species differ from the fishes of genera *Cubiceps* (Abe *et al.*, 1963) and *Nomeus* in having deep body (Nakabo, 1993) and distinguish from the other species of genus *Psenes* in having the scales on upper part of opercle and oval shape body (Legaspi, 1956). Young *Psenes cyanophrys* has almost the same in body form in adult (20 cm in total length, Nakabo, 2000). Although it was known that adult *P. cyanophrys* occurred at mid or bottom layer (Nakabo, 2000), the specimen used in this study (179.0 mm in total length) was captured with drifting seaweeds. Therefore, detailed ecological studies of this species should be necessary to understand those life history in Korean waters.

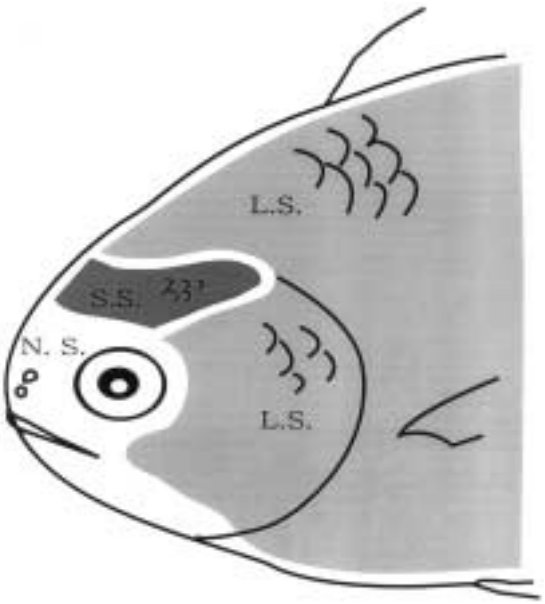

Fig. 4. Diagram showing the scales on the head of *Psenes cyanophrys*. L. S., large scale; S. S., small scale; N. S., none scale part.

Because of longitudinal lines on the body, we propose "Jul-mu-nui-mul-reung-dom" as a Korean name of *P. cyanophrys*.

Key to the species of the family Nomeidae from Korea

1a. More than 100 scales on the lateral line ..... *Psenes pellucidus* (mul-reung-dom)
1b. Less than 100 scales on the lateral line 2
2a. No scale area on the head reaching the top of gill cover ..... *P. maculatus* (Tti-mul-reung-dom : new korean name)
2b. Scales on top of head anterior to eyes (Fig.4) 3
3a. Body deep and rounded ellipse in shape ..... *P. cyanophrys* (Jul-mu-nui-mul-reung-dom: new korean name)
3b. Body elongate ellipse in shape ..... *Cubic squamiceps* (Dong-gang-yeon-chi)

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경남 통영해역에서 발견된 한국 미기록 노메치과 어류 2종 *Psenes maculatus*와 *Psenes cyanophrys* (노메치과, 농어목)에 대하여

명정구 · 조선형 · 김종만 · 김용억*

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1998년 6월과 7월에 경상남도 통영해역에서 떠다니는 해조(drifting seaweeds)를 채집하던 중 Nomeidae과의 우리 나라 미기록 어종인 *Psenes maculatus*와 *Psenes cyanophrys* 각각 1개체가 채집되었다.

*Psenes maculatus*는 유어기에 6개의 「<」모양의 흑점띠가 체측에 존재하는 특징으로 "띠물릉돔"으로 명명한다.

*Psenes cyanophrys*는 눈 뒤에 비늘이 존재하는 점, 체형이 난형인 점 등의 특징으로 같은 속의 물릉돔과 구분되었으며, 옆줄 아래에 16줄의 세로무늬가 나타나는 특징으로서 "줄무늬 물릉돔"으로 명명하였다.