

First Record of the Spotted Butterfish, *Scatophagus argus* (Scatophagidae, Perciformes) from Korea

Chung Lyul Lee and Dong Soo Joo*

Department of Biology, College of Natural Science, Kunsan National University,
Kunsan 573-701, Korea

*Kunsan Regional Maritime Affairs and Fisheries Office, Kunsan 573-030, Korea

Three specimens (148.8~227.1mm standard length) of the spotted butterfish, *Scatophagus argus* (Linnaeus), of the family Scatophagidae were collected for the first time from coastal waters of Puan, Chollabuk-do, Korea from October 1995 to September 1996. *S. argus* was characterized by having numerous round or oval black spots on body surface, 15~16 gill rakers, the united branchiostegal membranes and 4 anal fin spines.

Introduction

The family Scatophagidae which is comprising four species and two genera was widely distributed in the tropical Indo - Pacific Ocean, and primarily estuarine, or regularly enter freshwater and usually shoaling fish (Burgess, 1978; Kuitert, 1992, 1993). The genus *Scatophagus* was known hitherto two species, *S. argus* and *S. tetracanthus*: the former was mainly distributed in the tropical Indo - Pacific and south - eastern Australian Ocean, and the latter, in the east and south African Ocean (Heemstra, 1986; Kuitert, 1993). On the other hand, although records of *S. argus* were already reported in China, Taiwan and Japan (Liu, 1985; Shen, 1990; Shimada, 1993), but it was not known yet in the waters around Korea.

In 1995 and 1996, three specimens of *S. argus* were collected for the first time from coastal waters of Chollabuk - do, Korea. The aim of this paper is to report as first record of *S. argus* from

Korea.

Counts and measurements follow Hubbs and Lagler (1958). Counts for vertical fin rays and all vertebrae were taken from radiograph. The examined specimens were deposited at the Department of Biology, Kunsan National University (BKNU).

Family Scatophagidae

(New Korean name : Napjakdom - kwa)

Genus *Scatophagus* Cuvier et Valenciennes, 1831

(New Korean name : Napjakdom - sok)

Scatophagus Cuvier et Valenciennes, 1831 : 136 (type species : *Chaetodon argus* Linnaeus).

Scatophagus argus (Linnaeus, 1766)

New Korean name: Napjakdom) (Fig. 1~3)

Chaetodon argus Linnaeus, 1766 : 464 (original description, type locality : India).

Scatophagus argus Cuvier et Valenciennes,

1831 : 136 (type species : *Chaetodon argus* Linnaeus) ; Weber and Beaufort, 1936 : 6 ; Liu, 1985 : 237 - 238 ; Shen, 1990 : 301 ; Shimada, 1993 : 777.

Materials examined : BKNU 4191~4192, two specimens, 148.8~227.1mm standard length (SL), Kyokpo, Puan-gun, Chollabuk-do, Korea, Oct. 14, 1995 ; BKNU 4193, a specimen, 222.8 mm SL, Puan-up, Puan-gun, Chollabuk-do, Korea, Sep. 19, 1996.

Description : Dorsal fin rays XI , 16~17 ; anal fin rays IV , 14 ; pectoral fin rays 17~19 ; ventral fin rays I , 5 ; branched caudal fin ray 14 ; vertebrae 10+13=23 ; pored scales in lateral line 83~103 ; gill rakers on the first arch 4~5+11 ; pyloric caeca 7.

In percentages to standard length, head length 25.6~30.9 (27.5 ± 2.95) ; body depth 54.4~59.2 (56.8 ± 2.40) ; body width 16.3~23.4 (19.5 ± 3.58) ; caudal peduncle length 8.3~9.4 (8.7 ± 0.57) ; caudal peduncle depth 13.4~14.3 (13.8 ± 0.45) ; predorsal distance 27.4~34.7 (30.4 ± 3.83) ; prepectoral distance 25.9~29.1 (27.0 ± 1.80) ; preventral distance 31.9~33.7 (33.0 ± 0.98) ; preanal distance 59.6~66.2 (62.1 ± 3.58). In percentages to head length, snout length 26.6~31.6 (29.3 ± 2.53) ; eye diameter 19.7~22.9 (21.0 ± 1.70) ; interorbital width 42.6~48.5 (45.2 ± 3.01) ; body width 60.7~89.9 (71.4 ± 16.04).

Body deep and high, much compressed and oval, covered with fine ctenoid scales. Tip of mouth to vertex straight. Branchiostegal membranes united. Origin of dorsal fin to anterior base of soft dorsal fin nearly horizontal (Fig. 1). Snout projected. Mouth very small, terminal and not protractile. Eye situating in about middle of head. Interorbital width broader than diameter of eye. Posterior nostril round, larger than anterior one, with dermal flap posteriorly. Lateral line complete, reaching to base of cau-

dal fin. Teeth in jaws setiform, tricuspid and moveable. Caudal fin fanshaped. Spine of dorsal, ventral and anal very strong and sharp. Soft dorsal and anal fin scaly. Gill-rakers short and some slender (Fig. 2). The first ray of ventral almost extending to anus. Stomach U-shaped. Intestine elongated and arranged in several folds and its length very long, about 2.85 times of standard length. Swim bladder simple and alike an eggplant as physoclistous.

Body color in fresh : Ground color of body brown, becoming paler on belly and having a beautiful purplish gloss. Surface of body with a number of blackish and roundish spots (Fig. 1). Pectoral fin pale; ventral fin dusky; dorsal, anal and caudal fin with longitudinal black bars on their membranes. In case of a young specimen (BKNU 4192, 148.8mm SL), body side light yellow above, light brown below with round or oval black spots. The color of swim bladder white and semitransparent. The color of intestine gray, brown or yellowish.

Distribution : Yellow Sea of Korea, Taiwan, China, Japan and the Indo-Pacific.

Remarks : Scatophagid fishes are similar to chaetodontids in having small mouth with setiform teeth, axillary at the base of pelvic spines, six or seven branchiostegals (Burgess, 1978).

Fig. 1. *Scatophagus argus* (Linnaeus), BKNU 4193, 222.8 mm SL. Scale : 20 mm.

Fig. 2. Gill rakers of *Scatophagus argus* (Linnaeus). BKUN 4193, 222.8 mm SL. Scale : 10mm.

But they differ from chaetodontids in having 23 vertebrae, tricuspid teeth, a procumbent spine before dorsal fin (Fig. 3). *S. argus* is very similar to *S. tetracanthus* in exomorphology. But *S. argus* sharply differs from *S. tetracanthus* in having round or oval black spots on body surface (six broad and blackish brown cross-bands in *S. tetracanthus*) and 4-5+11=15-16 gill rakers (9-11) (Table 1). Shimada (1993) described that the first procumbent (the third supraneural) is small, but anterior tip of it is visible when the specimens is young (Fig. 3). Herre and Montalban (1927), Weber and Beaufort (1936), Kuitert (1992, 1993) and Nelson (1994) mentioned that scatophagid fishes usually live in tropical coastal waters, but when these fishes were young, they enter freely brackish water, estuaries or freshwater, and go through all their transformation and color changes until become adult, and feed on benthic animals and green algae (Ida, 1988).

Fig. 3. Lateral view of supraneural and associated bones of *Scatophagus argus* (Linnaeus). NS : neural spine, PG : pterygiophore, R : ribs, SN : supraneural, SO : supraoccipital.

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Table 1. Comparison of counts and morphology between *Scatophagus argus* and *S. tetracanthus*

Characters	<i>S. argus</i>			<i>S. tetracanthus</i>
	present specimens	Shimada (1993)	Liu (1985)	Heemstra (1986)
Dorsal fin rays	XI, 16~17	X ~ XI, 16~18	I, XI, 16~17	X - I, 15~18
Anal fin rays	IV, 14	IV, 14~15	IV, 14~15	IV, 14~15
Pectoral fin rays	17~19	17	16	16
Pored scales in lateral line	83~102	85~120	84~88	-
Gill rakers	4~5+11 (15~16)	5+13*	4+10	9~11
Band pattern	oval black spots	oval black spots	oval black spots	6 broad vertical bands
Body shape	compressed and oval	compressed and oval**	compressed and oval	compressed and oval
Mouth	small	small**	small	small
Lateral line	complete	complete	complete	complete
Branchiostegal membrane	united	united	united	united

*from Ida (1988), **from Abe (1987)

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한국산 Scatophagidae과(농어목) 어류의 1 미기록종, *Scatophagus argus*

이 충렬·주동수*

군산대학교 자연대학 생물학과

*군산지방해양수산청 어촌지도과

1995년 10월과 1996년 9월에 전라북도 부안과 격포에서 채집된 Scatophidae과 어류 3개체 (148.8~227.1mm SL)를 조사한 결과 지금까지 우리 나라에서는 서식이 확인되지 않은 *Scatophagus argus*(Linnaeus)로 동정되었다. 본종의 체형은 난원형으로 체고가 높고 매우 측편되어 있으며, 15~16개의 새파가 있고, 뒷지느러미 가시가 4개이며, 측선은 원활하고 꼬리지느러미 기저까지 달하며, 체측에 검은 반점이 산재하고, 새막이 유합되어 있는 점이 주요 특징으로 나타나고 있다. 본종의 한국명은 몸이 몹시 측편되어 있는 점을 들어 납작돔과(Scatophagidae), 납작돔속(*Scatophagus*), 납작돔(*S. argus*)으로 명명하였다.