

New Record of the Deepwater Stingray *Plesiobatis daviesi* from Korea

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ABSTRACT A single specimen (700 mm in disc length) of *Plesiobatis daviesi*, belonging to the family Plesiobatidae, was firstly collected in the north-eastern coastal waters of Jeju Island, Korea by using a bottom trawl on 24 October 2010. This species was characterized by having five pairs of gill openings, tail with one to three large spines, long snout length, long caudal fin, and pleated margin of nasal curtain. It is morphologically similar to *Urolophus aurantiacus*, but the former is distinguished from the latter by having longer caudal fin and snout length. We add *P. daviesi* to the Korean fish fauna and suggest the new Korean names, “Gin-kko-ri-huin-ga-o-ri-gwa”, “Gin-kko-ri-huin-ga-o-ri-sok” and “Gin-kko-ri-huin-ga-o-ri” for the family, genus and species, respectively.

Key words: New record, Plesiobatidae, *Plesiobatis daviesi*, Korea

INTRODUCTION

The family Plesiobatidae, belonging to order Myliobastiformes consists of a single species worldwide (Jeong, 2000; Nelson, 2006; Ebert, 2014). It inhabits the soft bottom of continental and insular slopes in general (Compagno *et al.*, 1989; Compagno and Last, 1997). This family is characterized by following morphological characters: eyes and spiracles located dorsally and closely each other; snout long, over six times the diameter of eye; nasal curtain incompletely united, not reaching mouth; floor of mouth without lobate papillae (Nishida, 1990; Ebert, 2014).

Plesiobatis daviesi, belonging to monotypic family Plesiobatidae, is widely distributed in Indo-Pacific Oceans from South Africa to the Hawaiian Islands (Froese and Pauly, 2015). Wallace (1967) firstly reported this species which was collected from the mouth of Limpopo River, Portuguese East Africa. This species is about 50 cm in total length at birth and grow up 270 cm in maximum total length (Compagno, 1986; Ebert, 2014).

Recently, one specimen of *P. daviesi* was collected from the coastal waters of Jeju Island (Marine block

no. 110). Here, we describe the morphological characters of *P. daviesi* as an addition to the list of Korean fishes.

MATERIALS AND METHODS

When we estimated the relative length, disc length was used as a denominator and a standard instead of total length because the specimen was partially cut in the tail. Measurements are followed by modifying the methods of Wallace (1967) and Ebert (2014). The examined specimen was deposited at the Fish Genetics and Breeding Laboratory, Jeju National University (JNU), Korea.

Family Plesiobatidae Nishida, 1990

(New Korean name: Gin-kko-ri-huin-ga-o-ri-gwa)

Eyes and spiracles located dorsally on head. Nasal capsules expanded laterally. Nasal curtain incompletely united, not reaching mouth. Caudal fin well developed and very elongated. Dorsal fin absent. Tooth counts 30 at upper and 62 at lower jaw. Gill openings small, five pairs on underside in front of pectoral disc. Last epibranchial cartilage not fused with fourth and fifth pharyngobranchial cartilages. Five branchial arches. Fourth and fifth pharyngobranchial cartilages proximally fused. Rostral extensions of pectoral propterygia absent (Nishida, 1990;

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Ebert, 2014).

Genus *Plesiobatis* Nishida, 1990

(New Korean name: Gin-kko-ri-huin-ga-o-ri-sok)

Plesiobatis Nishida, 1990: 98 (type species: *Plesiobatis daviesi* (Wallace), 1967)

***Plesiobatis daviesi* (Wallace, 1967)**

(Fig. 1; Table 1)

(New Korean name: Gin-kko-ri-huin-ga-o-ri-gwa)

Urotrygon daviesi Wallace 1967: 8 (type locality: Mozambique Channel, off mouth of Limpopo River, southern Africa)

Plesiobatis daviesi: Nishida, 1990: 98 (Japan); Chave and Mundy, 1994: 380 (Hawaii); Randall and Lim, 2000: 582 (South China Sea); Hutchins, 2001: 16 (western Australia); Aizawa, 2002: 175 (Japan); Ebert *et al.*, 2002: 356 (South Africa); Randall, 2007: 44 (Hawaiian Islands); Akhilesh *et al.*, 2009: 243 (northeastern Andaman Sea); Ebert, 2014: 83 (Indian Ocean).

Material examined. JNU-0087, one specimen, 700 mm in disc length (DL), off coastal waters of Jeju Island (marine block no. 110), 24 October 2010, bottom trawl.

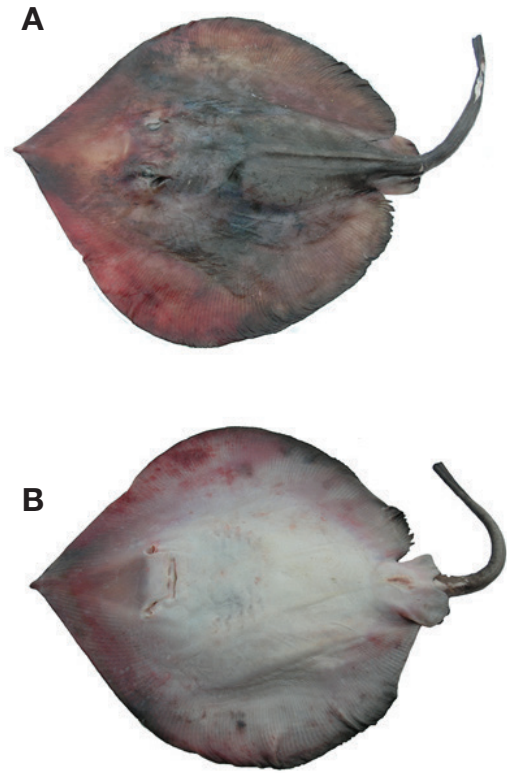


Fig. 1. *Plesiobatis daviesi*, 700 mm DL, off Jeju Island, Korea. A, dorsal view; B, ventral view.

Table 1. Comparison of morphometric characters of *Plesiobatis daviesi*

	Present study	Wallace (1967)		Nair and Soundararajan (1973)	Akhilesh <i>et al.</i> (2009)
		Holotype	Paratype		
Total length (mm)	Damaged (n = 1)	1,717 (n = 1)	596 (n = 1)	534 (n = 1)	925, 1,560 (n = 2)
Disc length (mm)	700	961	323	305	500, 827
In % of disc length					
Disc width	90.7	95.9	101.5	99.7	94.9~9.80
Pre-caudal length	141.0	–	–	–	139.0~142.4
Pre-narial length	28.6	–	–	–	29.2~29.5
Pre-oral length	34.1	34.0	35.9	36.7	34.7~36.0
Pre-orbital length	34.9	32.3	32.2	33.4	33.9~36.0
Pre-spiracle length	37.7	–	–	–	36.3~38.0
Pre-gill length (from first gill slit)	45.0	–	–	46.2	46.9~47.0
Pre-gill length (from first gill slit)	54.6	–	–	–	55.3~59.0
Eye length	3.9	–	–	3.6	3.2
Eye height	0.9	–	–	–	0.9~1.4
Interorbital width	10.1	7.9	9.6	12.1	13.0~13.9
Internarial width	13.7	13.9	16.4	–	14.2
Mouth width	10.7	11.9	11.1	10.5	11.2~12.2
Spiracle length	5.7	–	–	–	6.1~7.0
Interspiracle width	14.9	15.6	17.0	16.7	16.0~16.2
First gill slit length	3.6	–	–	–	3.3~3.8
Second gill slit length	3.4	–	–	–	3.3~3.8
Fifth gill slit length	2.7	–	–	–	2.6~2.5
Distance between first pair of gill slits	21.6	22.3	22.9	22.3	23.6~25.5
Distance between fifth pair of gill slits	13.1	14.6	14.9	13.8	14.5~16.0
Anterior pelvic length	13.3	–	–	–	12.0~12.8
Pelvic width	10.9	–	–	–	8.0~8.8
Snout to tail spine origin	133.4	131.4	134.1	126.6	135.5~137.0

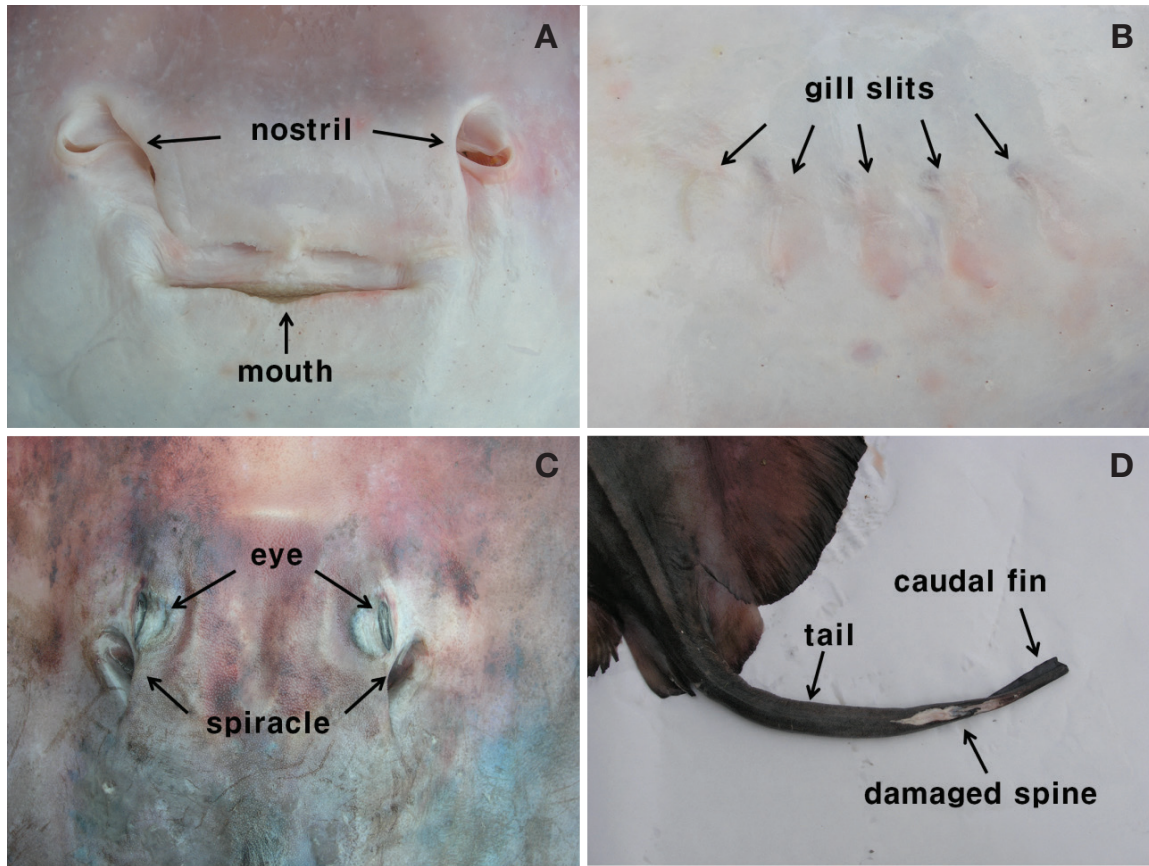


Fig. 2. A photograph showing mouth and nostril (A), five gill openings (B), eye and spiracle (C), and tail and damaged caudal spine and fin (D).

Description. Measurements for the present specimen are shown in Table 1. Snout slightly pointed, broadly angular and markedly produced, its length over 6 times eye diameters; disc oval, depressed and disc length slightly longer than disc width, its length 1.1 times disc width; distance between tip of snout and eye half from eye to posterior of disc length or two times the interorbital width; angle of anterior portion of disc 94° ; upper surface of the disc and tail covered with close-set prickles; eyes moderately size, smaller than spiracles, its length 0.7 times spiracle length and close to spiracles; no dorsal and anal fin; margin of nasal curtain pleated; mouth relatively straight, moderately broad with labial folds; oral teeth small, rounded-oval in shape; teeth counts 39 in upper and 41 in lower jaw; gill openings small, five pairs on underside of front half of pectoral disc; first gill slits larger than others, but fifth shorter; pelvic fins low, rounded-angular; caudal fin well developed on tail; but tail narrow in backward and damaged; one prominent stinging spine on dorsal surface of tail; precaudal tail slightly depressed and subcylindrical without lateral folds on sides.

Coloration. In fresh, upper surface a uniform purplish-brown or purplish-grey sometimes with irregular dusky blotches or spots; white below with dusky margin on disc, underside of tail dark. After preservation, upper part dark brown-grey without dusky blotches; disc brown.

Distribution. Known from Indo-Pacific Ocean: Hawaii Islands, Japan, China, Taiwan, Indonesia, Philippines, northern Australia, Mozambique to southern India and South Africa (Compagno, 1986; Ebert, 2014). In Korea, it occurs around Jeju Island (present study).

Remarks. The present specimen, collected in the coastal waters of Jeju Island, Korea, agrees well in its morphological characters with the species described in previous studies (Wallace, 1967; Aizawa, 2002; Akhilesh *et al.*, 2009). For example, it has five pairs of gill openings, one large spine on tail, long and broad snout in front of eyes, long caudal fin, no dorsal fin, pleated margin of nasal curtain, snout length over 6 times orbit diameter, eyes close to spiracles, upper surface of the disc and tail covered with close-set prickles. Thus, we identified our spec-

imen to be *P. daviesi* base on the morphological characters.

P. daviesi has long been recognized as a member of the genus *Urotrygon* Gill, 1863, by virtue of its long caudal fin. However, Nishida (1990) established the new genus *Plesiobatis* under the new family Plesiobatididae based on the nasal curtain incompletely united, not reaching the mouth, and its size and soft disc.

P. daviesi is called as the deepwater stingray in English because this species has been found on continental and insular slopes at a depth of 44~780 m (Aizawa *et al.*, 2013). As the large size of this species and low number of records indicate low productivity, hence poor resilience to fisheries, it has classified as “least concern” in the IUCN red list status (IUCN, 2014).

P. daviesi is morphologically similar to *Urolophus aurantiacus* Müller and Henle, 1841, and both species inhabit in East Asia. However the former can be clearly distinguished from the latter by having the nasal curtain incompletely united, not reaching the mouth (vs. very long, overlapping mouth in *U. aurantiacus*), caudal fin long, about half length of tail (vs. short) and snout length long, its length over 6 times eye diameters (vs. short, less than 6 times) (Aizawa, 2002; Ebert, 2014). We herein propose the new Korean names, “Gin-kko-ri-huin-ga-o-ri-gwa”, “Gin-kko-ri-huin-ga-o-ri-sok” and “Gin-kko-ri-huin-ga-o-ri” for family, genus and species, respectively.

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한국산 긴꼬리흰가오리과 (Plesiobatididae) 어류 1미기록종, *Plesiobatis daviesi*

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요 약 : 매가오리목, 긴꼬리흰가오리과 (신칭)에 속하는 *Plesiobatis daviesi* 1개체 (체반장 700 mm)가 2010년 10월 11일 제주도 동북쪽 연안 (해구번호 110)에서 저인망에 처음으로 채집되었다. 이 종은 5쌍의 아가미 구멍이 있는 점, 꼬리에 1~3개의 가시가 있는 점, 주둥이가 긴 점, 꼬리지느러미가 긴 점, 그리고 코 끝에 커튼 모양의 주름이 있는 점이 특징이다. 그리고 형태적으로 흰가오리와 유사하지만, 흰가오리보다 꼬리지느러미 길이와 주둥이 길이가 상대적으로 긴 특징을 갖는다. 이 미기록종의 과명과 속명 그리고 종명은 “긴꼬리흰가오리과”, “긴꼬리흰가오리속” 그리고 “긴꼬리흰가오리”로 각각 제안한다.

찾아보기 낱말: 미기록종, 긴꼬리흰가오리, 제주도, 한국