

A New Record of Family Chanidae (Gonorhynchiformes ; Chanoidei) from Korea

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A species, *Chanos chanos* (Forsskal), collected in Puan, Chollabuk-do on August 1994, of family Chanidae belonging to order Gonorhynchiformes was studied for the first time in Korea. *C. chanos* was characterized by the form of dorsal and caudal fin and the shape of mouth. A new Korean name "Gaednongeo" is proposed for the *C. chanos*.

Introduction

In the world, the family Chanidae belonging to the order Gonorhynchiformes was reported only one species (Nelson, 1994). This species was already reported in China and Japan (Chu, 1984 ; Masuda *et al.*, 1988) but did not report in Korea until now. Recently the family Chanidae from Korea was collected at the first time in Kyokpo, Puan-gun, Chollabuk-do, Korea on August 1994. This species was well distinguished from other species in the shape of caudal fin, the structure of mouth and the form of body. The aim of this study is to report *Chanos chanos* as a new record from Korea and to describe its important morphological characters. All counts and measurements of the specimens were followed mainly method of Hubbs and Lagler (1964). The examined specimens were deposited at the Department of Biology, Kunsan National University (BKNU).

Suborder Chanoidei(New Korean name : Gaednongeo - amok)

Dorsal fin single, and situated over middle part of body. Mouth usually small and put anterior head. Body surface with cycloid scales. Swim bladder present. Mouth toothless. Branchiostegal rays 4. No adipose fin.

Family Chanidae(New Korean name : Gaednongeo - kwa)

Body compressed and fusiform. Lower part of abdomen round or flat. Eyes moderate and placed on middle part of head side. Adipose eye developed well. Mouth small, terminal and upper jaw nonprotractile. Mouth toothless. Gill opening large. Body surface was covered with many small cycloid scales. Head naked without scales. Lateral line complete. Swim bladder present. Dorsal and anal fin with basal scaly sheath. Axillary scales of pectoral and pelvic fin large. No fin spines.

Genus *Chanos* Lacepede, 1803 (New Korean name : Gaednongeo - sok)

Chanos Lacepede, 1803, Hist. Nat. Poiss., 5 : 395 (type species : *Chanos arabicus* Lacepede).

Body compressed and fusiform. Head small and slightly obtuse. Eye moderate, and located at middle part of head side. Upper and lower jaws toothless. Gill opening large. Gill rakers dense and thin. Body surface with cycloid scales. Head naked without scales. Lateral line complete. Caudal fin deeply forked.

Chanos chanos (Forsskål, 1755) (New Korean name : Gaednongeo)

Mugil chanos Forsskål, 1755, Descript. Anim., 74 (type locality : China, Red Sea).

Chanos chanos Jordan et Evermann, 1902, Proc. U. S. Natn. Mus., 25 : 327 (type locality : Taiwan) ; Masuda *et al.*, 1988. Tokai Univ. Press, Kyoto, p. 54 ; Nakabo, 1993, Tokai Univ. Press, Kyoto, p. 211.

Materials : BKNU 2019 - 2021, 3 specimens, 308.3~345.8 mm standard length, Kyokpo. Puan - gun, Chollabuk - do, Korea, August 6, 1994.

Description : Dorsal fin rays 14 ; anal fin rays 9~10 ; pectoral fin rays 17 ; ventral fin rays 11~12 ; lateral line scales 79~81, gill rakers 157~172.

In percentages to the standard length, Head length 25.3~26.2 (25.8 ± 0.36) ; body depth

24.5~27.7 (26.5 ± 1.45) ; caudal peduncle length 11.2~11.8 (11.5 ± 0.27) ; caudal peduncle depth 9.3~9.6 (9.4 ± 0.13) ; preorbital snout length 6.1~6.8 (6.5 ± 0.32) ; eye diameter 5.3~6.1 (5.6 ± 0.33) ; interorbital width 9.2~9.5 (9.3 ± 0.11) ; predorsal distance 49.0~51.9 (50.5 ± 1.18) ; prepectoral distance 26.2~26.7 (26.5 ± 0.20) ; pre-ventral distance 55.6~56.2 (55.8 ± 0.27) ; preanal distance 80.3~80.9 (80.7 ± 0.23). In percentages to the head length, preorbital snout length 24.1~26.4 (25.4 ± 0.95) ; eye diameter 20.2~23.5 (21.8 ± 1.34) ; interorbital width 35.2~37.4 (36.1 ± 0.91).

Body compressed and fusiform. Head small and slightly obtuse. Dorsal fin moderate and situated over middle part of body, and its posterior margin deeply concave. Pelvic fin small and slightly behind under dorsal fin. Caudal fin large and deeply forked. Body surface covered with small cycloid scales but head naked without scales. Eye moderate and placed at middle of head side. Adipose eye developed well. Mouth small and placed at tip of head. Nostril round with a valve between anterior and posterior nostrils. Lateral line complete, almost horizontal to the body sides, and passed middle part of caudal fin base. Lower part of dorsal and anal fin covered with membranous scaly sheath. Pectoral and ventral fin with a long axillary scale. Pectoral fin placed at lower part of body. The base of caudal fin present 2 large scales. Gill rakers thin and dense.

Body color : In 10 % formalin, dorsal part of body blue - gray, and body side and abdominal part silvery. Dorsal and caudal fin dark, but pectoral, ventral and anal fin pale.

Distribution : West Sea of Korea, China, Japan, Taiwan and India.

Remarks : Like the description of Chu (1983) and Smith (1986), *C. chanos* from Korea also



Fig. 1. *Chanos chanos*, 308.3 mm in SL, BKNU 2019.

showed the particular characters (Table 1). On the other hand, *Chanos chanos* is partly similar to *Mugil cephalus* in structure of mouth part and developed adipose eye, and to *Lateolabrax japonicus* in form of body. Matsubara (1979) mentioned that the family Chanidae belonging to the suborder Chanoidei was classified into the order Clupeiformes based on the characters of branchiostegal rays 4, present of oviduct and undivided gas bladder inside. But many workers (Chu, 1984; Smith, 1986; Masuda *et al.*, 1988; Nakabo, 1993; Nelson, 1994) have classified into the order Gonorhynchiformes based on the characters of the mouth very small, toothless and pointed, orbitosphinoid absent, parietals small and suprabranchial organ present. I also regard their criteria as appropriate opinions. In addition to above characters, the order Gonorhynchiformes much differs from the order Clupeiformes in the structure of mouth and the form of branchiostegal membrane. This species spawn in the ocean, but their metamorphosis from the ribbonlike

larval stage occurred in brackish water (Nelson, 1994).

References

- Chu, Y. 1984. The Fishes of Fujian Province I. Fujian Sci. Tech. Press, China, pp. 113~117.
- Forsskål, P. 1755. Description animalium; avium, amphibiorum, piscium, insectorum, vermium, quae in itinere orientali observavit, Hauniae, 164 pp.
- Hubbs, C. L. and K. F. Lagler. 1964. Fishes of the Great Lakes Region. Michigan Univ. Press, pp. 19~27.
- Jordan, D. S. and B. W. Evermann. 1902. Preliminary report on an investigation of the fishes and fisheries of the Hawaiian islands. Rep. U. S. Fish Comm. 27 : 353~499.
- Lacepede, B. 1803. Histoire naturelle des Poissons. V, Paris, 803 pp.
- Masuda, H., K. Amaoka, C. Araga, T. Uyeno and T. Yoshino. 1988. The Fishes of the Japanese Archipelago. Tokai Univ. Press, p. 54.
- Matsubara, K. 1979. Fish morphology and hierachy. 2nd ed., Ishizaki - Shoten, Tokyo, p. 199.
- Nakabo, T. 1993. Fishes of Japan with Pictorial Keys to the Species. Tokai Univ. Press, p. 211.
- Nelson, J. S. 1994. Fishes of the World. Wiley, pp. 127~129.
- Smith, M. M. 1986. Smith's Sea Fishes. in Smith and Heemstra ed. Springer - Verlag, pp. 209 - 210.

Table 1. Comparison of counts, measurements and morphology of body parts of *Chanos chanos* reported by other authors.

Characters	Present study	Chu (1984)	Smith (1986)
Dorsal fin rays	14	14	13 - 17
Anal fin rays	9 - 10	11	8 - 10
Pectoral fin rays	17	15	15 - 17
Ventral fin rays	11 - 12	12	10 - 12
Lateral line scales	79 - 81	85 - 87	78 - 90
Gill rakers	157 - 172	152 - 163	(147 - 160)+(107 - 165)
SL/body depth	3.6 - 4.1	3.8 - 4.2	3.1 - 4.7
SL/head length(HL)	3.8 - 4.0	3.8 - 4.0	-
HL/Snout length	3.8 - 4.1	4.3 - 4.8	-
HL/eye diameter	4.3 - 5.0	3.5 - 4.1	-
HL/interorbital width	2.7 - 2.8	2.4	-
Branchiostegal membrane	united	united	united
Caudal fin	long, deeply forked	long, deeply forked	long, deeply forked
Base of dorsal and anal fin	scaly and sheath	scaly and sheath	scaly and sheath

* : standard length.

韓國産 **Chanidae**科 (압치目) 魚類의 1 未記錄種, *Chanos chanos*

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1994年 8月 全北 扶安郡 格浦 앞 바다에서 채집한 어류 중에서 體長 308.3~345.8 mm 되는 標本 3 個 體를 收集하여 調査한 結果 지금까지 우리 나라에서는 棲息이 報告되지 않은 *Chanos chanos*(Forsskål) 로 동정되었다. 本種은 등지느러미와 꼬리지느러미의 形態, 입의 모양, 등지느러미와 뒷지느러미 기부에 얇은 막의 존재 등에서 독특한 특징을 나타내고 있어 다른 種과 잘 區分된다. 本種의 韓國名은 갯농어亞目 (Chanoidei), 갯농어科 (Chanidae), 갯농어屬 (*Chanos*), 갯농어 (*C. chanos*) 라고 命名하였다.