

A Revision of the Eleotrid Goby Genus *Odontobutis* in Japan, Korea and China

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(Received May 16, 1984)

Abstract The eleotrid goby genus *Odontobutis* in Japan, Korea and China is represented by two species and three subspecies i.e., *O. obscura obscura*, *O. o. potamophila*, *O. o. interrupta* subsp. nov. and *O. platycephala* sp. nov. The genus is characterized by the presence of smooth, feeble crests on the dorsal sides of the eyes, by the absence of a spine on the preopercle, by the absence of teeth on the vomer, by the wide gill openings, by the larger interorbital width to eye diameter ratio and by the predorsal scales which extend forward on the upper surface of the head to between the hind nostrils.

Odontobutis platycephala is distinguished from *O. obscura* by the presence of two sensory canals on the preoperculomandibular pit line. *O. o. potamophila* and *O. o. interrupta* are distinguished from *O. o. obscura* by the presence of one postocular sensory canal on the supraorbital pit line. *O. o. interrupta* is distinguished from *O. o. potamophila* by the infraorbital connected to the verticalantorbital pit line and the interrupted cross bands on the body. Each of *O. o. obscura*, *O. o. interrupta* and *O. o. potamophila* is distributed in western Japan, the western coastal slope of Korea and China, respectively. *O. platycephala* occurs throughout Korea except along the northern coast.

The eleotrid goby genus *Odontobutis* has been represented by only one species, *O. obscura* (Temminck et Schlegel), distributed throughout the freshwaters of Japan, Korea, China and the Philippines.

Eleotris obscura Temminck et Schlegel, 1848 was described from near Nagasaki, Kyushu, Japan. The genus *Odontobutis* with *obscura* as the type species was erected by Bleeker (1874). This generic name was used by the following authors: Jordan and Snyder (1901a), Herre (1927), Koumans (1953) and Miyadi et al. (1976). Jordan and Seale (1905) transferred this species from *Odontobutis* to *Mogurnda* and some authors followed them: Tomiyama (1936), Jeong (1954, 1977), Matsubara (1955), Aoyagi (1957), Okada (1959-60) and Fowler (1962). Jordan and Snyder (1901b) altered the species name from *obscura* to *obscurus*, and Nakamura (1963) followed them.

On the other hand, two species of *Odontobutis*, *O. potamophila* and *O. wui*, were reported from China. *Odontobutis potamophila* (Günther, 1861) was synonymized with *M. obscura* by Tomiyama (1936), Okada (1959-60) and Fowler (1962). *O. wui* (Chen, 1934) was synonymized with *M. obscura* by Fowler (1962).

Nichols (1943) recognized *E. potamophila* as different from *O. obscura* and changed the generic name of *potamophila* from *Odontobutis* to *Philypnus*.

This study, by examining materials collected from Japan, Korea and China, revealed that the genus contains two species, *O. obscura* and *O. platycephala* sp. nov., and the former consists of three subspecies *obscura*, *potamophila* and *interrupta* subsp. nov.

Materials and methods

Measuring and counting procedures followed Hubbs and Lagler (1958) with the following additions. Body depth was measured at the pectoral origin, body width at the first dorsal origin, head width at the preopercular margin and head depth at the postocular. Lateral scale rows were counted from the upper end of the gill opening to the base of the caudal fin, transverse scales from the origin of the second dorsal fin to the anal base. Lateral scales with pit organs were defined as the scales which possesses pit organs. Counts for vertebrae were taken from radiographs. Observations of the arrangement of pit organs and sensory canals were made on specimens stained with cyanine.

The materials examined are listed in each species account. In the lists of materials, data for the specimens are given in the following order: catalogue number, number of individuals, standard length, collecting locality, collecting date. Abbreviations for the catalogue numbers of the specimens are: NSMT-P, Department of Zoology, National Science Museum, Tokyo; HUMZ, Laboratory of Marine Zoology, Faculty of Fisheries, Hokkaido University; MTUF, the Museum of Tokyo University of Fisheries; YCM-P, Yokosuka City Museum; ZUMT, Department of Zoology, University Museum, University of Tokyo; EUB, Laboratory of Biology, Faculty of Science, Ehime University; LICPP, Laboratory of Ichthyology, the Crown Prince's Palace, Tokyo; SMWU, Sang Myung Women's University, Seoul; BMNH, British Museum (Natural History), London; RMNH, Rijksmuseum van Natuurlijke Historie, Leiden; USNM, National Museum of Natural History, Smithsonian Institution, Washington.

Genus *Odontobutis*

Odontobutis Bleeker, 1874, p. 305 (type-species, *Eleotris obscura* Temminck et Schlegel, 1848).

Diagnosis. Preopercle without spine; no teeth on vomer; gill openings continued forward below eyes; smooth, feeble bony crests on dorsal sides of eyes; interorbital width wider than eye diameter; predorsal scales are extended forward on upper surface of head to between hind nostrils; tongue round, mostly free.

Description. First dorsal spines VI–VIII, third or fourth spine longest; second dorsal rays 7–10; anal rays 5–9; pectoral rays 13–17; pelvic I, 5; lateral scale rows 31–51; lateral scales with pit organs 25–34; transverse scales 12–24; predorsal scales 20–40; branchiostegal rays 6; abdominal vertebrae 13–16; caudal vertebrae 14–18; total vertebrae 28–33. Pelvic fins separated. Two dorsal fins separated. Body stout. Head large, cheek and opercle scaled. Mouth large, oblique, maxillary reaching below anterior border of eye. Lower jaw prominent. Conical teeth in rows on both jaws.

Remarks. Many authors synonymized *Odontobutis* with *Mogurnda* (Jordan and Seale, 1905; Tomiyama, 1936; Matsubara, 1955; Aoyagi, 1957; Okada, 1959–60; Fowler, 1962). *Mogurnda* has no bony crests on the head and medium wide

gill openings, while *Odontobutis* is characterized by the presence of smooth bony crests on the dorsal side of eyes and quite wide gill openings. Therefore, we separate *Odontobutis* from *Mogurnda*.

Key to the species of *Odontobutis*
(Fig. 1)

- 1(6) Sensory canals absent on preoperculomandibular pit line; first dark crossbands from half the middle of the first dorsal fin downward.
- 2(3) Sensory canal absent at postocular on supraorbital pit line (Japan).....
.....*O. obscura obscura*
- 3(2) Sensory canal present at postocular on supraorbital pit line (Sensory canal c in Fig. 1C–F).
- 4(5) Infraorbital and verticalantorbital pit lines (pit lines 6 and 7 in Fig. 1G–H) not connected (China).....*O. o. potamophila*
- 5(4) Infraorbital and verticalantorbital pit line connected; dark bands on body interrupted by pale longitudinal line on each dorsal side (Korea)..*O. o. intetrupia* subsp. nov.
- 6(1) Two sensory canals (d–e in Fig. 1H) present on preoperculomandibular pit line, also three (a–c in Fig. 1G) on supraorbital pit line: first dark crossbands on body occupying the area from posterior half of first dorsal fin to origin of second dorsal fin (Korea).....
.....*O. platycephala* sp. nov.

Odontobutis obscura obscura
(Temminck et Schlegel)
(Japanese name: Donko)
(Figs. 1A, B, 2A)

Eleotris obscura Temminck and Schlegel, 1848, p. 149, pl. 77, figs. 1–3 (near Nagasaki, Kyushu, Japan).

Odontobutis obscura: Bleeker, 1874, p. 305 (near Nagasaki, Kyushu, Japan).

Odontobutis obscurus: Jordan and Synder, 1901b, p. 43 (Kurume, Tokyo, Japan); Nakamura, 1963, p. 187, fig. 140 (Otsu, Japan).

Mogurnda obscura: Jordan and Seale, 1905, Chinese specimens, none described from Japan; Aoyagi, 1957, p. 214, figs. 179–180 (Japan); Okada, 1959–60, p. 649, fig. 112 (Japan).

Material examined. Holotype: RMNH 2040 a, 133.0 mm SL, near Nagasaki, Kyushu, Japan, col-

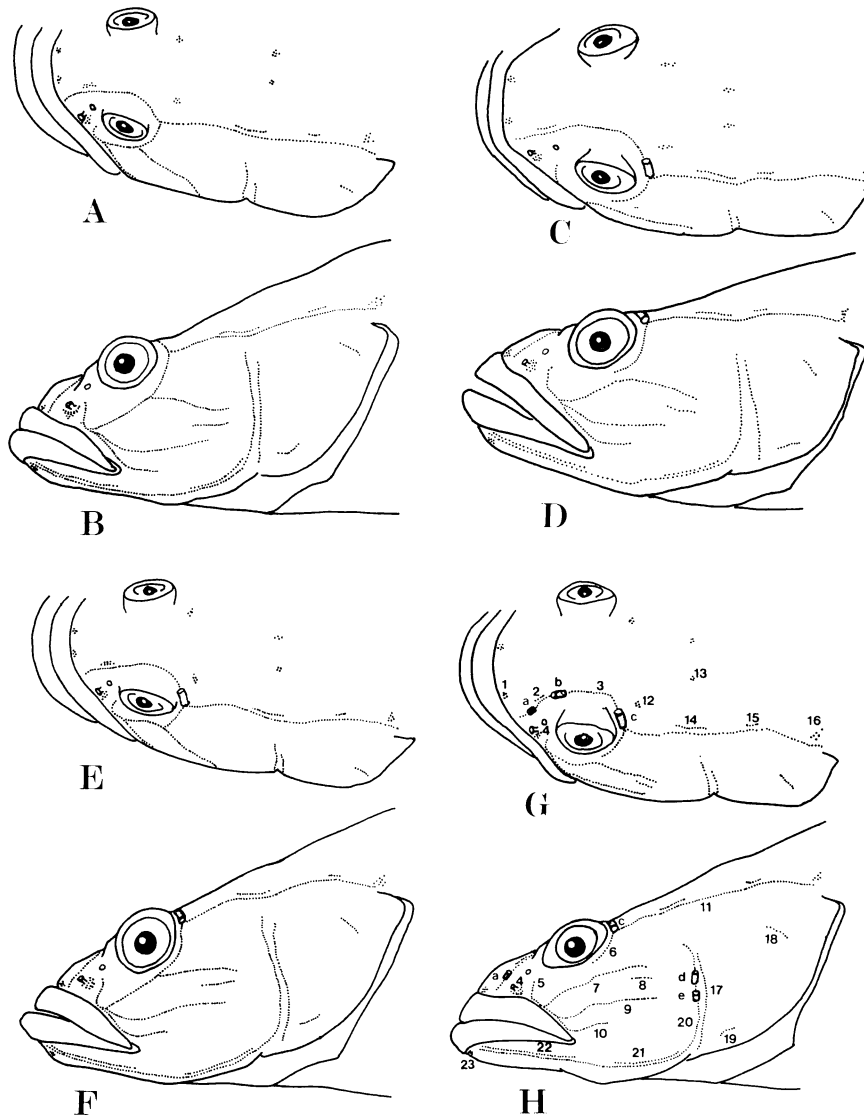


Fig. 1. Schematic figures of the sensory canals and pit organs of *Odontobutis*. A, B, *Odontobutis obscura*; C, D, *O. o. potamophila*; E, F, *O. o. interrupta*; G, H, *O. platycephala*.

lecting date unknown.

Paratypes: RMNH 2039 a-d and 2040 b-e, near Nagasaki, Kyushu, Japan, collecting date unknown.

Additional specimens: 312 specimens. NSMT-P 22396, 5, 98.3-120.8, Kawabe River, Minokoshi, Kita-gun, Ehime Pref., July 22, 1979; NSMT-P 22397, 20, 73.3-82.6, collecting locality same as in NSMT-P 22396, July 22, 1980; NSMT-P 22398, 4, 19.3-68.9, Ichijo River, Yasuhaga-cho, Fukui-shi, Fukui Pref., Nov. 1, 1979; NSMT-P 22399, 1, 83.4, Yamato River, Furuse, Gose-shi, Nara Pref., Oct. 27, 1979; NSMT-P 22400, 2, 47.2-69.0, Mimata

River, Usa-gun, Ohita Pref., Jan. 4, 1980; NSMT-P 22401, 6, 29.5-37.1, Uji River, Takao-gun, Kyoto-fu, May 12, 1979; HUMZ 101282-101285, 4, 77.7-95.1, collecting locality same as in NSMT-P 22396, July 13, 1979; HUMZ 101286-101294, 9, 28.0-50.4, Ishide River, Matsuyama-shi, Ehime Pref., May 17, 1979; HUMZ 101295-101296, 2, 88.4-121.5, Hiji River, Hataki, Ohzu-shi, Ehime Pref., Sep. 15, 1979; HUMZ 101297, 1, 43.9, Shigenobu River, Morimatsu, Ehime Pref., May 5, 1979; HUMZ 101298, 1, 56.9, collecting locality same as in HUMZ 101297, May 9, 1979; HUMZ 101299-101300, 2, 109.6-

- 125.1, collecting locality same as in NSMT-P 22396, Apr. 28, 1980; HUMZ 101301-101306, 6, 21.8-35.4, Hatahoko River, Kofure, Iki-gun, Nagasaki Pref., Sep. 13, 1980; MTUF 25018, 15, 19.8-120.4, Kannon River, Ushinotani, Fukui Pref., Nov. 1, 1979; MTUF 25019, 4, 82.4-119.2, Katsura River, Nishikyo-ku, Kyoto-fu, May 1, 1979; MTUF 25020, 1, 67.3, Kizu River, Yahata-cho, Ayaki-gun, Kyoto-fu, May 1, 1979; MTUF 25021, 9, 19.8-73.3, Morishita River, Tsukiura-cho, Ishikawa Pref., Oct. 31, 1979; YCM-P 12107, 3, 50.5-126.2, Yogo River, Yogo-cho, Ika-gun, Shiga Pref., May 1980; YCM-P 12108, 1, 128.5, Iyono River, Iyono, Sukumo-shi, Kochi Pref., Aug. 18, 1980; YCM-P 12109, 2, 58.3-69.1, Kagetsu River, Nobote-cho, Hita-shi, Ohita Pref., Aug. 14, 1979; YCM-P 12110, 7, 27.8-82.5, collecting locality and date same as in NSMT-P 22398; YCM-P 12111, 11, 21.5-86.5, collecting locality same as in YCM-P 12107, unknown: ZUMT 54351, 3, 38.2-106.8, Oda River, Chisei, Kita-gun, Ehime Pref., June 8, 1979; ZUMT 54352, 1, 67.4, Hiji River, Nomura-cho, Higashiwa-gun, Ehime Pref., Sep. 16, 1979; ZUMT 54353, 1, 39.5, Higashinagato, Matsuyama-shi, Ehime Pref., May 24, 1979; ZUMT 54354, 1, 46.2, Sumida River, Masaki-cho, Iyo-gun, Ehime Pref., May 17, 1980; ZUMT 54355, 8, 35.7-139.9, Yanaharazumi, Shigenobu-cho, Matsuyama-shi, Ehime Pref., May 20, 1979; EUB.Kyu. 25, 5, 50.2-75.4, Arita River, Furukoba, Nishimatsuura-gun, Saga Pref., Sep. 14, 1973; EUB.Kyu. 63.3.2, 8, 57.3-91.2, Shin River, Arita-gun, Kagoshima Pref., Mar. 2, 1973; EUB.Kyu. 154, 1, 75.1, Midori River, Futamata, Kumamoto Pref., Sep. 18, 1975; EUB.Kyu.Imi, 4, 27.8-45.8, Imi River, Imi, Higashikunisaki-gun, Ohita Pref., unknown: SMWU 110, 54, 23.0-124.9, collecting locality and date same as in ZUMT 54355; SMWU 111, 2, 90.9-132.9, Hiji River, Akaiwa, Kita-gun, Ehime Pref., Sep. 16, 1979; SMWU 112, 8, 107.7-134.9, collecting locality same as in HUMZ 101297, June 23, 1979; SMWU 113, 10, 25.3-42.8, collecting locality same as in HUMZ 101286, May 9, 1979; SMWU 114, 6, 21.0-40.6, collecting locality same as in HUMZ 101286, Oct. 27, 1979; SMWU 123, 1, 36.0, Tobe River, Morimatsu, Iyo River, Ehime Pref., Oct. 17, 1980; SMWU 124, 1, 107.1, collecting locality same as in HUMZ 101297, Apr. 1979; SMWU 125, 64, 23.2-89.8, collecting locality and date same as in HUMZ 54355; BMNH 1983.11.4.1-5, 5, 66.0-124.3, Arieda River, Kamidani, Kamiukena-gun, Ehime Pref., Aug. 5, 1979; BMNH 1983.11.4.6-9, 4, 40.8-68.5, Kuma River, Takayama, Kamiukena-gun, Ehime Pref., Aug. 5, 1979; BMNH 1983.11.4.10-13, 4, 60.4-107.1, Kuma River, Miyanomae, Kamiukena-gun, Ehime Pref., Aug. 5, 1979; BMNH 1983.11.4.14-17, 4, 38.3-90.1, Arieda River, Ueda, Kamiukena-gun, Ehime Pref., Aug. 5, 1979; BMNH 1983.11.4.18, 1, 86.8, Kuma River, Futasebashi, Kamiukena-gun, Ehime Pref., Aug. 5, 1979; USNM 264892, 7, 61.4-83.2, Arieda River, Yanai, Mikawa-cho, Kamiukena-gun, Ehime Pref., Aug. 5, 1979; USNM 264893, 4, 63.6-89.0, Kuma River, Koudono, Nishimyoujin, Kuma-cho, Kamiukena-gun, Ehime Pref., Aug. 5, 1979; USNM 264894, 4, 34.2-86.3, Wariishi River, Somano, Omogo-mura, Kamiukena-gun, Ehime Pref., Aug. 4, 1979; USNM 264895, 1, 87.8, Wariishi River, Shibukusa, Somano, Omogo-mura, Kamiukena-gun, Ehime Pref., Aug. 3, 1979; USNM 264896, 1, 85.0, Omogo River, Nanatori, Mikawa-mura, Kamiukena-gun, Ehime Pref., Aug. 3, 1979. The catalogue numbers of the specimens used for body proportional measurements were SMWU 112, 123, 124 and five individuals of 125, and those for vertebral counts were HUMZ 101286-94, 101301-306, MTUF 25018-19, 25021, YCM-P 12109-111, EUB.Kyu. 25.63.3.2, 154, Imi and SMWU 112. Additionally, to delineate the distribution of *O. o. obscura*, we used the collecting localities of our unpublished data and examined many specimens deposited in the collections of the National Science Museum; Department of Zoology, University Museum, University of Tokyo; Laboratory of Marine Zoology, Faculty of Fisheries, Hokkaido University; Yokosuka City Museum.
- Description.** Data for the holotype is given first, followed by those for paratypes and other specimens in parentheses (see also Tables 1, 2 and Fig. 3).
- Dorsal fins VII-I, 9 (VI-VIII-I, 7-10); anal fin I, 8 (I, 6-9); pectoral fin 15 (14-17); pelvic fin I, 5 (I, 5); lateral scale rows 36 (31-41); lateral scales with pit organ (26-30); transverse scales 15 (12-17); predorsal scales 31 (21-33); vertebrae (13-16+15-18=29-31). Pit lines 6 and 7 connected and no sensory canals on head (Fig. 1A, B). Body stout, posteriorly a little compressed. Head large, slightly depressed. Pectoral fin reaching below posterior border of first dorsal fin. Pelvic fin short, never reaching anus.
- Color in life: Head and body dark brown, paler ventrally, sometimes mottled by dusky dots. The distinct blackish bands on body; first band extending from the middle of the first dorsal fin, the second from about the posterior half of second dorsal, the third on basicaudal; the first and second bands slightly tapering upward. Single dark dot on upper margin of

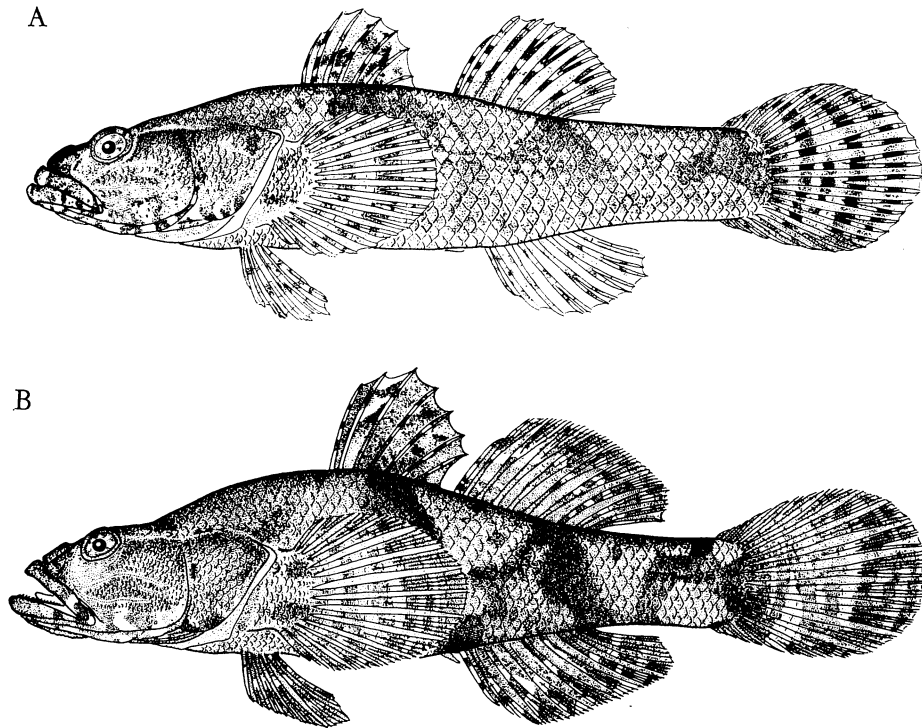


Fig. 2. A, *Odontobutis obscura obscura*, YCM-P 12108, 128.5 mm SL, male, Iyono River, Japan. B, *O. o. potamophila*, BMNH 1855.3.27.10, 90.0 mm SL, male, Yan-tse River, China.

gill opening. Several light dots on ventral side of head. Sometimes, especially in small individuals, dark stripes extend from eye to snout and to lower angle of preopercle. Two dark dots on base of pectoral. Several irregular rows of dark blotches on all fins. Amorphous dark dots on first dorsal. Iris mottled with small dark spots.

Color in formalin: No marked change except disappearance of dark spots around pupil.

Sexual dimorphism. Urogenital papilla distinct; pointed in the male, truncated in the female. In the spawning season, males become black, swelling on the forehead and cheek; tips of all of fins thickened.

Distribution. Western parts of Japan (Fig. 4). The eastern limit on the Pacific slope and the Japan Sea slope is the Toyo River, Aichi Pref. and Ouchi-gata, Ishikawa Pref., respectively. The collection localities of *O. o. obscura* in Japan reported by previous authors are as follows: Isozaki, Ibaragi Pref. (Akihito, 1969); Tochigi Pref. (Aoyagi, 1957); Tokyo, (Jordan and

Snyder, 1901b); Yokohama, Kanagawa Pref. (Jordan and Snyder, 1901a); the Tenryu River, Shizuoka Pref. (Nakamura, 1963); Toyama Pref. (Tomiya, 1936; Tanaka et al., 1978); Niigata Pref. (Honma and Tamura, 1972).

Ecological notes. Habitat preferences of *O. o. obscura* are very wide. It occurs mainly in middle and lower reaches, and occasionally, in upper reaches of rivers. It is also found in lakes, ponds and swamps. The spawning season is from spring to early summer. Males choose a sheltered breeding ground. Females spawn their eggs on the underside of the roof of the shelter (usually a rocky shelf). Eggs are laid in a single layer. The male stays in the shelter until the eggs hatch, while the female leaves soon after spawning. Males often emit croaks while guarding their spawning territory. Eggs large, about 1.5–2.0 mm in diameter. Egg capsules elliptical with adhesive filaments on one side, their length and breadth about 3.1–4.8 mm, 1.6–2.3 mm, respectively. Newly hatched juveniles are about 6–7 mm in standard length,

with well developed fin spines and rays, and show demersal life without a planktonic stage.

Remarks. Mori (1936) reported *O. obscura* from the Tadon River in northern Korea and the Han, Gum, Yongsan, Somchin and Naktong rivers in the south. In this study, the specimens identified as *O. o. obscura* could not be found in Korea. We had no opportunity to examine

specimens collected in North Korea, the northern part of China or the Philippines.

The arrangement of the pit organs of the holotype is not an usual pattern; pit lines 6 and 7 were separated, pit lines 17 and 19 were connected. Such individuals were rarely found in Kyushu. Additionally, one specimen having canal c collected from Ishikawa Pref. was found

Table 1. Frequency distributions of meristic counts of *Odontobutis*.

	Dorsal spines			Dorsal rays			
	VI	VII	VIII	7	8	9	10
<i>O. obscura obscura</i>	11	80*	13	17	61	25*	2
<i>O. o. potamophila</i>	1*	3			2*	2	
<i>O. o. interrupta</i>	26	40*		2	25	37*	2
<i>O. platycephala</i>	45*	52	2	11	74*	14	

	Anal rays					Pectoral rays				
	5	6	7	8	9	13	14	15	16	17
<i>O. o. obscura</i>		29	56	14*	3		3	28*	64	9
<i>O. o. potamophila</i>			3*	1			1	3*		
<i>O. o. interrupta</i>		8	40*	18			9	40*	16	1
<i>O. platycephala</i>	1	38	52*	8		1	1	36	57*	4

	Lateral scale rows																				
	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	49	50	51
<i>O. o. obscura</i>	1	1	3	10	5	17*	32	20	9	3	1										
<i>O. o. potamophila</i>				1		3*															
<i>O. o. interrupta</i>			1	6*	15	22	8	8	2	4											
<i>O. platycephala</i>									2	5	10*	16	16	13	12	11	10	4		1	1

	Lateral scales with pit organs									
	25	26	27	28	29	30	31	32	33	34
<i>O. o. obscura</i>		1	13	41	31	9				
<i>O. o. potamophila</i>	1		1	2*						
<i>O. o. interrupta</i>		2	18	19*	19	7				
<i>O. platycephala</i>					17	39	29	11*	3	2

	Transverse scales												
	12	13	14	15	16	17	18	19	20	21	22	23	24
<i>O. o. obscura</i>	2	18	37	34*	12	2							
<i>O. o. potamophila</i>		1		1*	2								
<i>O. o. interrupta</i>			15	19*	23	6	2						
<i>O. platycephala</i>							6*	16	29	25	16	8	1

	Predorsal scales																				
	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40
<i>O. o. obscura</i>		2	3	3	5	12	7	19	17	10	6	5*	2	2							
<i>O. o. potamophila</i>											1		1	1		1*					
<i>O. o. interrupta</i>	1	1	6	10	12	19*	8	2	1	3	1										
<i>O. platycephala</i>								4	1	3	7	6	21	12	11	10	7	4	4	2	3*

* Holotype.

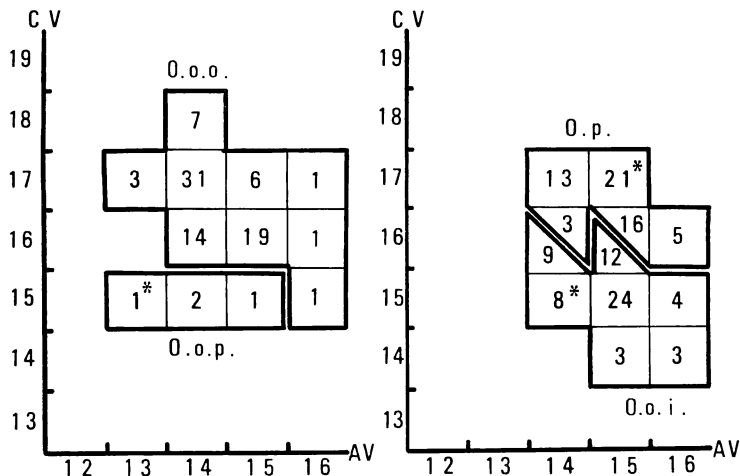


Fig. 3. Relationship between abdominal and caudal vertebrae in *Odontobutis*. O.o.o., *O. obscura obscura*; O.o.p., *O. o. potamophila*; O.o.i., *O. o. interrupta*; O.p., *O. platycephala*. Figures in each square indicate number of individuals. * Including the holotype.

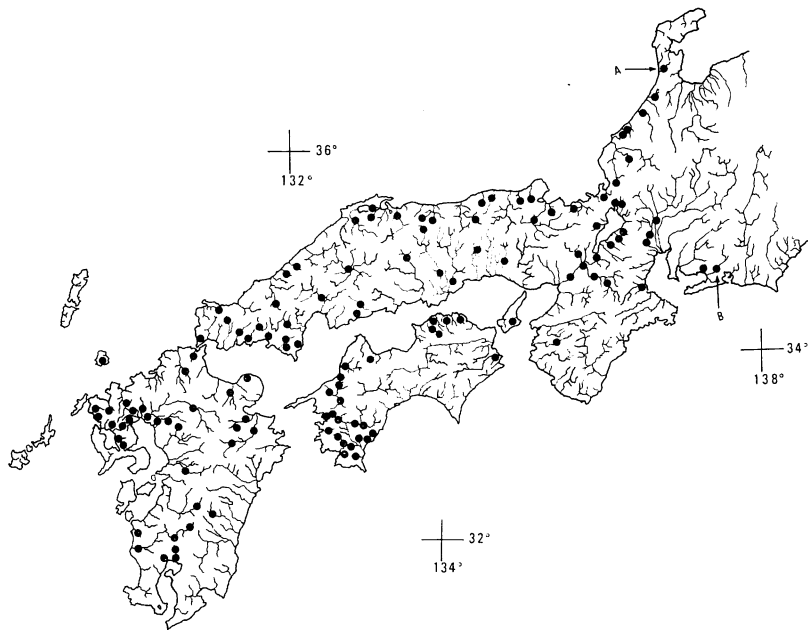


Fig. 4. Geographic distribution of *O. obscura obscura*. A, Ouchi-gata; B, Toyo River.

in 523 samples. The dark crossband of this specimen showed the character of *O. o. obscura*. We regard this individual as the exceptional fish within the population of *O. o. obscura* because of its coloration and geographical distribution. No specimens of this subspecies had canals a, b, d and e, individually or in any com-

ination.

Odontobutis obscura potamophila
(Günther)
(Japanese name: Kara-donko)
(Figs. 1C, D, 2B)

Eleotris potamophila Günther, 1861, p. 557 (Yan-tse

River, China).

Material examined. Holotype: BMNH 1855.3. 27.10, 90.0 mm SL, male, Yan-tse River, China, Mar. 27, 1855.

Paratype: BMNH 1861.11.7.4, 130.4 mm SL, female, Yan-tse River, 230 miles from river mouth, China, Nov. 7, 1861.

Additional specimens: NSMT-P 3319-6, 114.0 mm SL, male, Shanghai, China, collecting date unknown; NSMT-P 3319-7, 116.0 mm SL, male Shanghai, China, collecting date unknown.

Description. Data for the holotype is given first followed by those for paratype and other specimens in parentheses (see also Tables 1, 2 and Fig. 3).

Dorsal fins VI-I, 8 (VI-VIII-I, 8-9); anal fin I, 7 (I, 7-8); pectoral fin 15 (14-15); pelvic fin I, 5 (I, 5); lateral scale rows 36 (34-36); lateral scales with pit organs 27 (25-28); transverse scales 15 (14-16); predorsal scales 35 (30-33); vertebrae 13+15=28 (14-15+15=29-30). Canal c present. Pit lines 6 and 7 interrupted (Fig. 1C, D). Body stout, posteriorly a little compressed. Head large, slightly depressed. Pelvic fin short, never reaching to anus.

Color in spirits: Head and body brownish; paler ventrally, sometimes mottled with dots. Three distinct blackish bands on body; first band extending from the middle of the first dorsal fin; the second from about the posterior half of the second dorsal; the third on basicaudal; width of dorsal part of first and second crossbands narrower than that of lateral part. Single dark dot on upper margin of gill openings. Several light dots on ventral side of head. Two dark dots on base of pectoral. Membranes of first dorsal, anal and pelvic fins dark with several light blotches. All fins and rays exhibit irregular rows of dark blotches.

Sexual dimorphism. Urogenital papilla distinct; pointed in the male, truncated in the female. All fins longer or higher in males than in females.

Distribution. China.

Ecological notes. We could not observe living specimens of *O. o. potamophila*. The Ichthyological Laboratory of Hoopei Hydrobiological Institute (1976) described the spawning habits and ontogeny of *O. obscura* from the Chang River. If *O. obscura* studied by the Ichthyological Laboratory of Hoopei Hydrobiological Institute (1976) is identical with *O. o.*

potamophila, no marked differences are found between *O. o. potamophila* and *O. o. obscura* in these matters.

Remarks. The presence of canal c and the interruption of pit lines 6 and 7 are important key characters to distinguish *O. o. potamophila* from *O. o. obscura*. The former subspecies is also characterized by longer and higher fins than in *O. o. obscura*. The Hydrobiological Laboratory of Chinese Scientific Academy (1982) exhibited a color plate of *O. obscura* from the Yan-tse River. The appearance of this specimen corresponded to the characters of *O. o. potamophila*.

Mori (1936) reported *Eleotris potamophila* from the Yalu, Chongchon and Tadon rivers in northern Korea. We could not examine specimens collected in North Korea. Li (1981) reported that *Perccottus potamophilus* occurred in the Amur Subregion, East China Region and the Chekiang-Fukien Subregion. If *Perccottus potamophilus* described by Li (1981) is identical with *O. o. potamophila*, this subspecies can be found in these areas.

Nichols (1943) classified the species *potamophila* into the genus *Philypnus*. *Philypnus* and *Perccottus* have teeth on the vomer, but teeth are absent on the vomer in *Odontobutis*. If *Perccottus potamophilus* and *Philypnus potamophila* described by Li (1981) and Nichols (1943) are identical with *O. o. potamophila*, their classification on *Perccottus* and *Philypnus* is erroneous because both genera have teeth on the vomer.

Savage and Thiersant (1874) synonymized *Eleotris varius* with *E. potamophila* without any description. We could not find the original description of *E. varius* by Dabry.

As is the case with *O. o. obscura*, this subspecies exhibits a variation in the presence of canals and arrangement of the pit lines. For example, the paratype has no canal c on the left side. Pit lines 6 and 7 of the right side of NSMT-P 3319-6 are connected.

Odontobutis obscura interrupta

Iwata et Jeon, subsp. nov.

(New Japanese name: Semadara-donko)

(New Korean name; 얼룩동사리,

Olluktongsari)

(Figs. 1E, F, 5A)

Material examined. Holotype: SMWU 108, 71.1

Table 2. Proportional measurements in hundredths of standard length of *Odontobutis*. Data for paratypes and other specimens (α) show the mean values and their ranges (in parentheses).

Character	<i>O. obscura obscura</i>		<i>O. o. potamophila</i>		<i>O. o. interrupta</i>		<i>O. platycephala</i>	
	Holotype	Paratypes + α N=7+15	Holotype	Paratype + α N=1+2	Holotype	Paratypes N=15	Holotype	Paratypes N=15
Standard length (mm)	107.0	59.0–134.8	89.1	114.0–130.9	71.1	59.1–153.0	130.3	69.3–95.4
Head length	37.9	35.7 (31.8–38.4)	39.2	39.3 (38.7–40.2)	38.7	37.2 (35.5–39.5)	38.3	36.8 (34.7–38.5)
Body depth	21.5	22.3 (18.9–25.0)	22.2	21.3 (18.7–23.7)	23.8	23.6 (21.5–26.1)	21.2	19.5 (18.5–21.4)
Preanal length	60.7	63.7 (59.4–67.8)	65.1	64.5 (64.4–65.0)	63.0	63.1 (59.2–67.2)	66.5	63.2 (59.7–65.2)
Snout length	10.3	9.6 (7.8–11.6)	11.9	13.4 (10.6–17.8)	10.7	10.1 (9.3–10.7)	12.8	10.8 (10.3–11.5)
Head width	23.8	25.5 (21.4–28.3)	24.6	23.3 (22.2–24.3)	24.8	25.9 (23.5–27.9)	28.3	25.0 (23.2–26.8)
Body width	17.9	22.3 (17.3–28.1)	18.6	19.3 (17.5–20.9)	21.0	22.3 (18.0–28.3)	20.6	19.4 (17.7–21.5)
Maxillary length	15.9	14.6 (13.1–16.9)	16.8	16.2 (15.7–16.9)	14.9	15.0 (13.5–16.1)	18.8	15.5 (14.0–16.6)
Eye diameter	6.4	5.6 (3.8– 6.9)	6.7	5.6 (5.2– 6.0)	4.5	5.2 (3.9– 6.1)	5.0	4.9 (3.8– 6.3)
Interorbital width	7.5	8.2 (5.9–12.0)	8.2	8.9 (8.2–10.2)	9.1	8.0 (6.1– 9.1)	9.3	7.7 (6.0– 8.6)
Caudal peduncle length	19.9	20.7 (20.0–24.7)	18.4	20.1 (19.6–21.1)	23.1	20.6 (18.8–23.1)	19.2	20.0 (17.8–23.6)
Caudal peduncle depth	11.7	12.3 (10.8–13.9)	13.1	12.7 (12.5–13.1)	12.8	12.7 (11.6–13.5)	11.2	11.6 (11.1–12.7)
Head depth	15.0	16.4 (14.7–18.3)	17.7	16.3 (16.1–16.6)	16.7	15.6 (13.8–19.2)	16.0	14.4 (13.0–15.5)
Longest pelvic ray	15.9	14.5 (11.4–18.3)	16.1	17.0 (16.3–17.4)	15.6	13.2 (8.5–16.2)	13.1	13.8 (11.1–16.0)
Longest pectoral ray	24.3	18.6 (14.5–25.4)	24.0	22.2 (20.3–23.2)	21.1	18.6 (16.0–21.8)	16.2	18.4 (16.4–20.5)
Longest dorsal spine	12.4	11.7 (9.8–13.7)	17.3	15.6 (15.4–15.9)	13.1	13.3 (11.3–15.1)	11.7	13.4 (11.5–16.4)
Longest dorsal ray	16.1	14.8 (12.6–18.5)	19.9	17.5 (15.3–18.7)	16.3	15.2 (14.2–16.3)	14.4	14.9 (13.4–17.2)
Longest anal ray	15.8	14.4 (11.8–16.2)	18.2	16.2 (14.8–17.2)	15.8	14.1 (10.9–16.9)	12.7	13.6 (11.9–16.3)
First dorsal base	13.0	13.9 (9.2–16.6)	17.4	15.5 (14.7–15.6)	15.9	15.6 (12.8–17.3)	12.9	14.3 (13.6–17.0)
Second dorsal base	15.1	16.1 (13.8–17.7)	18.7	16.9 (14.7–18.5)	18.7	17.7 (14.2–19.4)	14.9	16.4 (15.2–18.0)
Anal base	11.3	11.5 (9.8–13.2)	15.3	12.2 (11.6–12.7)	13.4	13.7 (11.6–15.9)	10.4	11.8 (8.9–15.6)
Snout to first dorsal origin	44.1	44.3 (42.0–45.8)	46.5	44.7 (44.2–45.3)	44.4	43.0 (41.3–44.6)	45.0	44.5 (41.5–47.0)
Snout to first dorsal end	57.0	57.6 (53.8–62.7)	61.5	59.4 (59.2–59.6)	58.8	57.4 (54.1–58.9)	56.9	59.5 (55.2–64.7)
Snout to second dorsal origin	62.6	62.1 (58.0–63.7)	64.1	61.6 (60.9–62.5)	61.6	60.2 (58.2–62.6)	64.4	63.5 (61.1–65.6)
Snout to second dorsal end	76.7	77.5 (72.6–79.7)	80.7	77.6 (76.8–78.1)	78.2	77.1 (75.1–79.1)	78.0	78.2 (75.2–81.2)
Snout to anal origin	65.3	69.4 (68.0–73.0)	69.6	71.5 (70.6–72.2)	68.9	68.3 (63.6–72.4)	72.9	68.5 (62.0–71.4)
Snout to anal end	75.7	80.6 (78.4–83.0)	82.4	82.6 (82.5–82.7)	82.7	81.0 (79.4–82.7)	81.9	80.7 (77.8–84.1)

mm SL, male, Gum River, Kumchong-gi, Sayangmyon, Chongyang-gun, Chungchongnam-do (36°25'N, 126°50'E), Korea, July 21, 1979.

Paratypes: NSMT-P 22392, 1, 113.7, Ham River, Dokso-ri, Wabu-myon, Namangju-gun, Kyongki-do, Feb. 28, 1980; NSMT-P 22393, 1, 89.5, Wangsuk River, Sarung-ri, Jingon-myon, Namyangju-gun, Kyongki-do, Feb. 29, 1980; NSMT-P 22394-1-4, 4, 84.7-101.4, Wangsuk River, Changhyon-ri, Chinchop-myon, Namysngju-gun, Kyongki-do, Oct. 4, 1980; HUMZ 101333, 1, 173.8, Seoul, Mar. 1, 1980; MTUF 25025, 1, 91.8, Yetang Reservoir, Daehung-myon, Yesan-gun, Chungchongnam-do, May, 1976; YCM-P 12104, 12, 23.0-73.7, collecting locality and date same as in NSMT-P 22394, YCM-P 12105, 5, 53.1-68.6, collecting locality same as in NSMT-P 22394, Mar. 1, 1980; YCM-P 12106, 1, 116.1, Chochong River, Hyon-ri, Ha-myon, Kapyong-gun, Kyongki-do, Feb. 23, 1980; ZUMT 54346, 1, 153.0, Kum River, Pyuo-gun, Chungchongnam-do, May 14, 1967; ZUMT 54357-54360, 4, 39.9-118.0, Ungchon River, Oesan-River, Oesanmyon, Puyo-gun, Chungchongnam-do, Apr. 21, 1981; EUB.K.5-5-16, 12, 51.1-93.1, Saje River, Hungob-ri, Hungob-myon, Wonsong-gun, Kangwondo, June 28, 1973; EUB.K.6M-1-2, 2, 36.5-44.8, Muhan River, Chugyo-ri, Yesan-gun, Chungchongnam-do, June 29, 1973; EUB.K.6S-1-3, 3, Sapkyo River, Sapkyo-myon, Yesan-gun, Chungchongnam-do, June 29, 1973; SMWU 109, 1, 84.4, Gum River, Ubnae-ri, Chongyang-myon, Chongyang-gun, Chungchongnam-do, July 25, 1979; SMWU 122, 1, 104.5, Kapyong River, Kapyong-ub, Kapyong-gun, Kyongki-do, June 6, 1976; BMNH 1983.11.4.19, 1, 112.2, collecting locality and date same as in YCM-P 12106; BMNH 1983.11.4.20, 1, 82.4, collecting locality same as in NSMT-P 22394, Mar. 1, 1980; USNM 264890, 1, 114.1, South Han River, Yangpyong-ub, Yangpyong-gun, Kyongki-do, Feb. 1980; USNM 264891, 3, 84.8-97.0, Sudong River, Sudong-myon, Namyangju-gun, Kyongki-do, June 1980.

Additional specimens: HUMZ 101307-101332, 26, 26.7-51.4, collecting locality and date same as in NSMT-P 22393; LICPP 1980154, 5, collecting locality and date same as in USNM 264891; LICPP 1980155, 5, collecting locality and date same as in NSMT-P 22393.

Diagnosis. One sensory canal present posteriorly on supraorbital pit line. Infraorbital and verticalantorbital pit lines connected. Dark crossbands on body interrupted by a pale longitudinal line on each side.

Description. The catalogue numbers of the specimens which were used for proportion meas-

urements are: NSMT-P 22392, YCM-P 12106, ZUMT 54356, ten individuals of EUB.K.5, SMWU 109, USNM 264890; and vertebral counts were made on NSMT-P 22392-4, HUMZ 101307-32, MTUF 25025, YCM-P 12104-5, EUB.K.5, SMWU 109, BMNH 1983.11.4.19 and USNM 264890-91. Data in parentheses apply to paratypes (see also Tables 1, 2 and Fig. 4).

Dorsal fins VII-I, 9 (VI-VII-I, 7-10); anal fin I, 7 (I, 6-8); pectoral fin 15 (14-15); pelvic fin I, 5 (I, 5); lateral scale rows 35 (33-40); lateral scales with pit organs 28 (26-30); transverse scales 14 (14-18); predorsal scales 26 (20-30); vertebrae 14+15=29 (14-16+14-16=29-31). Sensory canal c present. Pit line 6 and 7 are connected. (Fig. 1E, F). Body stout, posteriorly a little compressed. Head slightly depressed. Pelvic fin short, never reaching to anus.

Color in life: Head and body brownish; paler ventrally, sometimes mottled by dusky dots. Three distinct blackish bands on body; the first extending from the middle of the first dorsal fin; the second from about the posterior half of the second dorsal; the third on basicaudal; anterior two interrupted by a pale longitudinal line on each dorsal side. Two dark spots on base of pectoral. One dark dot on upper margin of gill opening. Several light spots on the ventral side of the head. Several irregular rows of dark blotches on all fins, sometimes connecting. First dorsal with amorphous dark dots. Iris mottled with small dark dots.

Color in formalin: No marked change except disappearance of dark spots around pupil.

Sexual dimorphism. Urogenital papilla distinct; pointed in the male, truncated in the female. During the spawning season, males become darker, swelling on forehead and cheek, tips of fins thickened.

Distribution. Collecting localities in the present study fall within the West Korea Subdistrict given by Jeon (1980). This subspecies is, however, not found south of the Gum River (Fig. 6).

Etymology. The latin name *interrupta* refers to the situations of dark crossbands on the body.

Ecological notes. *O. o. interrupta* occurs mainly in the middle and lower reaches of the river. Based on our underwater observations

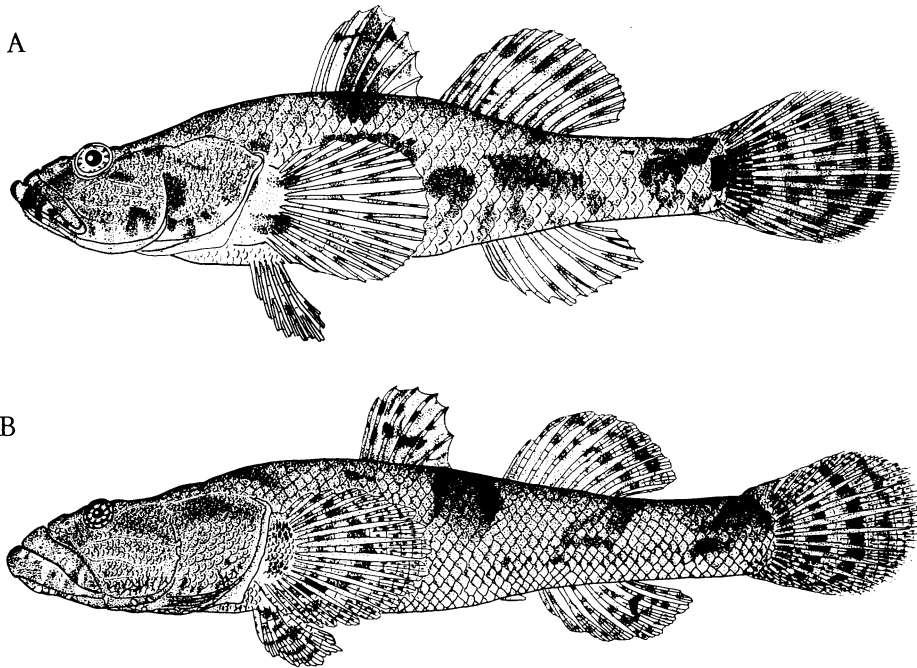


Fig. 5. A, *Odontobutis obscura interrupta*, subsp. nov., holotype, SMWU 108, 71.1 mm SL, male, Gum River, Korea. B, *O. platycephala*, sp. nov., holotype, SMWU 101, 130.3 mm SL, male, Somchin River, Korea.

made in a lower branch of the Han River, they were observed in slow-moving regions. Occasionally, some individuals hover in such areas. Spawning season is from spring to early summer. No marked differences are found between *O. o. interrupta* and *O. o. obscura* in spawning habits; size, shape and nature of eggs; development stages and size of newly hatched juveniles; except the fact that young juveniles of the former subspecies hover for lengthy periods.

Remarks. *O. o. interrupta* is distinguished from *O. o. obscura* by the presence of canal c. Connection of pit lines 6 with 7 and interrupted crossbands on the body are also useful characters to divide *O. o. interrupta* from *O. o. potamophila*. The individual with canal b was found in the Gum River (one specimen in 93 total examined samples). Variations in pit organ arrangement also can be rarely observed in this subspecies, for example, pit lines 6 and 7 separated.

Further investigations of Chinese specimens are required in order to clarify the relation of *O. o. potamophila* and *O. o. interrupta* and the constructions of this genus.

Odontobutis platycephala Iwata et Jeon,
sp. nov.

(New Japanese name: Kourai-donko)

(New Korean name: 통사리, Tongdari)

(Figs. 1G, H, 5B)

Material examined. Holotype: SMWU 101, 130.0 mm SL, male, Somchin River, Kyeso-ri, Maryong-myon, Chinan-gun, Chonrapuk-do (35°44'N, 127°20'E), Korea, Oct. 3, 1980.

Paratypes: NSMT-P 22388, 8, 29.9–189.4, Nam River, Soju-ri, Yurim-myon, Hamyang-gun, Kyongsangpuk-do, Oct. 1, 1980; NSMT-P 22389, 9, 50.9–106.4, Naktong River, Chomchin-ub, Munkyeong-gun, Kyongsangpuk-do, Sep. 1980; NSMT-P 22390, 4, 43.5–173.1, Nam River, Hamyang-ub, Hamyang-gun, Kyongsangnam-do, May, 8, 1981; HUMZ 101334–101336, 3, 34.4–85.4, collecting locality same as in SMWU 101, May 10, 1981; HUMZ 101363, 1, 54.0, Mankyong River, Yangki-ri, Pongtong-ub, Wanju-gun, Chonrapuk-do, Aug. 16, 1977; MTUF 25022, 1, 112.8, Chochong River, Hyon-ri, Hahyon, Kapyong-gun, Kyongki-do, Feb. 22, 1980; MTUF 25023, 1, 131.6, Somchin River, Naksu-ri, Songkwang-myon, Sungju-gun, Chonranam-do, Aug. 8, 1976; MTUF 25024, 10, 49.2–77.7, Sudong River, Unsu-ri, Sudong-myon, Namyangju-gun,

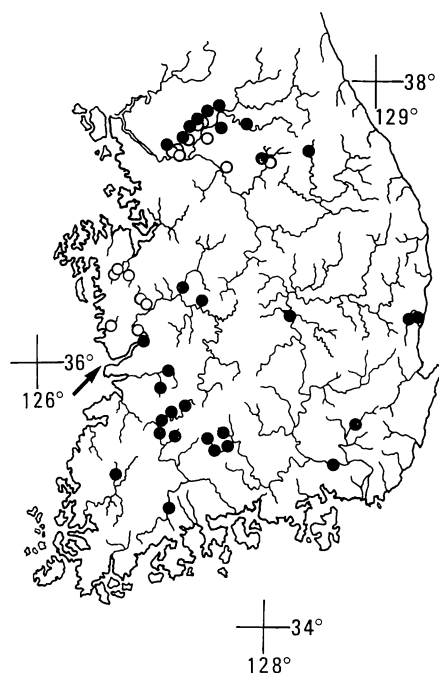


Fig. 6. Geographic distribution of *Odontobutis* in Korea. Open circle, *O. obscura interrupta*; solid circle, *O. platycephala*. Arrow indicates the Gum River.

Kyongki-do, June 1980: YCM-P 12101, 1, 87.1, Kukruk River, Shinchon-ri, Songchong-up, Kwangsan-gun, Chonranam-do, May 9, 1981; YCM-P 12102, 5, 98.1–124.6, collecting locality and date same as in SMWU 101; YCM-P 12103, 7, 23.0–86.6, Wangsuk River, Changhyon-ri, Chinchopmyon, Namyangchu-gun, Kyongki-do, Oct. 4, 1980: ZUMT 54361–54362, 2, 65.3–65.6, collecting locality same as in HUMZ 101334–101336, Aug. 15, 1977; ZUMT 54363–54365, 3, 31.8–38.1, Gum River, Simchon-myon, Okchon-gun, Chungchongnam-do, Aug. 29, 1978; ZUMT 54366, 1, 103.1, collecting locality same as in YCM-P 12103, Mar. 1, 1980: EUB.K.1, 1, 88.3, Han River, Chongpyong-ri, Oesomyon, Kapyong-gun, Kyongki-do, June 27, 1973; EUB.K.5, 4, 55.2–74.1, Saje River, Hungob-ri, Hungob-myon, Wonsong-gun, Kangwon-do, June 28, 1973; EUB.K.9, 8, 40.1–115.2, Mankyong River, Ubnae-ri, Kosan-myon, Wanchu-gun, Chonrapuk-do, June 30, 1973; EUB.K.10, 19, 38.8–93.7, Somchin River, Kwanchon-myon, Imsil-gun, Chonrapuk-do, June 30, 1973; EUB.K.11, 15, 36.9–108.0, Somchin River, Tunnam-myon, Imsil-gun, Chonrapuk-do, June 30, 1973; EUB.K.12, 2, 84.9–105.0, Somchin River, Santong-myon, Namwon-gun, Chonrapuk-do, July 1, 1973; EUB.K.13, 1, 87.9,

Nam River, collecting locality and date same as in EUB.K.12; EUB.K.15, 2, 21.5–83.0, Nam River, Sutong-myon, Hamyang-gun, Kyongsangnam-do, July 1, 1973; SMWU 102–103, 2, 142.0–142.3, Han River, Kapyong-up, Kapyong-gun, Kyongki-do, June 6, 1976; SMWU 104–107, 4, 72.2–87.9, collecting locality and date same as in SMWU 101; SMWU 115–116, 2, 103.3–117.4, Han River, Chuncheon-si, Kangwon-do, Sep. 30, 1980; SMWU 117–121, 5, 76.8–94.5, collecting locality same as in YCM-P 12101, Mar. 1980: BMNH 1983.11.4.21, 1, 123.0, Pyongchang River, Pyongchang-gun, Kangwon-do, Oct. 1979; BMNH 1983.11.4.22–27, 6, 76.2–103.4, Gum River, Kangkyong-up, Nonsang-gun, Chungchongnam-do, Mar. 8, 1980; BMNH. 11.4.28–29, 2, 75.4–79.3, collecting locality and date same as in MTUF 25022: USNM 264888, 1, 68.3, Gum River, Toam-ri, Kumnam-myon, Yonki-gun, Chungchongnam-do, July 29, 1979; USNM 264889, 4, 87.1–150.4, collecting locality and date same as in SMWU 101.

Additional specimens: HUMZ 101337–101362, 26, 96.0–155.4, collecting locality and date same as in NSMT-P 22389; HUMZ 57342–57346, 5, 51.8–86.9, Milyang River, Milyang-up, Milyang-gun, Kyongsangnam-do, Aug. 26, 1976; HUMZ 57295–57297, 3, 44.7–76.0, collecting locality same as in EUB.K.10, Sep. 1, 1976; EUB.K.14, 58, 68.4–95.4, collecting locality same as in NSMT-P 22390, July 1, 1973; LICPP 1980152, 5, collecting locality same as in NSMT-P 22389, Oct. 1980; LICPP 1980153, 5, collecting locality and date same as in SMWU 101.

Diagnosis. Two sensory canals present on preoperculomandibular pit line, also three on supraorbital pit line. First dark crossband on the body seen from the latter half of first dorsal fin to the origin of second dorsal fin.

Description. The catalogue number of the specimens which were used for body proportion measurements and vertebral counts is EUB.K. 14. Data in parentheses apply to paratypes (see also Tables 1, 2 and Fig. 3).

Dorsal fins VI–I, 8 (VI–VIII–I, 7–9); anal fin I, 7 (I, 5–8); pectoral fin 16 (13–17); pelvic fin I, 5 (I, 5); lateral scale rows 41 (39–51); lateral scales with pit organs 22 (29–34); transverse scales 18 (18–24); predorsal scales 40 (27–40); vertebrae 15+17=32 (14–16+16–17=30–32). Sensory canals a, b, c, d and e present. Pit lines 6 and 7 interrupted (Fig. 1G, H). Body stout, posteriorly a little compressed. Head large, depressed. Pelvic fin short, never reaching to anus.

Color in life: Head and body blackish rather than brownish; paler ventrally. Three distinct black crossbands on body; the first seen from the latter half of the first dorsal fin to the origin of the second dorsal fin; the second about the latter half of the second dorsal; the third on basicaudal. Two dark spots on base of pectoral. Several light small spots on ventral side of the head. All fins exhibit several irregular rows of dark blotches, sometimes connecting. Iris mottled with small dark dots.

Color in formalin: No marked change except disappearance of dark spots around pupil.

Sexual dimorphism. Urogenital papilla distinct; pointed in the male, truncated in the female.

Distribution. *O. platycephala* occurs throughout Korea except for the northern part of the East Korea Subdistrict defined by Jeon (1980) (Fig. 6).

Etymology. The latin name *platycephala* refers to the flat head of this species.

Ecological notes. *O. platycephala* occurs in the middle and upper reaches of rivers. According to our observations by snorkeling made at the upper reaches of the Somchin and Naktong rivers, it is found mainly in slow-flowing pools, rarely in rapids. *O. platycephala* could sometimes be observed with their ventral half submerged in the sandy bottom. In the small branch of the Han River where *O. platycephala* occurs together with *O. o. interrupta*, they show differences in their habitat preference. *O. platycephala* lives in the fast-moving, middle part of streams, while *O. o. interrupta* occurs in the slow-moving regions. This species, adult and juvenile, never hovers in the water as does *O. o. interrupta*. The spawning season ranges from spring to early summer. No marked differences are found between *O. platycephala* and *O. o. interrupta* in spawning habits; size, shape and nature of eggs; development stages and size of newly hatched juveniles.

Remarks. *O. platycephala* is characterized by the presence of canals a, b, c and e; more scales on the body; flatter head and portions of crossbands on body.

Compared with *Oxyeleotris marmorata* which has the most primitive sensory canal structure in gobioid fishes (Akihito, 1971), the canals of *O. platycephala* are retrogressive. Canal a of *O.*

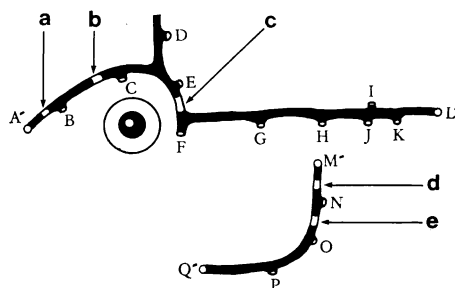


Fig. 7. Comparison of the sensory canals of *Oxyeleotris marmorata* and *Odontobutis platycephala* showing the loss of canals (black portions). Sensory canal system of *Oxyeleotris marmorata* and the alphabet markings of sensory canal pores are cited from Akihito and Meguro (1977). Symbols a to e correspond to those of Fig. 1G.

platycephala corresponds to the portions between sensory canal pores A' and B of *Oxyeleotris marmorata*; canal b to between sensory canal pores B and C; canal c to between sensory canal pores E and F; canal d to between sensory canal pores M' and N, and canal e to between sensory canal pores N and O, respectively (Fig. 7).

The variations of pit organ arrangement rarely occur as in *O. obscura*, while canals a, b, c, d and e can be observed in all individuals more than 110 mm in standard length.

Discussion

Chen (1934) reported *Odontobutis wui* as new species in China. According to his description, *O. wui* has the following characteristics: the interorbital without scales, the tongue truncated, the pelvic fin reaching to the anus and the interorbital width almost equal to the eye diameter. These characteristics do not correspond with those of *Odontobutis*.

The distribution of sensory canals and pit organ on the head are considered as very important for classification of gobioid fishes (Takagi, 1962; Akihito and Meguro, 1975a, b, 1977, 1980). That of the *O. obscura* group which is found in Japan, Korea and China suggests that they are different species rather than subspecies. As regards these key characters, some specimens were found in rare cases; presence of canal c or interruption of pit lines 6 to 7 in Japanese *O. o. obscura*; connection between pit lines 6 and 7 in Chinese *O. o. potamophila*; and inter-

ruption of pit lines 6 and 7 or absence of canal c in Korean *O. o. interrupta*. However, the possibility of allopatric distribution over these countries can be established because they are secondary freshwater fishes. Therefore, we regard *obscura*, *potamophila* and *interrupta* as different subspecies.

On the other hand, it is reasonable to consider *O. platycephala* as a different species from *O. obscura* because no hybrid specimens between *O. platycephala* and *O. o. interrupta* have been captured on the western coastal slope of Korea where *O. platycephala* is sympatric with *O. o. interrupta*.

At any rate, as we had no opportunity to examine specimens obtained from North Korea, the northern part of China and the Philippines, further extensive investigations are required in order to clarify the congeners of *Odontobutis* more thoroughly.

Acknowledgments

We are grateful to Mr. Alwyne Wheeler, British Museum (Natural History) for the loan of the type specimens of *O. o. potamophila* and Dr. M. J. P. van Oijen, Rijksmuseum van Natuurlijke Historie, Leiden for the measurement of the types of *O. o. obscura*. We are also grateful to Mr. Neal M. Teitler for reviewing the manuscript. We wish to thank Drs. Takeo Ito and Yasunobu Yanagisawa of Ehime University for giving us helpful advice. Our thanks are also extended to the following people for providing specimens and useful advice: Drs. Ryoichi Arai and Keiichi Matsuura, the Department of Zoology, National Science Museum, Tokyo, Mr. Katsusuke Meguro, the Crown Prince's Palace, Tokyo, Drs. Kunio Amaoka, Keikichi Hamada, Fumio Yamazaki, Hiroshi Onozato and Akira Goto, Hokkaido University, Dr. Yoshiaki Tominaga, University of Tokyo, Dr. Ik-Soo Kim, Chompuk University, Mr. Masayoshi Hayashi, Yokosuka City Museum, Mr. Kazumi Hosoya, Kyoto University, Mr. Hiroshi Senou, University of the Ryukyus, Mr. Yoshiteru Kimizuka, Mr. Hiroyuki Aizawa and Mr. Kwangsoo Kim. We are thankful to the students of the Laboratory of Ecology, Ehime University for their various criticisms and assistance. This work was partly supported by a Grant-in-Aid (No. 57340035) from the Ministry

of Education, Science and Culture, Japan.

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ドシコ属魚類の再検討

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ドシコ属魚類について再検討を行なった。ドシコ属は、1) 平坦な骨質隆起が眼の背方上部にある事、2) 前鰓蓋骨に棘がない事、3) 鋤骨に歯がない事、4) 鰓孔は目の下方まで達する事、5) 両眼間隔は眼径より大きい事、6) 背鰭前部鱗は鼻孔後方に達する事などで定義される。該当種はドシコ *Odontobutis obscura*、カラドシコ *O. o. potamophila*、セマダラドシコ (얼룩등사리) *O. o. interrupta*、コウライドシコ (등사리) *O. platycephala* で、後2者は新亜種および新種である。

コウライドシコ *O. platycephala* は頭部側線感覚系において孔器列の前鰓蓋下顎列上にふたつの感覚管を有する事で他のドシコ類と明瞭に区別される。カラドシコ *O. o. potamophila* とセマダラドシコ *O. o. interrupta* は眼上列眼後部にひとつの感覚管を有する事でドシコ *O. o. obscura* と区別される。カラドシコ *O. o. potamophila* とセマダラドシコ *O. o. interrupta* の差異は前者が眼下列と眼前頬縦列が分離しているのに対し後者はそれらが連続している事である。また後者の体側背方には明色帯が縦走するため暗色鞍状斑は中絶される。

ドシコ *O. o. obscura* は西日本、カラドシコ *O. o. potamophila* は中国に分布する。セマダラドシコ *O. o. interrupta* は韓国の錦江以北の西韓亜地域に、コウライドシコ *O. platycephala* は東韓亜地域北部を除く韓国全土にそれぞれ分布している。

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魚類学雑誌 Japan. J. Ichthyol. 31(4), 1985

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訂正・Errata

Japanese Journal of Ichthyology, 31 (4), Iwata *et al.*

- Page 374, right column, 2nd paragraph (key), 19th line, "*intetrupia*" should read "*interrupia*"; 3rd paragraph, 8th line from bottom, "Kurume, Tokyo" should read "Kurume; Tokyo".
- Page 378, Table 1, Transverse scales, numeral 1 (below 13) for *O. o. potamophila* should be shifted one column to the right (below 14).
- Page 380, left column, **Description**, 5th line, "VI-VIII" should read "VI-VII"; 9th line, "(30-33)" should read "(30-35)": right column, 3rd paragraph, 5th and 7th lines, "*Preccottus*" should read "*Perccottus*"; 5th paragraph, 1st line, "synonymizep" should read "synonymized".
- Page 382, left column, 2nd paragraph, 17th line, "Kum River, Pyuo-gun" should read "Gum River, Puyo-gun": right column, 2nd paragraph, 2nd line, "14-15" should read "14-17"; 3rd line, "35" should read "34"; 5th line, "14 (14-18); predorsal scales 26" should read "15 (14-18); predorsal scales 25".
- Page 383, right column, 6th line from bottom, "Hyon-ri" should read "Myon-ri".
- Page 384, right column, last paragraph, 8th line from bottom, "22" should read "23".
- Page 385, left column, **Remarks**, 2nd line, "a, b, c," should read "a, b, d,".
- Page 387, right column, Japanese abstracts, 10th line, "*interruta*" "*interrupia*".