

## *Xenobrama microlepis*, a New Genus and Species of Bramid Fish, from Subantarctic Waters of the South Pacific

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**Abstract** *Xenobrama microlepis* gen. et sp. nov. is described on the basis of 17 adult and subadult specimens collected by surface gill nets, bottom trawl and midwater trawl from the subantarctic waters of the South Pacific Ocean. This monotypic new genus is distinguished from other bramid genera by the following characters: inner lower edges of mandible touching each other (except near symphysis); gill rakers short, thick, and stout; subpectoral region very narrow; interpelvic space flat and wide; vertebrae 49–51; and scales in longitudinal series more than 83. The new taxon is widely distributed in the high seas of the South Pacific, 38–54°S, 79–176°W, but is rather rare compared to *Brama* spp. in catches of drift gill nets.

Since the Japan Marine Fishery Resource Research Center (JAMARC) started the survey of slender tuna, *Allothunnus fallai*, and pomfrets in the high seas of the South Pacific in 1982 and 1984 respectively, two research vessels collected about 600 metric tons of pomfrets by drift gill nets which were set at night from the surface to about 7 m in depth. Among the huge catch of bramid fishes, there was a species which was unable to be identified. We here describe it as a new genus and species. Specimens collected from Chatham Rise by bottom trawl and from off Chile by midwater trawl were also studied.

Mead (1972) recognized six genera, *Eumegistus*, *Taractes*, *Brama*, *Traractichthys*, *Pterycombus*, and *Pteraclis*, and 18 species including *Brama* sp. in the family Bramidae. This pelagic fish family is characterized by its ovate and compressed body; a single dorsal fin; unbranched anterior fin-rays forming an integral part of the dorsal lobe when it is present; all, as juveniles, adults, or both, have scales which bear spines or keels on their surface; all, as adults but not as young, have unarmed opercular and preopercular margins (Mead, 1972). The present specimens have all these characteristics except for the scales which lack spine and keel, although juvenile material has not been available.

The methods of counts and measurements follow those of Hubbs and Lagler (1958) and Mead (1972). Measurements were made with calipers. Counts for vertebrae and vertical fins and observation of thoracic ribs were made from radiographs.

The following abbreviations are used: AMS, Australian Museum, Sydney; FAKU, Faculty of Agriculture, Kyoto University; HUMZ, Laboratory of Marine Zoology, Faculty of Fisheries, Hokkaido University; NMNZ, National Museum of New Zealand; NSMT-P, Department of Zoology, National Science Museum, Tokyo.

### *Xenobrama* gen. nov.

**Type-species.** *Xenobrama microlepis* sp. nov.

**Diagnosis.** Inner lower edges of mandible touching each other except near symphysis. Gill rakers short, thick, and stout. Subpectoral region (distance between insertion of pectoral fin and outer margin of pelvic fin base) very narrow. Interpelvic region flat and wide (interpelvic width about 50% of body width, nearly equal to eye diameter). Total vertebrae 49–51. Scales in longitudinal series 83–95.

**Etymology.** A combination of Greek *xenos* (meaning strange, foreign) and *Brama* (a genus of the Bramidae to which this new taxon is presumably closely related).

**Remarks.** Six genera, *Brama*, *Taractes*, *Eumegistus*, *Traractichthys*, *Pterycombus*, and *Pteraclis*, are recognized in the Bramidae (Mead, 1972). Table 1 shows comparison of selected characters in the Bramidae. *Pterycombus* and *Pteraclis* are distinguishable from the other genera by possession of large depressible dorsal and anal fins and advanced pelvic fins etc., hence, may constitute a monophyletic group. *Xenobrama*

Table 1. Comparison of morphological characters among genera of the Bramidae.

Character/genus	<i>Brama</i>	<i>Taractes</i>	<i>Eumegistus</i>	<i>Taractichthys</i>	<i>Xenobrama</i>	<i>Pterycombus</i>	<i>Pteraclis</i>
Development of pre-caudal groove	poor	poor	absent	well	poor	absent	absent
Dorsal profile of head	strongly arched and rounded	slightly arched and flat	slightly arched and rounded	strongly arched and rounded	moderately arched and rounded	moderately arched and rounded	strongly arched and rounded
Inner edges of lower mandibles entirely touching to each other	yes	no	no	no	yes (except near symphysis)	no	yes
Gill rakers	long, slender, lath-like	long, slender or spinescent	lath-like	long, slender	short, thick and stout	slender, lath-like	short, slender, feeble
Thoracic ribs	normal	normal	normal	dorsally expanded	normal	expanded	normal
Scales below lateral line	oblique and high	normal	normal	normal	normal	oblique	oblique
Distance between lower base of $P_1$ and $P_2$	wide	rather narrow	wide	wide	very narrow	$P_2$ advanced	$P_2$ advanced
Interpelvic width	narrow	wide	wide	wide	wide	narrow	narrow
Vertebral number	36–43	39–42	37–40	44–47	49–51	48–51	49–52
Number of gill rakers	13–20 (rarely 13)	8–12	9–10	8–12	10–12	7–9	7–8
Scales in longitudinal series	57–84 (rarely up to 87)	42–50	about 50	34–46	83–95	47–53	50–99

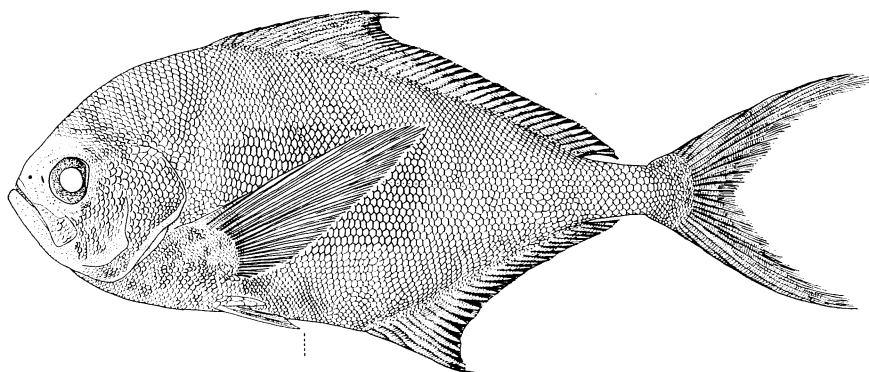


Fig. 1. *Xenobrama microlepis* sp. nov., paratype, NSMT-P 41947, 343 mm SL. Broken line indicates position of anus.

shares some characters with other genera, e.g., broad (as wide as eye diameter) and flat inter-pelvic space with *Taractes* and *Eumegistus* (interpelvic space of *Taractichthys* is broad with a midventral keel), higher number of vertebrae with *Taractichthys*, *Pterycombus*, and *Pteraclis*, and the condition of inner edges of mandible with *Brama* and *Pteraclis*, although the condition of *Xenobrama* may be considered as intermediate (Table 1). *Xenobrama* possesses unique characters such as stout gill rakers and numerous scales.

Although Yatsu and Nakamura (1988) included this species in the genus *Brama*, we have concluded that it is necessary to establish a new genus for this species on the basis of morphological comparisons.

*Xenobrama microlepis* sp. nov.  
(Fig. 1)

*Brama* sp. 2: Yatsu and Nakamura (1988), p. 51, 1 color photo, key, brief description.

**Holotype.** NSMT-P 44298, 494 mm SL, 44°56'S, 148°17'W, Feb. 8, 1986, collected by drift gill nets at night in the surface layer.

**Paratypes.** NSMT-P 41947, 343 mm SL, 53°00'S, 118°11'W, Feb. 8, 1987; AMS I. 27500-001, 347 mm SL, 53°00'S, 118°11'W, Feb. 8, 1987; NSMT-P 44296, 421 mm SL, 47°16'S, 149°06'W, Jan. 15, 1986; NSMT-P 44284, 483 mm SL, 45°27'S, 132°28'W, Jan. 4, 1986; HUMZ 104866, 422 mm SL, 45°01'S, 169°01'W, Nov. 11, 1984; FAKU 111771-111773, 367-397 mm SL, off southern Chile, Feb., 1986; NMNZ P. 24136, 392 mm SL, 49°52'S, 140°01'W, Feb. 13, 1986; NSMT-P 41927, 432 mm SL, 45°18'S, 98°06'W, Dec. 26, 1986; NMNZ P. 24137, 450 mm SL, 45°27'S, 132°28'W, Jan. 4, 1986;

NSMT-P 44297, 459 mm SL, 44°56'S, 148°17'W, Feb. 8, 1986; NSMT-P 44299, 490 mm SL, 40°20'S, 119°54'W; all of the above paratypes were collected by drift gill nets at night in the surface layer; NSMT-P 43079, 429 mm SL, 43°16'S, 176°44'W, Mar. 21, 1983, by bottom trawl at depths of 134-142 m in early morning; NSMT-P 43080, 504 mm SL, collected with NSMT-P 43079; NSMT-P 41848, 472 mm SL, 40°23'S, 79°53'W, Jul. 13, 1986, by midwater trawl net at depth of 270 m in the daytime.

**Diagnosis.** Dorsal profile of head moderately arched and rounded. Scales below lateral line arranged in normal hexagonal as opposed to oblique and vertically elongate hexagonal in *Brama*. Subpectoral region very narrow. Interpelvic space flat and as wide as eye diameter. Gill rakers short and robust (Fig. 2) and rather fewer in number (10-12). Total vertebrae 49-51. Scales in longitudinal series 83-95.

**Description.** Counts and measurements are shown in Table 2. Head and body moderately compressed. Lower jaw terminal. Dorsal profile of head rounded and convex between eyes. Greatest depth of body at origin of dorsal fin. Dorsal and anal fins with prominent lobes at anterior part. Base of pectoral fin situated relatively low and tip of fin extends over anal fin lobe. Pelvic fin inserted below posterior border of pectoral fin base. Caudal fin forked. Scales present on head (except for snout and outer margin of opercle), body, and proximal parts of all fins (inner surface of pectoral fin naked). Mid-lateral scales of caudal peduncle unspecialized and gradually decreasing their size over caudal fin. Transverse precaudal grooves poorly developed. A single lateral line originates from upper border of gill

slit and abruptly descends above tip of pelvic fin, then running along the midline of body to caudal fin base. Axillary scales long, extending about two-thirds the length of pelvic fin. Area between bases of pelvic fin flattened and as wide as eye diameter. Anus rounded, never slit-like. Snout rather sharp for this family. Anterior nostril rounded. Posterior nostril slit-like. Edges of preopercle and opercle smooth. Eye elliptical. Branchiostegal membrane completely covered by gill flap (opercular bones) when mouth closed. Branchiostegal rays 7. Gill rakers short, thick, and stout, never lath-like (Fig. 2). Pseudobranchiae present. Upper jaw extending to below posterior margin of pupil. Teeth on jaws small and conical in several rows anteriorly and two rows posteriorly; teeth on outer and inner rows enlarged. Several small teeth on vomer. Two or three rows of small teeth on palatine anteriorly,



Fig. 2. Outer view of right gill arch of *Xenobrama microlepis* sp. nov., NSMT-P 44298.

Table 2. Measurements and counts of *Xenobrama microlepis* gen. et sp. nov.

	Holotype NSMT-P 44298	Range	Paratypes Mean	SD	N
SL (mm)	494	343–504	428.6		17
Proportional measurements (% of SL)					
Fork length	110.3	107.7–114.9	112.2	2.21	15
Predorsal length	37.7	36.1–42.4	38.2	1.53	17
Preanal length	57.1	49.4–61.2	56.6	2.83	17
Prepelvic length	35.6	34.5–37.0	35.6	0.78	12
Body depth	41.7	40.5–47.3	43.0	1.85	17
Body width	16.0	15.1–18.2	16.4	1.04	15
Head length	28.9	26.5–29.8	28.1	1.11	17
Caudal peduncle depth	8.1	7.3–8.8	8.1	0.43	17
Pectoral length	36.4	34.1–40.9	38.6	1.67	17
Pelvic length	11.7	10.9–14.8	12.8	1.37	17
Distance between lower base of P <sub>1</sub> and P <sub>2</sub> (% of HL)	6.9	5.7–8.7	6.4	0.76	15
Snout length	29.4	28.4–31.8	30.2	1.15	17
Eye diameter	25.9	20.6–27.7	24.3	1.61	17
Upper jaw length	49.7	48.5–54.3	50.9	1.56	17
Interorbital width	34.3	31.1–37.3	34.8	2.10	17
Counts					
Dorsal fin rays	41	38–42	40.1	1.09	17
Anal fin rays	30	27–30	28.7	0.86	17
Pectoral fin rays	21	20–24	22.0	0.94	17
Pelvic fin rays	I, 5	I, 5	I, 5	0.00	17
Vertebrae	50	49–51	49.9	0.64	8
Abdominal	17	16–18	17.0	0.53	8
Caudal	33	32–35	32.9	0.99	8
Lateral line scales	91	87–98	92.2	3.43	11
Scales in longitudinal series	89	83–95	88.6	3.38	16
Gill rakers	4+7	3–5+6–9	3.9+7.3	0.49+0.77	17

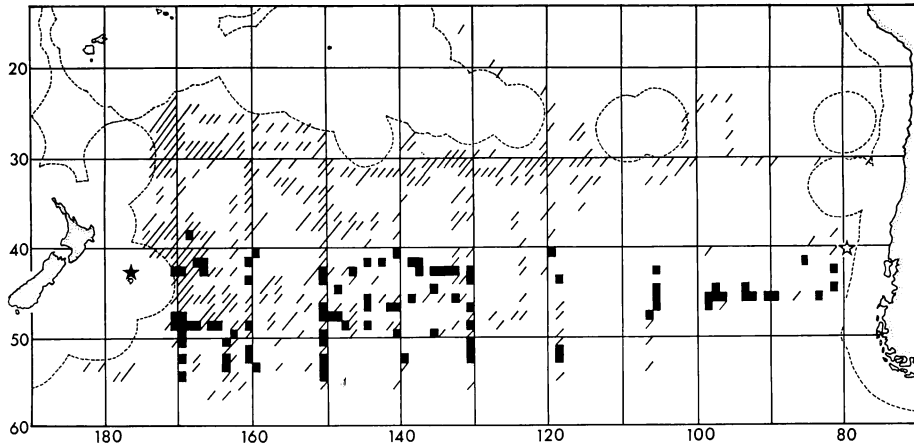


Fig. 3. Geographic distribution of *Xenobrama microlepis* sp. nov., primarily deduced from catches by drift gill nets by the JAMARC's research activities from 1982 to 1987. Broken curves, limits of 200-mile Exclusive Economic Zones (EEZ); oblique lines, fishing operations of drift gill nets expressed by one degree square (Lat.  $\times$  Long.); solid squares, occurrences of *X. microlepis*; open star, record by mid-water trawl; solid star, record by bottom trawl. No gill-net fishing was conducted inside the EEZ.

a single row posteriorly. Thoracic ribs without dorsal expansion.

Color of preserved specimens: Uniformly blackish (rarely deep brown) except for pectoral fin, tip of pelvic fin, and distal ends of several caudal rays, which are all whitish and semitransparent.

Color of fresh specimens: Body and head metallic silver, dorsally blackish. Vertical fins also metallic silver with blackish outer margins. This metallic color disappears immediately after death (Mr. Sawadaishi, personal communication). Yatsu and Nakamura (1988) show a color photograph of this species taken immediately after the catch by vertical long-line.

**Geographic distribution.** Occurrences by catches of drift gill nets are shown in Fig. 3, along with specimens collected by trawl and two specimens collected by vertical long-line at 48°06'S, 165°42'W (Sawadaishi, 1988). These distributional records suggest its broad presence in high seas of subantarctic region.

**Vertical distribution.** The depth where the two specimens were collected by vertical long-line was inferred to be 230–240 m (Sawadaishi, 1988), which is similar to that by midwater trawl (NSMT-P 41848). The former catch was made at twilight after sunset, the latter in daylight. Two specimens were collected by bottom trawl at depths of 134–142 m in the early morning (05:46–06:16 local

time). Catches by drift gill nets were from surface to about 7 m at night. These facts suggest diel vertical migration.

**Biology.** The following information was obtained by JAMARC's research in the South Pacific in December and January (especially, Kakoi and Shirasawa, 1988; Sawadaishi, 1988; Yatsu, 1988). The gonads of about 10% of the females were mature (ovary with transparent eggs). Squids, fishes (mainly paralepidids), salps, and amphipods were found in the stomachs.

**Etymology.** The Greek *microlepis* refers to the small scales.

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- (AY: Japan Marine Fishery Resource Research Center, 3-27, Kioi-cho, Chiyoda-ku, Tokyo 102, Japan; IN: Fisheries Research Station, Kyoto University, Nagahama, Maizuru, Kyoto 625, Japan; AY, present address: Far Seas Fisheries Research Laboratory, 5-7-1 Orido, Shimizu 424, Japan)
- 南太平洋亜南極域から得られたシマガツオ科魚類の新属新種 *Xenobrama microlepis*  
谷津明彦・中村 泉
- 南太平洋の亜南極域から表層流し網、中層および着底トロールにより得られた 17 個体の標本に基づき、シマガツオ科の新属新種 *Xenobrama microlepis* を記載した。本属はシマガツオ科の他の属からは以下の点で区別される。左右の下顎の腹縁は互いに接する、鰓耙は太く短い、胸鰭基部下方は狭い、腹鰭間隔は広い（体幅の約半分、ほぼ眼径に等しい）、脊椎骨数 49-51、縦列鱗数 83 以上。本種は南太平洋の南緯 38-54 度、西経 79-176 度に広く分布するが、表層流し網の漁獲はシマガツオ属 *Brama* に比べ稀である。
- (谷津: 102 東京都千代田区紀尾井町 3-27 海洋水産資源開発センター; 中村: 625 舞鶴市長浜 京都大学農学部附属水産実験所; 谷津現住所: 424 清水市折戸 5-7-1 遠洋水産研究所外洋資源部)