

**Reexamination of the Holotypes of
Bregmaceros japonicus Tanaka and
B. nectabanus Whitley**

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Two worldwide revisions on the family Bregmacerotidae (Gadiformes) have been published (D'Ancona and Cavinato, 1965; Belyanina, 1974). However, the classification of this family is still incomplete, and diagnoses of the species differ among authors. The meristic characters of several species show wide variations and are difficult to measure (see the keys of D'Ancona and Cavinato (1965) and Belyanina (1974)). Also, several undescribed species are believed to be present (Milliken, 1975; the present authors, in preparation).

The present authors feel that the classification of the bregmacerotid fishes should be

reconsidered. The holotypes must be re-described in detail, because most of them were poorly described, and D'Ancona and Cavinato (1965) and Belyanina (1974) did not observe them. In this study the holotypes of *B. japonicus* Tanaka and *B. nectabanus* Whitley were reexamined for morphological characters including counts for the vertebrae, principal caudal fin rays, etc. The counts of the unpaired fin rays and vertebrae were made on radiographs. Principal caudal fin rays are defined as branched rays +2.

Bregmaceros japonicus Tanaka, 1908

Holotype. ZUMT (Department of Zoology, the University Museum, the University of Tokyo) 2015; collected in 1908 in Sagami Bay, Japan. Tanaka (1908) defined this species as a new sub-species of *B. atlanticus* Goode et Bean, 1885-1886, and in the redescription, he (Tanaka, 1913) ranked it at the species

Table 1. Proportional measurements and counts of the holotypes of *Bregmaceros japonicus* Tanaka and *B. nectabanus* Whitley.

Catalogue number	<i>B. japonicus</i>		<i>B. nectabanus</i>		
	ZUMT 2015		IA 1719		
Author	Tanaka (1908)	Present authors	Whitley (1941)	Munro (1950)	Present authors
Standard length (mm)	69.0	66.9	33.0	—	30.8
In % of standard length					
Head	14.5	15.7	16.7	17.2	18.5
Maximum body depth	11.6	11.2	15.2	15.4	15.3
Occipital ray	—	—	—	19.0	20.8
Predorsal length	—	36.0	—	—	39.0
Preanal length	—	34.2	—	—	39.0
Longest pelvic fin ray	49.3	57.5	—	62.5	48.7
In % of head length					
Snout	30.0	28.6	—	27.0	21.1
Eye diameter	20.0	25.7	27.3	27.0	26.3
Upper jaw	—	48.6	—	55.5	45.6
Counts					
Dorsal rays	55	about 56	50	50	50
Anal rays	52	about 58	53	53	53
Pectoral rays	16	21	—	—	18
Pelvic rays	5	7	—	—	7
Principal caudal rays	—	14	—	—	13
Total caudal rays	—	34	—	—	29
Abdominal vertebrae	—	14	—	—	14
Caudal vertebrae including the first preural	—	42	—	—	36

level. Both descriptions are almost identical. Among the measurement values, the proportion of snout length alone is different; 30% in head length in 1908 and 33.3% in 1913. The holotype is not in good conditions; scales are mostly lost; an occipital ray peculiar to the family is broken at its tip; having been long preserved in formalin, some rays of the dorsal and anal fins are not accurately countable owing to decalcification (interpolated values in Table 1). The body now bleached, has turned red-brown, but chromatophores still remain visible.

Description. Comparison with Tanaka's (1908, 1913) descriptions which appear in parentheses: Inside of operculum colourless (pigmented); the first dorsal fin ray above fourth anal (a little behind insertion of anal in 1908, and above insertion of anal fin in 1913). The following features can be added: Snout rounded; tip of upper jaw below the vertical of the posterior 2/3 of eye; small teeth on vomer; the predorsal length in % of the preanal length 105.2; remnants of lateral pored scales along the dorsal margin from above pectoral insertion to about the posterior 3/4 of dorsal base; the backs of body and head, and the basal portions of unpaired fins with much denser chromatophores; posterior 2/3 of anal fin without pigment except the basal portion; tips of the outer 3 elongated rays of pelvics hyaline.

Proportional measurements and counts are shown in Table 1.

Notes. The meristic counts of the original description differ considerably from the present ones (see Table 1).

The identification of *B. japonicus* and *B. atlanticus* is at present unclear. Belyanina (1974) considered *B. japonicus* to be a form of *B. atlanticus* by reason of the fact that her specimens of *B. japonicus* type, with the start of the dorsal fin posterior to that of the anal, had the same meristic characters as *B. atlanticus*. As seen in Table 1, the vertebral number of the holotype (56 in total) does not correspond with that of *B. atlanticus* (less than 55 according to D'Ancona and Cavinato (1965) and Belyanina (1974)). An examination of the holotype of *B. atlanticus* is needed.

Bregmaceros nectabanus Whitley, 1941

Holotype. IA (Department of Ichthyology, the Australian Museum) 1719; collected in 1923 from Darwin, Northern Territory, Australia. Preserved in fairly good condition: scales almost all lost except on the tail; body bleached, appearing red-brownish yellow.

Description. The holotype was described briefly by Whitley (1941) and Munro (1950). Their descriptions are nearly the same as the description derived from the present examination, except that most of the following features were not stated in the original description and Munro's description. Snout rounded; small teeth on jaws and vomer, none on palatines; occipital ray rather short, its length in % of predorsal length 53.3; the beginning of dorsal fin on a line with that of anal fin (in Munro (1950), slightly in advance of anal fin). Lateral line of pored scales beginning at the upper edge of operculum, runs along the dorsal margin from above the vertical of the border of operculum to about 3/4 of dorsal base, and declines diagonally to just above the midline of body; the rearmost portion could not be distinguished. A few longitudinal, short rows of chromatophores confined to the dorsal region from occiput to just before the start of dorsal fin (in the descriptions of Whitley (1941) and Munro (1950), these rows were recognized throughout dorsal region); occipital ray, mouth cavity, and inside of operculum colourless.

Proportional measurements and counts are shown in Table 1.

Notes. D'Ancona and Cavinato (1965: 47) reported 3 forms in *B. nectabanus*. Their counts are as follows: D. 44~48 and A. 44~48 in the Fiji Islands form; D. 47~55 and A. 50~55 in the Toyama Bay form; D. 44~50 and A. 46~50 in the southeastern Atlantic and Indo-Malaya form. The holotype falls in the range of the Toyama Bay form in fin ray numbers of the dorsal (50) and anal (53).

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Bregmaceros japonicus と *B. nectabanus* の模式標本の再調査

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Bregmaceros japonicus Tanaka, 1908 と *B. nectabanus* Whitley, 1941 の模式標本を観察し、形態的特徴を精しく記録した。その結果、*B. japonicus* の模式標本の脊椎骨数は *B. atlanticus* Goode et Bean, 1885-1886 のものとは異なること、および *B. nectabanus* の模式標本は背鱗と尻鱗条数から D'Ancona and Cavinato (1965) の Toyama Bay 型に相当すること、が知られた。

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