Sexual Dimorphism of a Triggerfish, *Sufflamen fraenatus*, and Record of Its Juvenile from Kominato, Chiba Prefecture, Japan

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A triggerfish, *Sufflamen fraenatus* (Latreille) is characterized by having an uniform dark brown body with a pale band, which is connected by a transverse pale band around the lower lip on each side, extending backward from the angle of mouth to in front of the pectoral base. Jordan and Fowler (1902: 255), Fowler (1928: 450; 1938: 83, 165, 208, 244; 1959: 619), Kamohara (1940: 42), Randall (1955: 223), and de Beaufort (1962: 292), however, noted that this pale band is sometimes obscure or absent. Smith (1953: 408, fig. 1162) figured a juvenile, length 5 ins., which has uniform coloration.

The present writers found the two types in color pattern among 41 adult specimens, 186.0 to 311.8 mm in standard length, which were collected around the shore of the Ogasawara Islands (Bonin Island, Lat. 26~28°N, Long. 141~143°E) in 1968 to 1973 (Table 1). The one type has a distinct pale band mentioned above, but another one has only an obscure transverse pale band around the lower lip without any extention toward the pectoral base. The gonads of the specimens were inspected by the naked eyes and microscopic observations. All the specimens of the first type (Fig. 1, A) were male, whereas those of the second type (Fig. 1, B) were female. Unfortunately, specimens smaller than 186.0 mm in standard length except one described later were not collected. The counts and measurements of the materials are shown in Table 2, where no distinct difference between the sexes is found. As shown in Table 1, however, the size of males often exceeds over 250 mm in standard length but that of females hardly does, hence males seem to grow larger than females.

In September 8, 1974, a juvenile of balistid fish (Fig. 2), 46.0 mm in standard length, was collected at Kominato, Chiba Prefecture. The juvenile is identified as *S. fraenatus* on the basis of its morphology (Table 2). The coloration in formalin is as follows: the upper part of body above the line from the tip of snout to the hind edge of soft dorsal base dark brown, the lower part of body below the line pale brown with eight to nine irregular longitudinal dark brown lines; a black blotch between the second and the third dorsal spines; soft dorsal and anal fins pale with two indistinct dark longitudinal lines; pectoral fin pale; caudal fin somewhat dusky.

Although the generic name *Balistes* has currently been given to the present species by Japanese ichthyologists (Kamohara, 1940; Matsubara, 1955: 992), it seems reasonable that in accordance with Fraser-Brunner (1935: 659, 662) the genus *Sufflamen* is adopted to the present species.

There are two major opinions in recent studies concerning to the identification of the present species, which is identified as either *S. capistratus* (Shaw) or *S. fraenatus* (Latreille). In this work, however, we followed de Beaufort (1962), and

Table 1. Size of body and presence or absence of pale band behind mouth in *Sufflamen fraenatus* collected around the Ogasawara Islands.

Date	Pale band behind mouth			
	Present		Absent	
	No. of specimens	Range of standard length (mm)	No. of specimens	Range of standard length (mm)
July~Aug., 1968	2	261.0~271.0	3	218.2~232.8
July~Aug., 1968	—		2	222.0~224.5
Aug. 20, 1968	1	278.0	—	
Jan.~Feb., 1972	3	256.0~311.8	4	196.0~273.0
Jan., 1973	2	258.5~259.0	2	204.3~244.5
Sept. 2, 1973	5	229.0~260.0	10	186.0~245.5
Sept. 6, 1973	4	231.0~290.0	3	212.0~245.0
Total	17	231.0~311.8	24	186.0~273.0

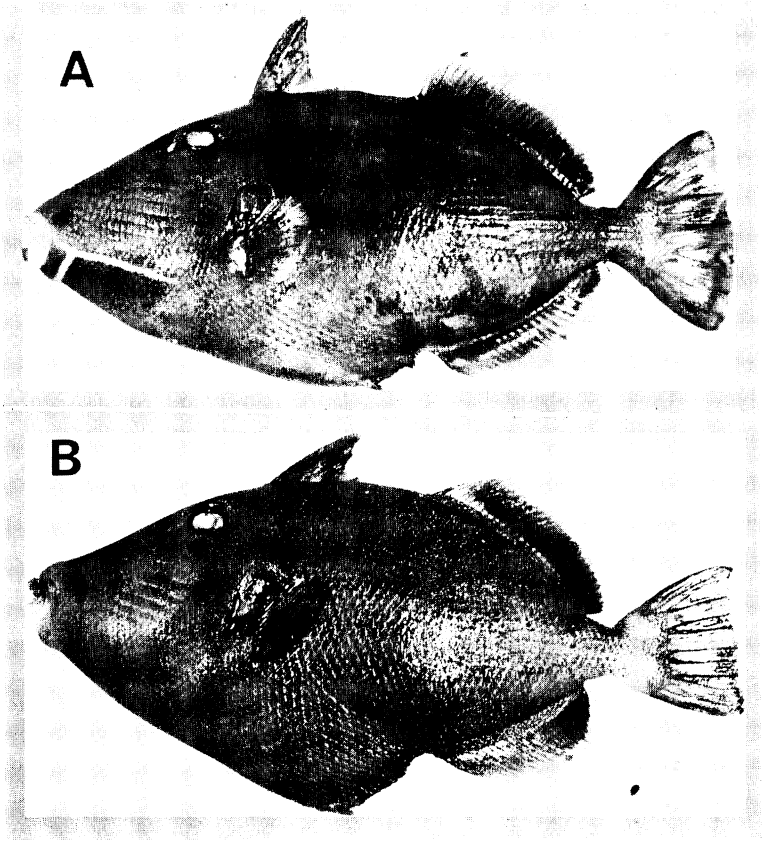

Fig. 1. *Sufflamen fraenatus*, from Hira-shima, Ogasawara Islands. A, TUFO 958, male, 253.4 mm in standard length; B, TUFO 946, female, 191.3 mm in standard length.

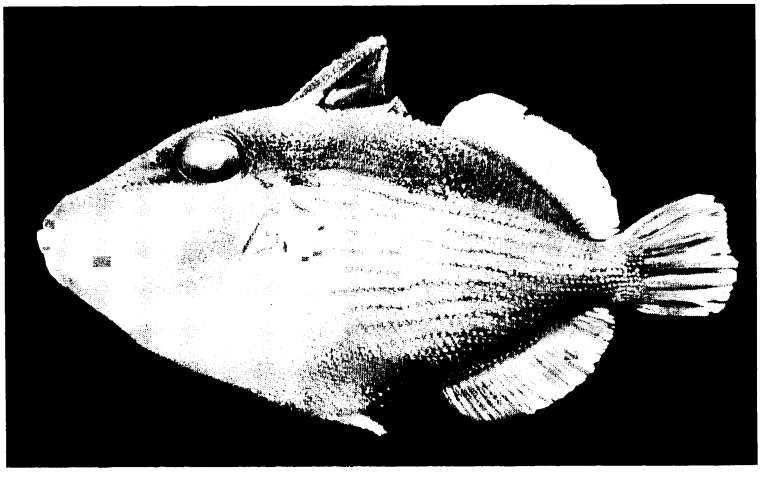

Fig. 2. Juvenile of *Sufflamen fraenatus*, 46.0 mm in standard length, Kominato, Chiba Pref.

Table 2. Comparison of *Sufflamen fraenatus* between sexes, along with thoes in *S. verres*.

Species	*S. fraenatus*			*S. verres*			
Locality	Ogasawara Is., 1968–1973		Kominato, 1974	Eastern Pacific: Jordan & Evermann (1898) as *Pachynathus capistratus*		Eastern Pacific: Berry & Baldwin (1966)	
Sex	male	female	(juvenile)	male	female	male	female
Pale band behind mouth	present	absent	absent	present	faint	present	absent
Lower part of body (adult)	dark brown	dark brown	—	yellow	olive	lighter	light
No. of specimens	17	24	1	—		65	
Standard length (mm)	229.0～311.8	186.0～273.0	46.0	—		12.6～375.0	
Dorsal fin rays	III–27～30	III–28～31	III–29	III–30～31		III–30～33	
Anal fin rays	25～27	25～27	26	27～28		27～30	
Pectoral fin rays	13～14	12～15	14	—		14～15	
Gill rakers (right)	29～36	28～34	—	—		27～31	
In % of standard length:							
body depth	43.7～51.2	43.7～53.8	53.9	50.0		46～58	
head length	35.2～41.3	36.1～39.4	41.3	41.7		33～38	
predorsal length	35.9～42.9	40.7～45.2	45.7	—		—	
tip of snout to anus	63.7～68.9	61.1～71.1	68.5	—		—	
snout length	27.3～31.0	27.9～30.0	27.0	—		21～29	
eye diameter	4.2～5.2	4.7～5.8	10.9	—		4.1～11.8	
interorbital width	7.9～9.6	8.4～9.5	12.2	—		—	
caudal peduncle depth	7.7～9.2	7.8～9.1	10.4	—		—	
1st dorsal base length	15.3～17.9	14.8～18.1	20.4	—		17～30	
2nd dorsal base length	30.4～33.8	30.7～34.7	30.4	—		—	
anal base length	27.7～30.0	25.8～30.4	26.7	—		—	

Berry and Baldwin (1966: 445), where *S. capistratus* is considered to be a junior synonym of *S. fraenatus*.

S. fraenatus is closely related to an endemic species in the eastern Pacific, *S. verres* (Gilbert and Starks), not only in the meristic and morphometric characters but also in the coloration. But the former is distinguished from the latter in having lower number of dorsal and anal fin rays and having the whole dark brown body in both sex (Table 2). Jordan and Evermann (1898: 1704) suggested the existence of sexual difference in color pattern of *Pachynathus capistratus* (Shaw) from the west coast of the Middle America. Their material, however, should probably be regarded as *S. verres* according to the description by Berry and Baldwin (1966) and comparison of the fin-ray counts and coloration with *S. fraenatus* (Table 2).

The sexual color difference in *S. fraenatus* as mentioned above is thought to develope in parallel with that in *S. verres*, and the juvenile of *S. fraenatus* is also very similar to the "protracted" prejuvenile of *S. verres* in their color patterns (Berry and Boldwin, 1966: 444～445, figs. 6～8).

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メガネハギの性的2型と千葉県小湊からえられたその稚魚について

座間　彰・服部　仁

1968 年から 1973 年にわたり小笠原諸島沿岸で採集した 41 尾 (体長 186.0～311.8 mm) のメガネハギは下顎の周囲と口角から後方にのびる淡色帯が明瞭なもの 17 尾と不明瞭か，まったく認められないもの 24 尾にわけることができた．これら 2 型の標本について生殖腺を調べた結果，前者は雄，後者は雌であることがわかり，この斑紋の相異は性的 2 型であることが明らかになった．

さらに，1974年 9 月 8 日に千葉県小湊で採集されたモンガラカワハギ科の 1 稚魚については形態的な測定を行ない検討した結果，メガネハギの稚魚と査定した．

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