

DENTEX FOURMANOIRI, A NEW SPECIES OF SEA BREAM (SPARIDAE: DENTICINAE) FROM OFF NEW CALEDONIA

by

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ABSTRACT. - A new species of sea bream, *Dentex fourmanoiri* is described from 16 specimens caught in deep water off New Caledonia. It is distinguishable from other species of *Dentex* by the number of dorsal fin rays (XIII + 9), a more acute snout angle, a greater eye, and the bright yellow margins of the dorsal and caudal fins.

RÉSUMÉ. - *Dentex fourmanoiri*, une espèce nouvelle de denté (Sparidae, Denticinae) de Nouvelle-Calédonie.

Une nouvelle espèce de denté, *Dentex fourmanoiri* est décrite à partir de 16 spécimens récoltés dans les eaux profondes de Nouvelle-Calédonie. Elle diffère des autres espèces de *Dentex* par le nombre de rayons à la nageoire dorsale (XIII + 9), un museau plus aigu, un oeil plus grand, et les bords des nageoires dorsales et caudale jaune vif.

Key-words. - Sparidae, Denticinae, *Dentex fourmanoiri*, ISEW, New Caledonia, New species, Taxonomy.

The genus *Dentex* includes 10 species but there are only two recorded species of yellow sea bream in the West Pacific, both known from Japan (Akazaki in Masuda *et al.*, 1984). These are *Dentex* sp. and *Dentex tumifrons* (Temminck and Schlegel, 1843) originally described from Nagasaki, Japan. The latter is also reported from north-western Australia (Gloerfelt-Tarp and Kailola, 1984; Sainsbury *et al.*, 1985), and from the South China Sea (Lee, 1983).

In the 1970s, P. Fourmanoir, former ichthyologist in ORSTOM (Institut de recherche scientifique pour le développement en coopération), collected a specimen of a probable new species of a yellow sea bream from off New Caledonia, and sent it to the first author (MA) who reported on this discovery during the XIth annual meeting of the Ichthyological Society of Japan (21 March - 1st April, 1978), as mentioned in vol. 25, n° 1 of the Japanese Journal of Ichthyology (p. 75). Unfortunately, the specimen was lost and the description could not be completed.

In the course of the exploratory cruises performed by ORSTOM in the economic zone of New Caledonia to investigate the bathyal fauna and new resources (Séret, 1997), 16 specimens of this new sea bream were collected and are herein described.

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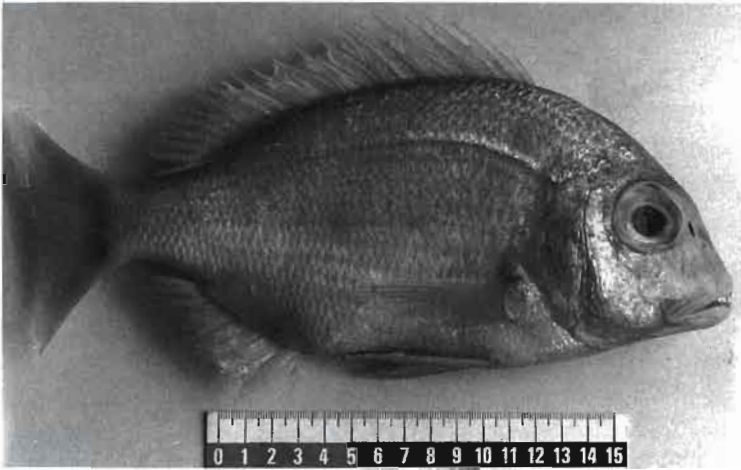


Fig. 1. - Holotype of *Dentex fourmanoiri* n. sp. (MNHN 1998-301), 226 mm SL, from Chesterfield Islands.



Fig. 2. - Paratype of *Dentex fourmanoiri* n. sp. (MNHN 1998-302), 178 mm SL, from northern New Caledonia.

MATERIALS AND METHODS

The 16 specimens of the new species are listed in the type series below. The new species was compared to closely related species: 42 specimens of *Dentex tumifrons* from Japan and East and South China seas, and 42 specimens of *Dentex* sp. from Okinawa and the Ogasawara Islands.

Methods for taking measurements and meristic data follow Akazaki (1962); counts were made on radiographs. An analysis of covariance was done on selected morphometric ratios.

The specimens are deposited in the Muséum national d'histoire naturelle, Paris (MNHN), the National Science Museum, Tokyo (NSMT) and Miyazaki University (MU).

DENTEX FOURMANOIRI N. SP.

(Figs 1, 2, Table I)

Type series

Holotype. - MNHN 1998-301, 1 specimen (226 mm SL), R.V. "Coriolis", CORAIL 2, CP 130, 19°27'S, 158°34'E (east of Chesterfield Islands), beam trawl, 217 m depth, Jul. 1988.

Paratypes. - MNHN 1997-4140, 3 specimens (164-190-215 mm SL), R.V. "Coriolis", CORAIL 2, stn. 131, 19°25'S, 158°37'E (east of Chesterfields Islands), beam trawl, 217 m depth, 29 Aug. 1988; MNHN 1997-4141, 2 spms (103-190 mm SL), R.V. "Alis", BATHUS 1, stn. 712, 21°44'S, 166°35'E, beam trawl, 210 m depth, 9 Mar. 1993, col. B. Richer de Forges; MNHN 1997-4142, 2 spms (190-205 mm SL), R.V. "Alis" BERYX 4, stn. 3, 22°44'S, 167°17'E, longline, 260 m depth, 23 Jan. 1992, col. R. Grandperrin; MNHN 1998-302, 5 spms (113-178 mm SL), R.V. "Vauban", MUSORSTOM 4, stn. CC 173, 19°02'S, 163°18'E, bottom trawl, 250-290 m depth, 17 Sep. 1985, col. B. Séret; NSMT-P 54577, 1 spm 165 mm SL, same data as MNHN 1998-302; MUFS 14874, 1 spm 155 mm SL, same data as MNHN 1998-302; MUFS 14775, 1 spm dissected 137 mm SL, same data as MNHN 1998-302.

Diagnosis

A yellow sea bream of the genus *Dentex* characterized by: XIII + 9 dorsal fin rays; snout acute (70°-83°); eye diameter 2.40-3.35 times in head length; distal margins of dorsal and caudal fins bright yellow.

Description

Selected measurements and meristics are given in table I.

A yellow sea bream of the genus *Dentex* with an oval and compressed body; head large with anterior profile nearly evenly sloping, steeper in front of eye in large specimens; snout angle acute, 70° (holotype) and 70-83° (paratypes); snout and suborbital region naked; cheeks, opercle scaly; preopercle scaly except at its posterior margin; mouth low, slightly oblique; a single row of sharp, conical teeth along sides of each jaw, with 4 anterior canine-like teeth in upper jaw and 4-6 in lower jaw (character of Denticinae); interorbital slightly round and scaly; caudal fin forked.

Gillrakers on first arch 7 + 10 (holotype), 4-7 + 10-11 (paratypes); dorsal fin with 13 spines and 9 soft rays; the spines increasing in length up to the fourth or fifth, and subequal thereafter; anal fin with 3 spines and 8 soft rays; pelvic fin with 1 spine and 5 soft rays; pectoral fins with 15 soft rays (14 for 3 specimens); scales along lateral line 47 (holotype), 47-50 (paratypes); scales on transverse series 5 + 14 (holotype), 5-6 + 12-15 (paratypes).

Colour (in fresh specimens) (Fig. 2). - Body rosy to light red with silvery reflections; some specimens with purplish shades; dorsal and caudal fins pale yellowish with distal margin bright yellow; pectoral, pelvic and anal fins pale; base of pectoral fin pinkish; eye silver with some yellowish tint, iris black.

Etymology

The new species is named in honor of Pierre Fourmanoir, former ichthyologist in ORSTOM, who first collected this new sea bream in New Caledonian waters.

Distribution

Known from Chesterfield Islands and New Caledonia from 210 to 290 m depth.

COMPARISONS WITH OTHER SPECIES

(Figs 3, 4, Tables II, III)

The analysis of covariance performed on selected morphometric characters showed significant differences in some ratios (Table II).

Table I. - Selected measurements expressed as ratios of standard length (SL) and head length (HL) and meristic data of 3 Indo-Pacific species of *Dentex*.

Species	<i>Dentex fourmanoiri</i>	<i>Dentex tumifrons</i>	<i>Dentex sp.</i>
Locality	New Caledonia	Japan + China Seas	Okinawa + Ogasawara
Specimens examined	Holotype + 15 Paratypes	42 specimens	42 specimens
Standard length (mm)	226 (103-215)	68.5-247	205-316
RATIOS	Holotype (Range) Mean	Mean (Range)	Mean (Range)
SL / head length	2.94 (2.53-2.98) 2.77	2.82 (2.69-3.10)	2.94 (2.74-3.06)
SL / body depth	2.17 (2.04-2.26) 2.13	2.08 (1.97-2.88)	2.17 (2.00-2.36)
SL / body width	6.65 (5.15-7.63) 6.00	5.46 (5.20-6.68)	6.04 (4.63-7.50)
SL / pectoral fin length	2.69 (2.46-2.97) 2.70	2.66 (2.36-3.00)	2.72 (2.50-3.14)
HL / 1st dorsal spine length	5.13 (4.24-6.15) 5.02	4.40 (3.70-6.33)	4.69 (3.96-5.94)
HL / 2nd dorsal spine length	3.21 (2.83-4.13) 3.28	2.82 (2.45-3.62)	2.96 (2.43-4.05)
HL / 3rd dorsal spine length	2.37 (2.00-3.15) 2.43	2.18 (1.95-2.71)	2.26 (1.84-2.68)
HL / 1st anal spine length	4.28 (3.40-4.20) 3.74	4.35 (3.63-5.33)	4.05 (3.68-4.59)
HL / 2nd anal spine length	2.66 (1.89-2.59) 2.30	2.74 (2.37-3.20)	2.54 (2.26-3.10)
HL / 3rd anal spine length	3.35 (2.57-3.50) 2.93	3.00 (2.52-3.53)	3.02 (2.36-3.73)
HL / pelvic spine length	1.97 (1.80-2.38) 1.72	2.18 (1.93-2.47)	2.06 (1.83-2.36)
HL / pelvic fin ray length	1.51 (1.29-1.70) 1.47	1.46 (1.33-1.74)	1.43 (1.31-1.64)
HL / snout length	2.57 (2.12-2.65) 2.49	2.47 (1.85-2.97)	2.47 (2.26-3.21)
HL / upper jaw length	2.48 (2.25-2.93) 2.61	2.55 (2.32-2.78)	2.52 (2.28-2.79)
HL / interorbital width	3.21 (3.14-3.85) 3.46	3.44 (3.00-4.08)	3.19 (2.93-4.04)
HL / eye diameter	3.08 (2.40-3.35) 2.78	3.38 (2.84-4.40)	3.66 (3.09-4.09)
HL / suborbital width	4.05 (3.88-5.57) 4.62	3.91 (3.31-4.91)	4.12 (3.64-4.85)
MERISTICS	Holotype (Range) Mean	Mean (Range)	Mean (Range)
Lateral line scales	47 (47-50) 48.1	48.3 (46-50)	48.5 (47-50)
Transverse series: upper/under	5+14 (5-6+12-15) 5.5+13	5.4+14 (5-7+13-15)	5.8+14 (5-6+13-15)
Under 4th dorsal spine	5	5	5
Dorsal fin spines/rays	XIII+9	XII+10	XII+10
Anal fin spines/rays	III+8	III+8	III+8
Pelvic fin spines/rays	I+5	I+5	I+5
Pectoral fin rays	15	15	15
Gill rakers	7+10 (4-7+10-11)	7-8+11-13	7+11-12
Snout angle	70° (70°-83°) 76°9	82°9 (82°-88°)	80°8 (80°-83°)

Table II. - Main characteristics of the 10 known species of *Dentex*. DF = number of dorsal fin spines and rays; AF = number of anal fin spines and rays; PF = number of pectoral fin rays; SL = standard length; HL = head length; BD = body depth; SOW = suborbital width; LL = number of lateral line scales; TSL = number of transverse series of scales above the lateral line.

<i>Dentex</i> species	DF	AF	PF	SL/HL	SL/BD	HL/SOW	LL	TSL	Locality
Atlantic									
<i>D. angolensis</i>	XII-10	III-8	15-16	2.4-2.8	2.3-2.5	5.3-5.9	46-47	4	North-west African coast
<i>D. barnardi</i>	XII-10	III-8	16	2.9	2.5	4.1	61	6	West African coast
<i>D. canariensis</i>	XII-10	III-8	16	2.9-3.1	2.4-3.0	3.1-4.2	58-63	5-6	North-west African coast
<i>D. congoensis</i>	XII-10	III-8	15	2.9	2.6	7.2	46	4	North-west African coast
<i>D. dentex</i>	XI-11	III-8	15	2.8	2.6	4.0	60	8	England, France, Mediterranean, Morocco
<i>D. macrophthalmus</i>	XII-10	III-8	16	2.5-2.7	2.7-2.8	9.4-9.8	53-56	5-6	Portugal, Medit., Morocco, Mauritania
<i>D. maroccanus</i>	XII-10	III-8	16	2.7	2.3	5.2-6.5	48	4	North-west African coast
Pacific									
<i>D. tumifrons</i>	XII-10	III-8	15	2.7-3.1	2.0-2.3	3.5-4.7	46-50	5	Japan, East and South China Seas
<i>D. fourmanoiri</i>	XIII-9	III-8	15	2.6-3.0	2.1-2.2	4.1-5.6	45-50	5-6	New Caledonia
<i>Dentex</i> sp.	XII-10	III-8	15	2.7-3.1	2.0-2.3	3.6-4.9	47-50	5-6	Okinawa, Ogasawara

Table III. - Results of the covariance analysis on selected morphometric characters. HL = head length; BD = body depth; PL = pectoral fin length; 3DS = 3rd dorsal fin spine length; 3AS = 3rd anal fin spine length; SnL = snout length; SOW = suborbital width; ED = eye diameter; - = not significant. * = significant at 5%; ** = significant at 1% level.

Covariance analysis	Covariance parameters	SL/HL	SL/BD	SL/PL	HL/3DS	HL/3AS	HL/SnL	HL/ED	HL/SOW
① Between <i>D. fourmanoiri</i> & <i>D. tumifrons</i>	Slope	0.2104	0.4303	0.983	4.5786	18.377	12.889	11.397	2.3829
	Adjusted mean	0.0118	5.1501	6.1451	0.1056	5.9339	6.6139	132.99	58.051
	Significant 5%	-	-	-	*	**	**	**	-
	Significant 1%	-	*	*	-	*	*	**	**
② Between <i>D. fourmanoiri</i> & <i>Dentex</i> sp. (Okinawa + Ogasawara)	Slope	0.0419	5.1064	0.0079	1.592	1.621	5.621	2.4258	0.0555
	Adjusted mean	4.9378	4.569	2.1396	7.5096	3.0111	0.5323	20.608	0.4457
	Significant 5%	-	*	-	-	-	*	-	-
	Significant 1%	*	*	-	**	-	-	**	-
③ Between <i>D. tumifrons</i> & <i>Dentex</i> sp. (Okinawa + Ogasawara)	Slope	0.0497	7.046	1.1454	0.1941	0.4946	0.448	0.4215	1.0448
	Adjusted mean	19.651	1.16	3.5297	1.8556	20.85	34.191	13.61	59.923
	Significant 5%	-	**	-	-	-	-	-	-
	Significant 1%	**	-	-	-	**	**	**	**

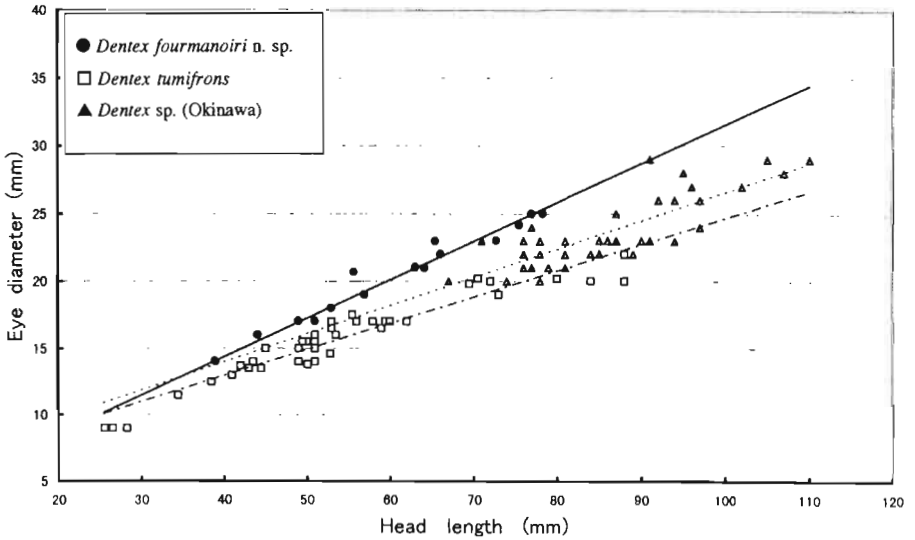


Fig. 3. - Regressions between head length and snout length in 3 Indo-Pacific species of *Dentex*.

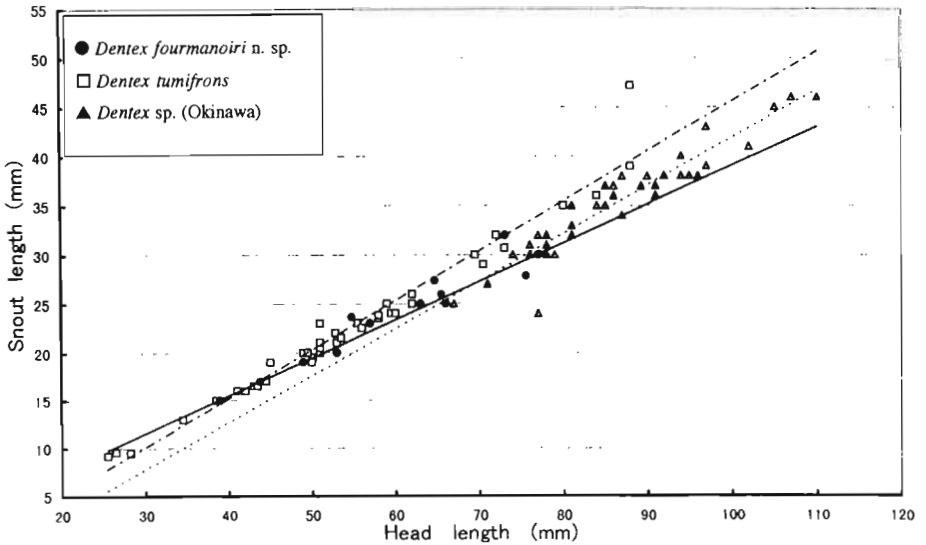


Fig. 4. - Regressions between head length and eye diameter for 3 Indo-Pacific species of *Dentex*.

Dentex fourmanoiri is mainly distinguishable from *Dentex tumifrons* by the number of dorsal fin rays (XIII + 9 versus XII + 10); snout angle more acute, 70°-83° versus about 78°-87°; a larger eye, its diameter 2.40-3.35 (2.78) times in head length versus 2.84-4.40 (mean: 3.38) (Fig. 3); general colouration light red with silvery reflections versus silvery red with golden sheen; dorsal and caudal fins with bright yellow margin versus fins orange-yellow to reddish; no blotches versus 3 large yellow blotches on body

below base of dorsal fin in *D. tumifrons*. Furthermore, *D. fourmanoiri* tends to have a shorter snout, its length contained 2.12-2.65 (mean: 2.49) times in head length versus 1.85-2.97 (mean: 2.47) (Fig. 4).

Dentex fourmanoiri is mainly distinguishable from an undescribed species from Japan, *Dentex* sp. (Akazaki in Masuda *et al.*, 1984) by number of dorsal fin rays (XIII + 9 versus XII + 10); a larger eye, its diameter 2.40-3.35 (mean: 2.78) times in head versus 3.09-4.09 (mean: 3.66) (Fig. 3); body without spots versus scattered with numerous small blue spots; dorsal fin with bright yellow margin versus dorsal bright yellow; pelvic and anal fins pale versus bright yellow in *Dentex* sp. Furthermore, *D. fourmanoiri* tends to have a snout angle somewhat more acute, 70°-83° versus about 80°-83°; a snout shorter, 2.12-2.65 (mean: 2.49) times in head versus 2.26-3.21 (mean: 2.47) (Fig. 4).

Dentex fourmanoiri is easily distinguishable from the 7 Atlantic species of *Dentex* by its number of dorsal fin rays: XIII + 9 versus XI-XII + 10-11 (Table III).

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