

Review of the Species of the Genus *Dentex* (Perciformes: Sparidae) in the Western Pacific Defined as the *D. hypselosomus* complex with the Description of a New Species, *Dentex abei* and a Redescription of *Evyinnis tumifrons*

Yukio Iwatsuki¹, Masato Akazaki² and Nobuhiko Taniguchi³

¹Division of Fisheries Sciences, Faculty of Agriculture, University of Miyazaki, 1–1, Gakuen-kibanadai-nishi, Miyazaki 889–2192, Japan
E-mail: yuk@cc.miyazaki-u.ac.jp

²Deceased on 12 May 1999

³Laboratory of Applied Population Genetics, Graduate School of Agriculture, Tohoku University, Tutumidori, Amamiya-cho, Aoba-ku, Sendai-City, 981–8555 Japan
E-mail: nobuhiko@bios.tohoku.ac.jp

Abstract The lectotype of *Chrysophrys tumifrons* designated by Boeseman (1947) is a specimen of the species currently recognized as *Evyinnis japonica* Tanaka, 1931. The name is, therefore, the senior synonym for that species. *Dentex spariformis* Ogilby, 1910, based on specimens collected at Moreton Island, Queensland, Australia, is redescribed and resurrected as a valid species, having previously been synonymized with *D. tumifrons* (Temminck and Schlegel, 1843). *Dentex abei* sp. nov. is described from ten type and 30 non-type specimens collected in the Ryukyu Islands, Chichi-jima of Ogasawara Islands (=Bonin Islands), Japan, and Luzon Island, Philippines. These two *Dentex* species, together with *D. hypselosomus* Bleeker, 1854 and *D. fourmanoiri* Akazaki and Séret, 1999 are recognized as a “*Dentex hypselosomus* complex” and reviewed on the basis of western Pacific and southern Indonesian material. *Dentex hypselosomus* differs from the others in having three eye-sized fluorescent yellow blotches dorsally, plus a small yellow spot posteriorly on the soft dorsal fin base (vs. small bright cobalt or blue-spotted lines on the body in *D. abei* and no spots in *D. fourmanoiri* and *D. spariformis*) and deeper suborbital depth. *Dentex fourmanoiri* differs from *D. spariformis* in having 13 dorsal fin spines and 9 soft dorsal fin rays (vs. 12 spines and 10 rays). *Dentex spariformis* has a larger eye than *D. abei* and *D. hypselosomus* (mean orbit diameter 2.78 in head length vs. 3.66 and 3.32, respectively). Although none of the four species have been recorded in the equatorial zone, *D. abei* and *D. hypselosomus* are allopatric in the Northern Hemisphere, while *D. spariformis* and *D. fourmanoiri* are allopatric in the Southern Hemisphere, too. A key to the complex is provided.

Key words: Taxonomy, Sparidae, *Dentex*, review, *Dentex abei* sp. nov.

Akazaki and Séret (1999) considered the sparid genus *Dentex* to comprise seven Atlantic and three Pacific species, including their new species, *D. fourmanoiri*. The Western Pacific *Dentex tumifrons* (Temminck and Schlegel, 1843) has long been recorded as a valid species to the East Asian Shelf (type locality: Nagasaki, Japan). Although Bleeker (1854) described a second, *Dentex hypselosomus* (as *hypselosoma*), it was considered to be a junior synonym of *D. tumifrons* by

Akazaki (1962).

Dentex spariformis Ogilby, 1910, described from Moreton Island, Queensland, Australia and recognized by Fowler (1933), was also synonymized with *D. tumifrons* by Akazaki (1962). However, Akazaki (1962) did not comment the species. Gloerfelt-Tarp and Kailola (1984) identified the species as *D. tumifrons* and subsequent authors have followed that view (Allen and Swainson, 1988; Allen, 1997; Akazaki and Séret,

1999; Carpenter, 2001), although Hutchins (2001) transferred it to the monotypic genus *Altolaius* (Whitley, 1937: type species, *Dentex spariformis*) and also considered it to be a valid species. However, he did not provide an adequate description and explanation.

Gushiken (1972) reported *D. tumifrons* from the Ryukyu Islands, Japan, but Akazaki (1984) doubted the identification, referring only to *Dentex* sp. specimens lacking large yellow blotches dorsally. Specimens of "*D. tumifrons*" collected from southern Japan (except the Ryukyu Islands), South Korea, China, and Taiwan clearly have those markings. Subsequent authors followed Akazaki's (1984) opinion (Shen, 1993; Hayashi, 1993, 1999, 2002; Youn, 2002). Taniguchi *et al.* (1986) studied genetic differences between the Okinawan and Southern Japanese (excluding the Ryukyu Islands) populations using allozyme and protein markers, finding a level of difference between them at the subspecies — specific level. However, they did not propose a new taxon. Recently, Akazaki and Séret (1999) described *Dentex fourmanoiri*, from New Caledonia (including Chesterfield Islands), an endemic species with 13 dorsal fin spines and characteristically large eyes, and included an account of Akazaki's (1984) *Dentex* sp. of the Ryukyu Islands, Japan as a separate valid species. However, there has not been an inclusive review of the above species, encompassing known types and non-type specimens throughout the western Pacific.

In 1947, Boeseman designated a lectotype and a paralectotype from the two syntypes of *D. tumifrons*. The lectotype has proven to be the species currently recognized as *Evynnis japonica* Tanaka, 1931. According to Article 74.7.3 of the International Commission of Zoological Nomenclature (1999, 2003), *D. tumifrons* is an available name and a senior synonym of *E. japonica*. Accordingly, *Dentex hypselosomus* Bleeker, 1854 is a valid name. *Dentex hypselosomus*, *D. spariformis*, and *D. fourmanoiri* are herein redescribed as valid species. In addition, a new species of *Dentex* is described on the basis of specimens

collected from the Ryukyu and Ogasawara Islands (=Bonin Islands), Japan. The 4 species together are regarded as the "*Dentex hypselosomus* complex." The unique allopatric distributional pattern of the 4 species is discussed and a key is provided. *Evynnis tumifrons* is redescribed as a valid species.

Materials and Methods

Counts and measurements generally followed Akazaki (1962) and Akazaki and Séret (1999). The dorsalmost, spine-like element in the pectoral fin is usually unsegmented but regarded as a ray in the pectoral fin counts. Standard length was abbreviated as SL. Institutional codes follow Leviton *et al.* (1985) except for the Fisheries Science Course, Faculty of Agriculture, University of Miyazaki (MUFS).

Dentex hypselosomus complex

Dentex abei sp. nov., *D. fourmanoiri*, *D. hypselosomus*, and *D. spariformis* are more closely related to each other than to other species of *Dentex* in having the following combination of characters: Dorsal fin rays XII–XIII, 9–10, four anteriormost dorsal fin spines progressively longer, third or fourth longest; anal fin rays III, 8, second spine slightly longer than third; a row of sharp conical teeth in both jaws, 4 in upper jaw and usually 6 in lower jaw enlarged, caniform, no molars; interorbital scales extending almost to level with anterior margin of eye; preopercular flange fully scaled; vertebrae 10+14=24; body and head red or rosy or pinkish-red with yellow or reddish-yellow suffusion on dorsal fin rays.

Dentex abei sp. nov.

(Proposed English name: Yellowfin sea brjeam)

(Japanese name: Kibire-akarenko)

(Figs. 1A, 2A)

Dentex tumifrons (not of Temminck and Schlegel):

Fowler, 1933: 123 (Luzon Island, Philippines);

Gushiken, 1972: 41, fig. 202 (Ryukyu Islands, Japan).

Dentex sp.: Akazaki, 1984: 177, pl. 166B (Okinawa,

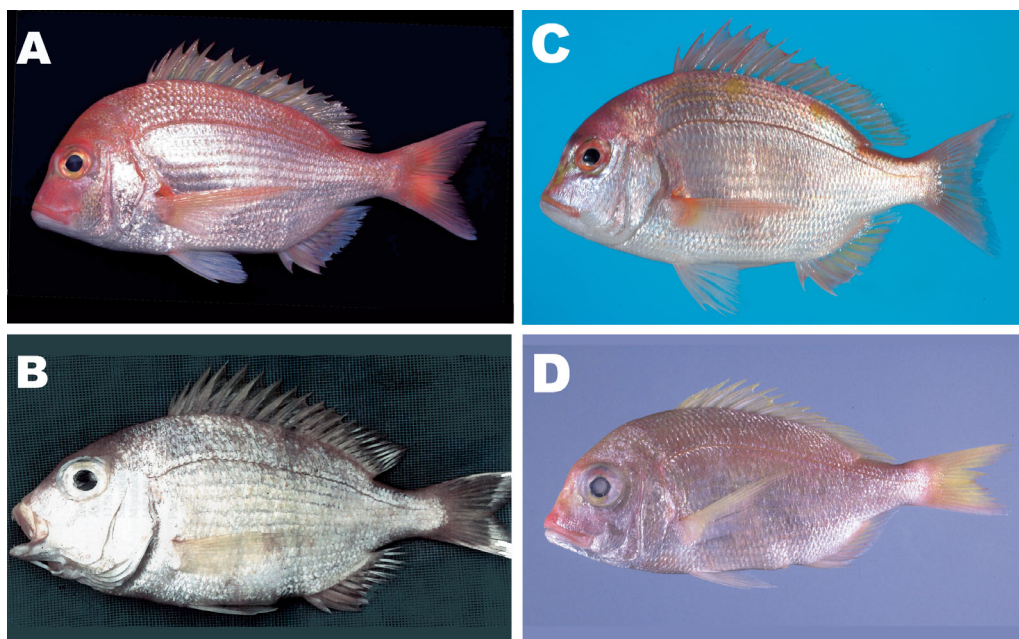


Fig. 1. Species of the *Dentex hypselosomus* complex. A: *Dentex abei* sp. nov., NSMT-P 57150, holotype, 269 mm SL, Okinawa, Japan; B: *D. fourmanoiri*, MNHN 1998-301, 226 mm SL, Chesterfield Island, New Caledonia; C: *D. hypselosomus*, MUFS 22047, 165 mm SL, Miyazaki, Kyushu Island, Japan; D: *D. spariformis*, QM 9999, 193 mm SL, off Moreton Bay, Australia.

Japan); Hayashi, 1993: 749 (Ryukyu Islands, Japan); Akazaki and Séret, 1999: 180 (Ryukyu Islands, Japan); Hayashi, 1999: 859 (Ryukyu and Ogasawara Islands, Japan); Hayashi, 2002: 859 (Ryukyu Islands and Ogasawara Islands, Japan).

Holotype. NSMT-P 57150, 269 mm SL, male, off Okinawa Island, Ryukyu Islands, Japan, 50 m depth.

Paratypes. MUFS 7487, 7489, 7491, 7492, 4 specimens, 205–213 mm SL, off Iheiyajima, Ryukyu Island, Japan; MUFS 17643–17648, 5 specimens, 265–307 mm SL, off Chichi-jima, Ogasawara (Bonin) Island, Japan, ca. 100 m depth, hand-line.

Non-type specimens. 30 specimens, 120–306 mm. MUFS 1866, 213 mm SL, Naha fish market, Okinawa, Japan; MUFS 2341, 182 mm SL, Chi-Lung fish market, collected off Chi-Lung, northeastern Taiwan, hand-line, ca. 50 m depth; MUFS 2691, 4524, 4525, 5260, 5262, 5414, 6 specimens, 120–230 mm SL, Naha fish market, Okinawa; MUFS 17590–17599, 17639–17642, 17649–17651, 17 specimens, 223–306 mm SL, data as for MUFS 17643–17648; USNM 183185, 201 mm SL, San Fernando, Union Prov., Luzon Island, Philippines; USNM 191189, 4 specimens, 143–163 mm SL, off I-Lan, northeastern Taiwan.

Diagnosis. A species of the *Dentex hypselo-*

somus complex with the following combination of characters: dorsal fin rays XII, 10; pectoral fin rays 15; orbit diameter small (mean 3.66, range 3.09–4.09 in head length; Fig. 5); snout angle blunt (range 79°–83°, mean 81°); body prominent pinkish-red with silvery reflection, 5 or 6 bright cobalt or blue small-spotted lines (Fig. 2A) between each horizontal scale row below lateral line, visible only from oblique dorsal view, similar line of small blue spots rising obliquely above lateral line; eye uniformly reddish-gold sheen; no prominent yellow blotch in the anterior nostril and snout region; dorsal fin rays with saffron-yellow membrane but each ray reddish-yellow.

Description. Meristic values and proportional measurements as percentages of standard length of the holotype, nine paratypes, and 30 non-type specimens of *Dentex abei* sp. nov. are given in Table 1. Characters given in the diagnosis are not repeated.

Body compressed, deep to somewhat slender;

Table 1. Counts and proportional measurements of type and non-type specimens of *Dentex abei* sp. nov., and *D. fourmanoiri* Akazaki and S eret, 1999, expressed as percentages of standard length (means in parentheses).

	<i>Dentex abei</i> sp. nov.			<i>Dentex fourmanoiri</i>	
	Holotype NSMT-P 57150 <i>n</i> =1	Paratypes ^a <i>n</i> =9	Non-type specimens <i>n</i> =30	Type specimens ^b <i>n</i> =16	Other specimens <i>n</i> =3
Dorsal and anal fin rays	XII, 10; III, 8	XII, 10; III, 8	XII, 10; III, 7–8 (7, 1 of 21 specimens)	XIII, 9; III, 8	XIII, 9; III, 8
Pelvic and pectoral fin rays	I, 5; 15	I, 5; 15	I, 5; 15	I, 5; 14–15 (14, 3 of 16 specimens)	I, 5; 15
Pored lateral line scales	49	48–49	48–50	47–50	49–51
Scales of transverse series	4 ¹ / ₂	4 ¹ / ₂	4 ¹ / ₂ –5	4 ¹ / ₂ –5	4 ¹ / ₂ –5
Scales above and below lateral line	6/15	6/14–15	5–6/12–15	5–6/12–15	5–6/14
Gill rakers	8+12 =20	8+12–13 =20–21	7–8+12–13 =19–21	4–7+10–11 =14–18	6–7+11–12 =17–19
Squamation on preopercular flange	Fully scaled	Fully scaled	Fully scaled	Fully scaled	Fully scaled
Standard length (mm)	269	205–307	128–307 (236)	103–226	202–223
Body depth	51	42–53	42–53 (46)	44–49	44–45
Head length	36	33–36	33–37 (35)	34–38	35–37
Body width at pectoral fin base	18	16–19	12–20 (17)	13–19	16–19
Snout length	15	12–15	12–16 (14)	—	13–15
Orbit diameter	12	9–10	9–12 (10)	—	11–13
Dermal eye opening	10	7–10	7–12 (9)	—	11–12
Suborbital depth	9	7–9	7–9 (8)	—	7.6–8.1
Interorbital width	11	8–11	9–12 (10)	—	10–11
Upper jaw length	14	13–15	12–16 (14)	—	15–16
Caudal peduncle depth	12	10–12	10–13 (12)	—	12–13
Caudal peduncle length	16	15–19	15–20 (18)	—	19–20
Predorsal length	46	42–47	42–55 (46)	—	42–46
Preanal length	64	69–72	64–73 (70)	—	64–71
Prepelvic length	40	38–42	38–45 (40)	—	39–45
Dorsal fin base	56	53–58	51–58 (54)	—	51–53
Anal fin base	21	18–22	18–23 (20)	—	20
Pelvic fin spine length	16	13–17	13–19 (15)	—	16–17
First pelvic fin ray length	24	20–24	20–25 (22)	—	20–21
Pectoral fin ray length	41	33–38	31–41 (37)	34–41	36–37
First dorsal fin spine length	7	7–8	4–8 (7)	—	7–9
Second dorsal fin spine length	12	9–13	8–14 (11)	—	10
Third dorsal fin spine length	14	13–17	13–19 (15)	—	14–15
Fourth dorsal fin spine length	14	14–18	13–21 (16)	—	15–16
First dorsal fin ray length	11	11–14	11–14 (12)	—	12
First anal fin spine length	8	6–9	6–10 (8)	—	8–9
Second anal fin spine length	13	12–14	11–16 (13)	—	14–15
Third anal fin spine length	12	10–12	10–14 (11)	—	12–13
First anal fin ray length	10	10–12	9–13 (11)	—	12

^a MUFS 7487, 7489, 7491–7492, 4 specimens, 205–213 mm SL, off Iheiayajima, Ryukyu Is., Japan; MUFS 17643–17648, 5 specimens, 265–307 mm SL, off Chichi I., Ogasawara (Bonin) Is., Japan; ^b Data based on Akazaki and S eret (1999).

anterodorsal profile ascending sharply, rostro-occipital profile somewhat convex; orbit small diameter, slightly greater than interorbital width; snout length much greater than orbit diameter; maxilla reaching beyond vertical through anterior margin of eye; mandibular profile almost straight; preopercle entire with rounded angle; preopercular flange fully scaled; first to third dorsal fin spines progressively longer, third or fourth dorsal fin spine longest; predorsal length clearly less than body depth, slightly less than dorsal fin base length; pectoral fin tip reaching to or slightly beyond first anal fin spine base, its length greater than head length; anal fin spines stout, second longest, longer than orbit diameter; caudal fin weakly forked, lobes short, broad; most upper gill rakers on lower limb of gill arch long, a few lower gill rakers sometimes shortened or rudimentary.

Color when fresh. Based on color transparencies and observations of type and non-type specimens, in addition to description presented in Table 4: pectoral fin rays strongly pinkish-red on much of upper part of fin; anal fin rays uniformly reddish-yellow (anteriorly and along posterior basal portion), remainder hyaline; caudal fin rays mostly prominent pinkish-red or yellow.

Color of preserved specimens. Upper sides of head and trunk uniformly yellowish-tan; dark brownish small-spotted lines between each horizontal scale row below lateral line (not discernible in some long term preserved specimens).

Distribution. *Dentex abei* sp. nov. is known only from the Ryukyu Islands, including the Okinawa Trough, Ogasawara Islands, Japan, north-eastern Taiwan, and off Luzon Island, Philippines (Fig. 6). Attempts to find specimens from other localities were unsuccessful. Most examples of *D. abei* were collected by hand-line in depths of 50–150 m.

Etymology. The specific name “*abei*” recognizes the late Dr. Tokiharu Abe, who studied many Japanese fish species and was aware of the uniqueness of this species.

Remarks. On the basis of isozyme and pro-

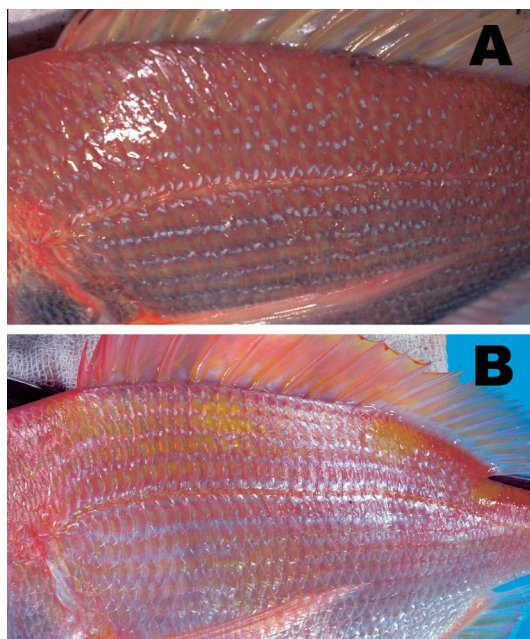


Fig. 2. Body coloration. A: *Dentex abei*, holotype, MSMT-P 57150, 269 mm SL; B: *D. hypselosomus*, MUFS 22984, 184 mm SL.

tein markers, Taniguchi *et al.* (1986) concluded that “The genetic distances between *Dentex tumifrons* [= *hypselosomus*] and *Dentex* sp. [= *D. abei*] were larger than the subpopulation level but smaller than the species level” but did not propose a new name for the latter. The recognition of *D. abei* as a valid species is based on meristic and morphological information, as well as color characters (see Discussion below and Remarks for *D. hypselosomus*).

The specimen from the Philippines reported by Fowler (1933), *Dentex hypselosomus* (as *tumifrons*; USNM 183185, 201 mm SL, San Fernando, Union Prov., Luzon Island, Philippines) is *D. abei*.

Dentex fourmanoiri Akazaki and Séret, 1999

(English name: Fourmanoir’s sea bream)

(Fig. 1B)

Dentex fourmanoiri Akazaki and Séret, 1999: 179, figs. 1–2 (type locality: off East of Chesterfield Island, New Caledonia, 19°27’S, 158°34’E,

217 m depth); Carpenter, 2001: 2999 (New Caledonia including Chesterfield Island).

Types. Type specimens were not examined but raw data for them were provided by the late M. Akazaki, prior to his death.

Non-type specimens. MUFS 6032, 6084, 6085, 3 specimens, 199–228 mm SL, off New Caledonia.

Diagnosis. A species of the *Dentex hypselosomus* complex with the following combination of characters: dorsal fin rays XIII, 9; pectoral fin rays 14–15; orbit diameter large (range 2.40–3.35 in head length, mean 2.78; Fig. 4); snout, sharp angle (range 70°–83°, mean 77°); body rosy to pale red with silvery reflection, often with 7 or 8 wide purplish-silver longitudinal stripes between adjacent horizontal scales below lateral line (small blue-spotted lines absent), visible from lateral view; eye silvery, some specimens with yellowish tint ventrally without a prominent yellow blotch in anterior nostril and snout region; dorsal fin rays pale yellowish with bright yellow distal margin.

Description. Meristic values and proportional measurements as percentage of standard length for the holotype, paratypes, and 3 non-type specimens of *Dentex fourmanoiri* are given in Table 1. Characters presented in the diagnosis are not repeated.

Body compressed, deep to somewhat slender; anterodorsal profile ascending gradually, rostro-occipital profile somewhat convex, body somewhat thickened; orbit diameter large, slightly greater than interorbital width; snout length much greater than orbit diameter; maxilla reaching to or slightly beyond vertical through anterior margin of eye; mandibular profile almost straight; preopercle entire with rounded angle; preopercular flange fully scaled; first to third dorsal fin spines becoming progressively longer, fourth dorsal fin spine longest; predorsal length less than half body depth, clearly less than dorsal fin base length; pectoral fin tip reaching to or slightly beyond first anal fin spine base, its length subequal to head length; anal fin spines robust, second longest, longer than orbit diameter; cau-

dal fin weakly forked, lobes short, broad; most upper gill rakers on lower limb of gill arch long, a few lower gill rakers sometimes abruptly shortened or rudimentary.

Color when fresh. Based on color transparencies, reproduced as, Fig. 1B and fig. 2 of Akazaki and Séret, 1999 of type and non-type specimens: a render part of pectoral and anal fin rays uniformly pale, caudal fin rays pale yellowish with bright yellow distal margin.

Color of preserved specimens. Upper sides of head and trunk uniformly yellowish-tan; most life colors not discernible but 7 or 8 wide silver (guanine) longitudinal stripes between adjacent horizontal scale rows below lateral line in some ethyl-alcohol specimens.

Distribution. The holotype of *Dentex fourmanoiri* was collected at a depth of 217 m, East of Chesterfield Island, New Caledonia with other specimens coming from the main islands of New Caledonia (Fig. 6). The species has not been reported elsewhere.

Dentex hypselosomus Bleeker, 1854

(English name: Yellowback sea-bream)

(Japanese name: Kidai)

(Figs 1C, 2B, 3A)

Chrysophrys tumifrons Temminck and Schlegel, 1843: 70, pl. 34 [Nagasaki Bay, Japan; in part, only for paralectotype of Boeseman (1947) but justified as unavailable name in this species because of lectotype of Boeseman (1947) identified as present *Evyinnis japonica* Tanaka, 1913, this species being a senior synonym of *Evyinnis tumifrons* in this study; see Remarks].

Dentex hypselosoma Bleeker, 1854: 402 (type locality: Nagasaki, Japan); Steindachner, 1896: 199 (Kobe, Hiogo, Nagasaki).

Synagris hypselosoma: Bleeker, 1873: 40 (Nagasaki, Japan); Bleeker, 1875–1876: 314, fig. 2, pl. 36 (Nagasaki, Japan).

Pagrus tumifrons: Ishikawa and Matsuura, 1897: 53 (Tokyo); Jordan and Snyder, 1901: 79 (Nagasaki).

Dentex hypselosomus: Jordan and Evermann, 1902: 345, fig. 17 (Taiwan); Jordan and Richardson, 1909: 185 (Takao).

Taius tumifrons: Jordan and Thompson, 1912: 531 (Japan); Snyder, 1912: 415 (Kagoshima, Japan); Jordan and Metz, 1913: 34 (Tsushima Straits); Tanaka,

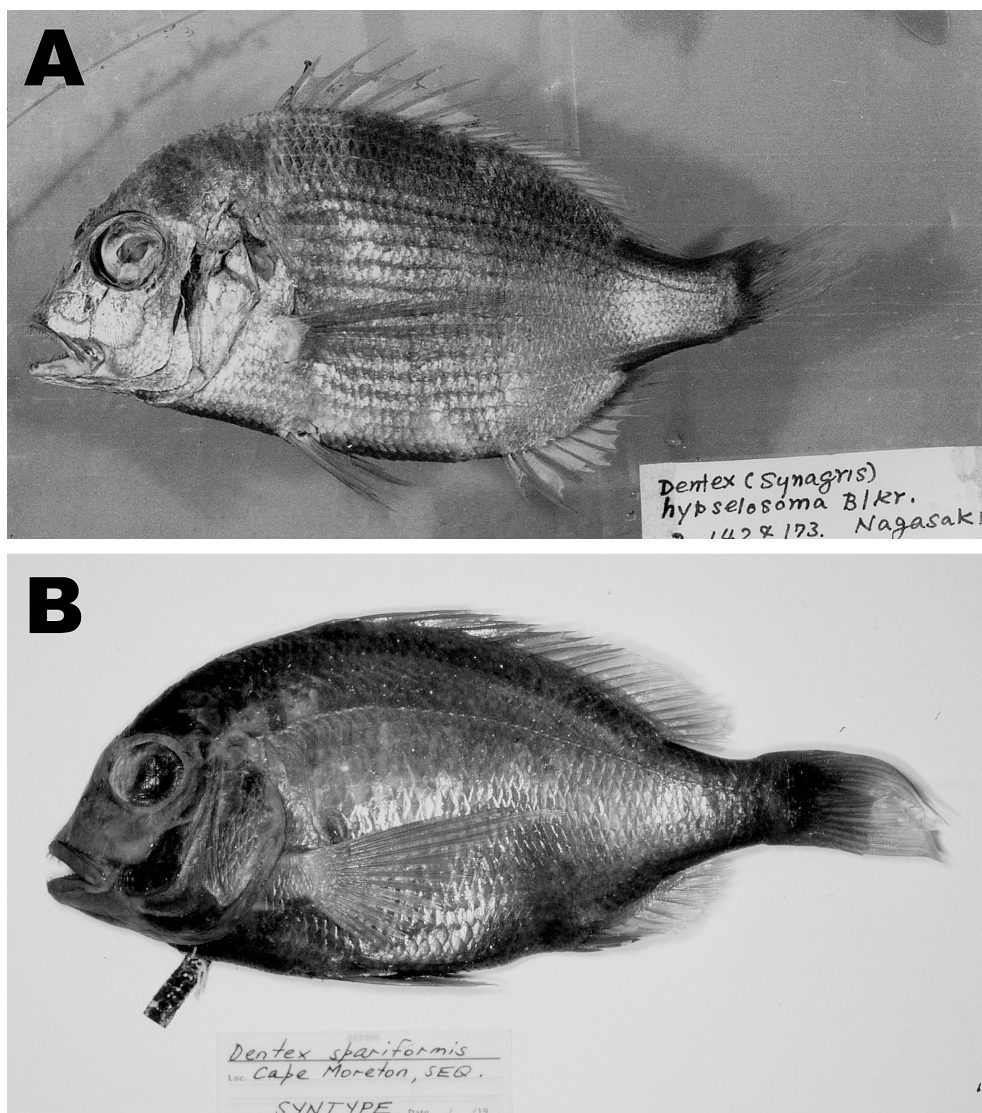


Fig. 3. Lectotypes of *Dentex hypselosomus*, RMNH 5678, 138 mm SL (A) and *Dentex spariformis*, QM I. 1549, 172 mm SL (B).

1915: 374, pl. 102, fig. 314 (southern Japan, Taiwan, China); Jordan and Hubbs, 1925: 241 (Tokyo, Kobe, Kagoshima, Misaki, Toyama, Miyazu); Oshima, 1927: 131, figs. 2–3 (Keelung, Tong King Bay); Fowler, 1930: 592 (Nagasaki, Japan), 596 (Shanghai, China), 609 (Hong Kong, China).

Raius tumifrons: Jordan and Thompson, 1914: 256 (Misaki, Tsushima Straits).

Dentex tumifrons: Akazaki, 1962: 137 (southern Japan); Akazaki, 1984: 177 (southern Japan); Okamura *et al.*, 1985: 511, 689 (Okinawa Trough, Japan); Chen *et al.*, 1997: 92 (Nansha Islands to South China); Akazaki

and Séret, 1999: 177 (southern Japan); Carpenter, 2001: 619 (South China Sea); Sadovy and Cornish, 2000: 137 (Hong Kong, China); Shinohara *et al.*, 2001: 326 (Tosa Bay, Japan); Carpenter, 2001: 3000 (Japan, in part); Hayashi, 2002: 859 (southern Japan); Youn, 2002: 342, 645 (South Korea).

Lectotype. RMNH 5678 (Fig. 3A), 138 mm SL, Nagasaki, Japan.

Paralectotype. RMNH 35385, 110 mm SL, Nagasaki, Japan.

Non-type specimens. 51 specimens, 78–306 mm SL. MUFS 1443, 112 mm SL, off Miyazaki City, Miyazaki,

Kyushu Island, Japan; MUFS 2342, 212 mm SL, Chi-Lun, Taiwan; MUFS 3972, 78 mm SL, Shirahama, Wakayama, Honshu Island, Japan; MUFS 4322, 154 mm SL, Kushima, Miyazaki, Kyushu Island, Japan; MUFS 4519–4521, 3 specimens, 148–162 mm SL, Kawaminami, Miyazaki, Japan; MUFS, 5263, 5265–5272, 5275–5276, 11 specimens, 120–150 mm SL, Ushibuka, Kumamoto, Kyushu Island, Japan; MUFS 12086–12088, 3 specimens, 97–112 mm SL, Nishimaizuru, Kyoto, Honshu Island, Sea of Japan; MUFS 17651–17669, 18 specimens, Meitsu, Miyazaki, Kyushu Island, Japan; MUFS 12751–12752, 2 specimens, 124–127 mm SL, southern Kagoshima Bay, Kagoshima, Kyushu Island, Japan; MUFS 19870, 190 mm SL, off Miyotoura, Nichinan, Miyazaki, Kyushu Island, Japan; MUFS 17996, 270 mm SL, off Oshima, Nango, Miyazaki, Japan; MUFS 22984, 184 mm SL, off Oshima, Nango Miyazaki, Kyushu Island, Japan; RMNH 960 (paralectotype of Boeseman, 1947), 141 mm SL, Nagasaki Bay, Japan; SMF 25471, 143 mm SL, off Hainan Island, China, South China Sea.

Diagnosis. A species of the *Dentex hypselosomus* complex with the following combination of characters: dorsal fin rays XII, 10; pectoral fin rays usually 15 (rarely 16); orbit diameter small, range 2.66–3.87, mean 3.32, in head length (Fig. 5); snout angle blunt, range 82°–88°, mean 83°; body red dorsally, becoming pale red ventrally with a yellowish gold sheen, snout vivid yellow, three large fluorescent yellow blotches dorsally beneath dorsal fin base and a single black iris-sized yellow spot on base of posteriormost soft dorsal fin ray (Figs. 1C, 2B), clearly visible from oblique dorsal view (Fig. 2B); eye uniformly prominent reddish-gold; prominent yellow blotch on anterior nostril and snout region; dorsal fin membrane and rays orange-yellow to pale red but with a longitudinal hyaline stripe beneath fin base, and soft membrane and rays saffron-yellow.

Description. Meristic values and proportional measurements as percentages of standard length for the lectotype and non-type specimens of *Dentex hypselosomus* are given in Table 2. Characters presented in the diagnosis are not repeated.

Body compressed, deep to somewhat slender; anterodorsal profile ascending sharply, rostro-occipital profile somewhat convex; orbit diameter small, subequal to or slightly less than interorbital width; snout length much greater than orbit

diameter; maxilla reaching beyond vertical through anterior margin of eye to vertical through anterior margin of iris; mandibular profile almost straight; preopercle entire with rounded angle; preopercular flange fully scaled; first to third dorsal fin spines progressively longer, third or fourth dorsal fin spine longest; predorsal length less than body depth, less than dorsal fin base length; pectoral fin tip reaching to or slightly beyond first anal fin spine base, its length greater than head length; anal fin spines stout, second longest, longer than orbit diameter; caudal fin weakly forked, lobes short, broad; most upper gill rakers on lower limb of gill arch long, a few lower gill rakers sometimes abruptly shortened or rudimentary.

Color when fresh. Based on color transparencies of many specimens, including MUFS 22047 (Fig. 1C), 165 mm SL, and observations of many non-type specimens, in addition to description presented in Table 4: pectoral fin rays orange-yellow to reddish for much of upper part of fin; anal fin rays reddish-yellow anteriorly, orange-yellow or yellow posteriorly, except for hyaline rays and lower distal margin hyaline; caudal fin rays mostly red to pale red, yellowish anteriorly.

Color of preserved specimens. Upper parts of head and trunk uniformly yellowish-tan; life colors lost.

Distribution. *Dentex hypselosomus* is known from southern Japan (except the Ryukyu and Ogasawara Islands), southern Korea, China, and western Taiwan (Fig. 6). Attempts to locate specimens from the Indian Ocean and southeastern Asia to Australia were unsuccessful. The species is highly esteemed commercially, and it is caught mainly between 50 and 200 m in the East China Sea, where it has two spawning seasons per year in June and November (Yamada, 1986).

Remarks. *Chrysophrys tumifrons* was described on the basis of 2 syntypes (RMNH D418, stuffed, 250 mm SL and RMNH 960, 141 mm SL) by Temminck and Schlegel (1843). Subsequently, Boeseman (1947) designated a lectotype

Table 2. Counts and proportional measurements of type and non-type specimens of *Dentex spariformis* Ogilby, 1910 and *D. tumifrons* (Temminck and Schlegel, 1843), expressed as percentages of standard length (means in parentheses).

	<i>Dentex spariformis</i>			<i>Dentex tumifrons</i>		
	Lectotype QM I. 1549 <i>n</i> = 1	Paralectotypes QM I.477 and AMS I.12538 <i>n</i> = 2	Non-type specimens <i>n</i> = 39	Lectotype of <i>Dentex tumifrons</i> RMNH 960 ^a <i>n</i> = 1	Lectotype and paralectotype of <i>Synagris hypselosoma</i> RMNH 5678 <i>n</i> = 2	Non-type specimens <i>n</i> = 51
Dorsal and anal fin rays	XII, 10; III, 8 1, 5; 15	XII, 10; III, 8 1, 5; 15	XII, 10; III, 8 1, 5; 15-16 (16; 11 of 22 specimens)	XII, 10; III, 8 1, 5 and III, 5 in right (as deformity); 15	XII, 10; III, 8 1, 5; 15 or 16	XII, 9-10 (9, 1 of 50 specimens); III, 8 1, 5; 15-16 (16, 4 of 50 specimens)
Pelvic and pectoral fin rays	49 7/15 4 1/2	48-49 7/15 4 1/2	47-49 5-6/13-16 4 1/2	48 5/15 4 1/2	48 or 49 5-6/15-16 4 1/2	47-49 5/13-15 4 1/2
Pored lateral line scales						
Scales above and below lateral line						
Scales between 5th dorsal fin spine base and lateral line						
Squamation on preopercular flange	Fully scaled	Fully scaled	Fully scaled	Fully scaled	Fully scaled	Fully scaled
Gill rakers	7+13 =20 172	7-8+13 =20-21 133-144	6-8+10-13 =16-21 61-283 (131)	7+12 =19 141	7+12-13 =19-20 110-138	6-9+10-12 =16-21 78-70 (169)
Standard length (mm)						
Body depth	47	48	42-54 (48)	52	46-48	41-53 (48)
Head length	35	34-35	34-39 (36)	34	35	29-35 (35)
Body width at pectoral fin base	15	16-17	14-28 (17)	16	13	14-20 (17)
Snout length	12	13	10-16 (14)	14	13	11-18 (15)
Orbit diameter	10	11-12	10-15 (13)	14	12-13	9-14 (11)
Suborbital depth	8	8-10	7-10 (8)	11	9-10	7-11 (8)
Dermal eye opening	11	12-13	9-14 (12)	8	11-12	8-11 (10)
Interorbital width	10	9-11	8-13 (11)	—	8	9-12 (10)
Upper jaw length	13	13-14	12-17 (14)	11	13-14	10-17 (14)
Caudal peduncle depth	12	12	10-13 (12)	9	12-13	11-20 (12)
Caudal peduncle length	19	20	14-24 (20)	11	20-22	16-22 (19)
Predorsal length	44	45	42-52 (45)	7	45	43-49 (46)
Preal length	64	61	61-75 (66)	12	63-64	58-74 (64)
Prepelvic length	41	39-40	37-48 (42)	16	39	37-45 (39)
Dorsal fin base	50	52	48-56 (52)	16	53-54	49-59 (53)

Table 2. (Continued).

	<i>Dentex spariformis</i>			<i>Dentex tumifrons</i>		
	Lectotype QM I. 1549 <i>n</i> = 1	Paralectotypes QM I. 477 and AMS I. 12538 <i>n</i> = 2	Non-type specimens <i>n</i> = 39	Lectotype of <i>Dentex tumifrons</i> RMNH 960 ^a <i>n</i> = 1	Lectotype and paralectotype of <i>Synagris</i> <i>hypselosoma</i> RMNH 5678 <i>n</i> = 2	Non-type specimens <i>n</i> = 51
Anal fin base	19	20	18-24 (20)	14	18-20	18-24 (20)
Pelvic fin spine length	15	18	14-20 (17)	13	15-17	14-18 (17)
First pelvic fin ray length	24	24-25	20-28 (24)	13	20	19-25 (22)
Pectoral fin ray length	36	36-37	25-42 (37)	12	39	34-43 (38)
First dorsal fin spine length	7	8	6-9 2(8)	16	8-9	5-11 (8)
Second dorsal fin spine length	13	12	8-15 (11)	25	14	8-14 (12)
Third dorsal fin spine length	14	16-17	13-18 (16)	14	17-18	13-18 (16)
Fourth dorsal fin spine length	—	—	—	16	16-18	15-18 (17)
First dorsal fin ray length	7	13	11-15 (13)	47	13	11-15 (13)
First anal fin spine length	13	8-9	7-10 (8)	62	8-9	4-10 (8)
Second anal fin spine length	12	14-15	12-17 (14)	—	13-14	10-15 (12)
Third anal fin spine length	11	13-14	11-16 (13)	—	13	9-15 (11)
First anal fin ray length	—	14	9-16 (14)	—	12	10-14 (11)

^a Boeseman's (1947) paralectotype (see text).

(Fig. 4A) for the larger specimen. It has proven to be an example of a different genus and species, long recognized as *Evynnis japonica* Tanaka, 1931, as well as by Yamaguchi and Machida (2003). The specimen has 61 pored lateral line scales (clearly countable although enameled) (vs. 48–50 in *D. hypselosomus*), 9 soft anal fin rays (vs. 8 in *D. hypselosomus*), lacks scales on the preopercular flange (vs. fully scaled in *D. hypselosomus*), and the first and second dorsal fin spines considerably shorter than the third and fourth dorsal fin spines, all characteristics of *Evynnis japonica* (Tables 2–3; Tanaka, 1931; Akazaki, 1962; Carpenter, 2001).

The smaller paralectotype (RMNH 960, 141 mm SL) is a specimen of *Dentex hypselosomus* as recognized in this study (Table 2), with characteristics matching those presented by Akazaki (1962) and Carpenter (2001). *Evynnis japonica* is, therefore, a junior synonym of *Evynnis tumifrons* (Table 3). *Dentex hypselosomus* Bleeker, 1854 based on 2 syntypes (RMNH 5678, 110–138 mm SL) from Nagasaki, Japan is the only other available name for this species. Bleeker's description of *D. hypselosomus* clearly matches (Table 2). We herein designate the larger syntype (RMNH 5678, 138 mm SL) of *Dentex hypselosomus* (originally as *hypselosoma*) as the lectotype, the smaller specimen becoming the paralectotype (RMNH 35385, 110 mm SL).

Dentex spariformis Ogilby, 1910

(Proposed English name: Saffronfin sea bream)

(Fig. 1D)

Dentex spariformis Ogilby, 1910: 91 [ca. 66.7 km (as 36 miles) south 12°W from Moreton Island, Queensland, Australia, ca. 14 m (7 fathoms)]; Ogilby, 1916: 169, pl. 21 (off Cape Moreton); Fowler, 1933: 124 (Queensland, Australia).

Dentex tumifrons (not of Temminck and Schlegel): Gloerfelt-Tarp and Kailola, 1984: 207, unnumbered color plate on p. 206 (off Lombok Island, Indonesia); Allen, 1997: 132 (Western Australia); Carpenter, 2001: 3000 (Western Pacific, in part).

Allotiaius spariformis: Hutchins, 2001: 35 (Australia).

Lectotype. QM I. 1549, 172 mm SL, ca. 66.7 km (as

36 miles), south 12°W. from Moreton Island, Queensland (Qld), Australia, ca. 14 m (7 fathoms).

Paralectotypes. AMS I.12538, 143 mm SL, same locality as lectotype; QM I. 477, 133 mm SL, same locality as the lectotype.

Non-type specimens. 61–283 mm SL, $n=39$. CSIRO CA 401, 88 mm SL, Cape Lambert, East Australia; CSIRO CA 3029, 200 mm SL, East Australia; CSIRO H 2017-01, 144 mm SL, Geraldton, Australia; CSIRO H 3644-01, 151 mm SL, Qld, Australia; CSIRO H 4649-20, 160 mm SL, East Australia; FRLM 14692, 246 mm SL, Bali, Indonesia; NTM 10752-008, 101 mm SL, off southern Lombok Island, Indonesia, 150 m depth, trawl; NTM 11748-003, 100 mm SL, East of Dunk Island, Qld, Australia, 218–220 m depth, trawl; NTM 11749-004, 88 mm SL, East of Dunk Island, Qld, Australia, 220 m depth, trawl; NTM S. 11751-010, 151 mm SL, East of Dunk Island, Qld, Australia, trawl, 264 m depth; NTM 11752-012, 3 specimens, 141–169 mm SL, East of Dunk Island, Qld, Australia, 260–262 m depth, trawl; NTM 12187-003, 269 mm SL, Northwest of Melville Island, NT, Australia, trawl, 113 m depth; NTM S. 13301-004, 214 mm SL, western part of Lyndoch Bank, Arafura Sea, Indonesia, 159 m depth, trawl; NTM S. 13660-002, 283 mm SL, Lyndoch Bank, Arafura Sea, Indonesia, 183 m depth, trawl; NTM 61225-002, 237 mm SL, Australia; QM 12989, 7 specimens, 61–74 mm SL, ca. 13 km (7 miles), off northwest of Cape Moreton, Qld, Australia, 60 fms (ca. 100 m) depth, trawl; QM I. 18697, 121 mm SL, off eastern Fraser Island (25°27'–17'N, 153°46'–43'E), Qld, Australia, trawl, 230–183 m depth; QM 19209-001, 2 specimens, 141–152 mm SL, off Sandy Cape (23°59'–23°54'N, 152°47'–152°43'E), Qld, Australia; QM I. 25297, 154 mm SL, off Swain Reef (21°22'N, 153°05'E), Qld, Australia, trawl; QM 25689, 10 specimens, 61–121 mm SL, off Swain Reef (21°42'N, 152°55'E), Qld, Australia, 185–190 m depth, trawl; QM 26532, 225 mm SL, Australia.

Diagnosis. A species of the *Dentex hypselosomus* complex with the following combination of characters: dorsal fin rays XII, 10; pectoral fin rays 15 or 16; orbit diameter large (mean 2.78, range 2.37–3.39 in head length; Fig. 5); snout angle sharp (mean 76°, range 69°–84°); body color light pinkish-red with silvery reflection, no obvious blue-spotted lines or yellow blotches (as in *D. abei*) or wide longitudinal purplish-silver stripes between each horizontal scale row below lateral line (as in *D. fourmanoiri*); eye color generally pinkish-gold or with silver sheen (lower part yellowish in some specimens); prominent

yellow blotch absent from anterior nostril and snout region; dorsal fin rays saffron-yellow on membrane and rays.

Description. Meristic value and proportional measurements as percentages of standard length for the holotype, two paratypes, and 39 non-type specimens of *Dentex spariformis* are given in Table 2. Characters presented in the diagnosis are not repeated.

Body compressed, deep to somewhat slender; anterodorsal profile ascending gradually, rostroroccipital profile somewhat convex, body somewhat thickened; orbit diameter large, slightly greater than interorbital width; snout length much greater than orbit diameter; maxillary reaching through vertical level of anterior margin of eye; mandibular profile almost straight; preopercle entire with rounded angle; preopercular flange fully scaled; first to third dorsal fin spines becoming progressively longer, third or fourth dorsal fin spine longest; predorsal length clearly less than body depth, slightly less than dorsal fin base length; pectoral fin tip reaching to or slightly beyond first anal fin spine base, its length greater than head length; anal fin spines stout, second longest, longer than orbit diameter; caudal fin weakly forked, lobes short, broad; most upper gill rakers on lower limb of gill arch long, a few lower gill rakers sometimes abruptly shortened or rudimentary.

Color when fresh. Based on color transparencies from FishBase as *D. tumifrons* and photograph of J. Johnson, in addition to description presented in Table 4: a render (upper) part of pectoral fin rays saffron-yellow or pale yellow; anal fin membrane and rays pale saffron-yellow; caudal fin membrane and rays mostly saffron to pale yellow.

Color of preserved specimens. Upper sides of head and trunk uniformly yellowish-tan; life colors otherwise lost.

Distribution. *Dentex spariformis* is currently known only from northern Australia, Bali, and Lombok Island and the Arafura Sea, Indonesia (Fig. 6), at depths between ca. 100 and 264 m.

Remarks. *Dentex spariformis* Ogilby, 1910

has long been considered a junior synonym of *D. tumifrons* (= *D. hypselosomus* of this study; e.g., Gloerfelt-Tarp and Kailola, 1984; Allen, 1997; Akazaki and Séret, 1999; Carpenter, 2001) but is herein considered as valid. The species lacks the following characters that are unique to *D. hypselosomus*: 3 large fluorescent yellow blotches dorsally below the dorsal fin base plus a black iris-sized spot on the base of posteriormost soft dorsal fin ray (Figs. 1C, 1D, 2B).

The largest syntype of *Dentex spariformis* Ogilby, 1910 (QM I. 1549, 172 mm SL) is here designated the lectotype, QM I.477 and AMS I.12538 (133–144 mm SL) becoming paralectotypes.

Discussion

Comparison. Selected counts and characters of *Dentex abei* sp. nov., *D. fourmanoiri*, *D. hypselosomus*, and *D. spariformis* are compared in Tables 1 and 2. *Dentex fourmanoiri* clearly differs from the other 3 species in having 13 dorsal fin spines and 9 soft dorsal fin rays (vs. 12 dorsal fin spines and 10 dorsal fin soft rays). *Dentex hypselosomus* is similar to *D. abei* in having a smaller orbit diameter (means 3.32 and 3.36 in head length, respectively vs. mean 2.78 in *D. fourmanoiri* and *D. spariformis*; Fig. 5A), but differs from it in having a greater suborbital depth (mean 9.5% SL vs. mean 7.8% SL in *D. abei* and *D. fourmanoiri*, 8.1% SL in *D. spariformis*, see Table 4 and Fig. 5B), 3 large fluorescent yellow blotches dorsally beneath the dorsal fin ray base, an iris sized yellow spot on around the last soft dorsal fin base (Figs. 1C, 2B), that is clearly visible at an oblique dorsal view (Fig. 2B), and a prominent yellow blotch on the anterior nostril and snout region (vs. yellow blotches absent in others). *Dentex abei* sp. nov. is distinguishable from the three other species in having 5 or 6 bright cobalt or blue small-spotted lines (Fig. 2A) between adjacent horizontal scale rows below the lateral line that are visible only from an oblique dorsal view, and such lines rising obliquely above the lateral line (vs. small blue-

spotted lines absent)(Fig. 2A).

Distribution. *Dentex abei* sp. nov., *D. fourmanoiri*, *D. hypselosomus*, and *D. spariformis* have allopatric and non-equatorial distributions in the western Pacific (Fig. 6). In the Northern Hemisphere, *Dentex abei* is currently known only from the Ryukyu Islands including the Okinawa Trough, Ogasawara Islands, Japan and northeastern Taiwan, plus off Luzon Island, Philippines, while *D. hypselosomus* is currently known from the East Asian Shelf, including southern Japan (except the Ryukyu and the Ogasawara Islands), southern Korea, Taiwan (generally the western part of Taiwan), and China. In the Southern Hemisphere, *D. spariformis* is distributed off Australia (except southwestern part), while *D. fourmanoiri* is currently known only from off New Caledonia, including the Chesterfield Island. A similar distributional pattern is known for congeneric trichiurids (Burhanuddin *et al.*, 2002; Burhanuddin and Iwatsuki, 2003; Chakraborty *et al.*, 2005) with the Northern Hemisphere: *Trichiurus russelli* in the northern Gulf of Thailand and northern Bengal Bay and *T. brevis* in southern China and in the Southern Hemisphere: *T. nikolensis* in northwestern Australia, and *T. australis* in northeastern Australia. Species in both *Dentex* and *Trichiurus* are known to be basically benthic and deep-sea species strongly connected with a continental shelf (Nakamura and Parin, 1993 for *Trichiurus*) and are not strong swimmers, like species of the carangid genus *Seriola*. In the Northern and Southern Hemisphere, *Dentex* species have a clearly allopatric distribution in two small regions, the East Asian Shelf (*D. abei* and *D. hypselosomus*), and northern Australia and New Caledonia (*D. fourmanoiri* and *D. spariformis*).

Generic position. Akazaki (1962) provided the following combination of characters as a diagnosis for the genus *Dentex*: a row of sharp conical teeth in both jaws, 4 in upper jaw and 6 in lower jaw enlarged, caniform; no molars; 1445 interorbital scales almost extending to level with anterior margin of eye; preopercular flange fully scaled; a transverse series of scale rows be-

tween lateral line and median dorsal spines $4\frac{1}{2}$ – $7\frac{1}{2}$.

Prior to these studies, Jordan and Thompson (1912) and Whitley (1937) each proposed a new generic name, *Taius* (type species: *Chrysophrys tumifrons* Temminck and Schlegel, 1843) and *Alotaius* (type species: *Dentex spariformis* Ogilby, 1910), respectively. Akazaki (1962) synonymized *Polysteganus* of Klunzinger (1870, type species: *Polysteganus coeruleopunctatus* Klunzinger, 1870), *Taius* and *Opsodentex* of Fowler (1925, type species: *Sparus macrophthalmus* Bloch, 1791) with *Dentex* (Cuvier, 1814, type species: *Sparus dentex* Linnaeus, 1758), recognizing the first and last as subgenera. Although interrelationships of all species within the genus remain unresolved, we follow Akazaki (1962) and Carpenter (2001) in regarding *D. fourmanoiri* and *D. hypselosomus* plus *D. spariformis* and *D. abei* sp. nov. considered in this study as a natural group. Further work is required to understand interrelationships within the Sparidae.

Evyinnis tumifrons (Temminck and Schlegel, 1843)

(English name: Crimson seabream)

(Japanese name: Chidai)

(Figs. 4A–C)

Chrysophrys cardinalis (not of Lacepède, 1802): Temminck and Schlegel, 1843: 69, pl. 33 (Nagasaki, Japan; pl. 33 as Fig. 4B).

Chrysophrys tumifrons Temminck and Schlegel, 1843: 70, pl. 34 [Nagasaki Bay, Japan; in part, only for lectotype of Boeseman (1947) but justified as available valid name in the genus *Evyinnis*].

Evyinnis cardinalis: Jordan and Thompson, 1912: 573 (Tokyo, Japan).

Chrysophrys cardinalis (not of Lacepède, 1802): Tanaka, 1915: 313, pl. 51, fig. 3 (Japan and China).

Evyinnis japonica Tanaka, 1931: 29 (no type known, new name for *Chrysophrys cardinalis* of Temminck and Schlegel, 1843, not of *Sparus cardinalis* Lacepède, 1802); Akazaki, 1962: 176 (Japan); Akazaki, 1984: 177 (Japan, China, Korea, and Taiwan); Hayashi, 1999, 2002: 858; Carpenter, 2001: 3001 (Temperate West Pacific from Hokkaido to East China Sea; a single record from Bali); Youn, 2002: 342, 616 (Korea).

Lectotype. RMNH D418, stuffed, 250 mm SL,

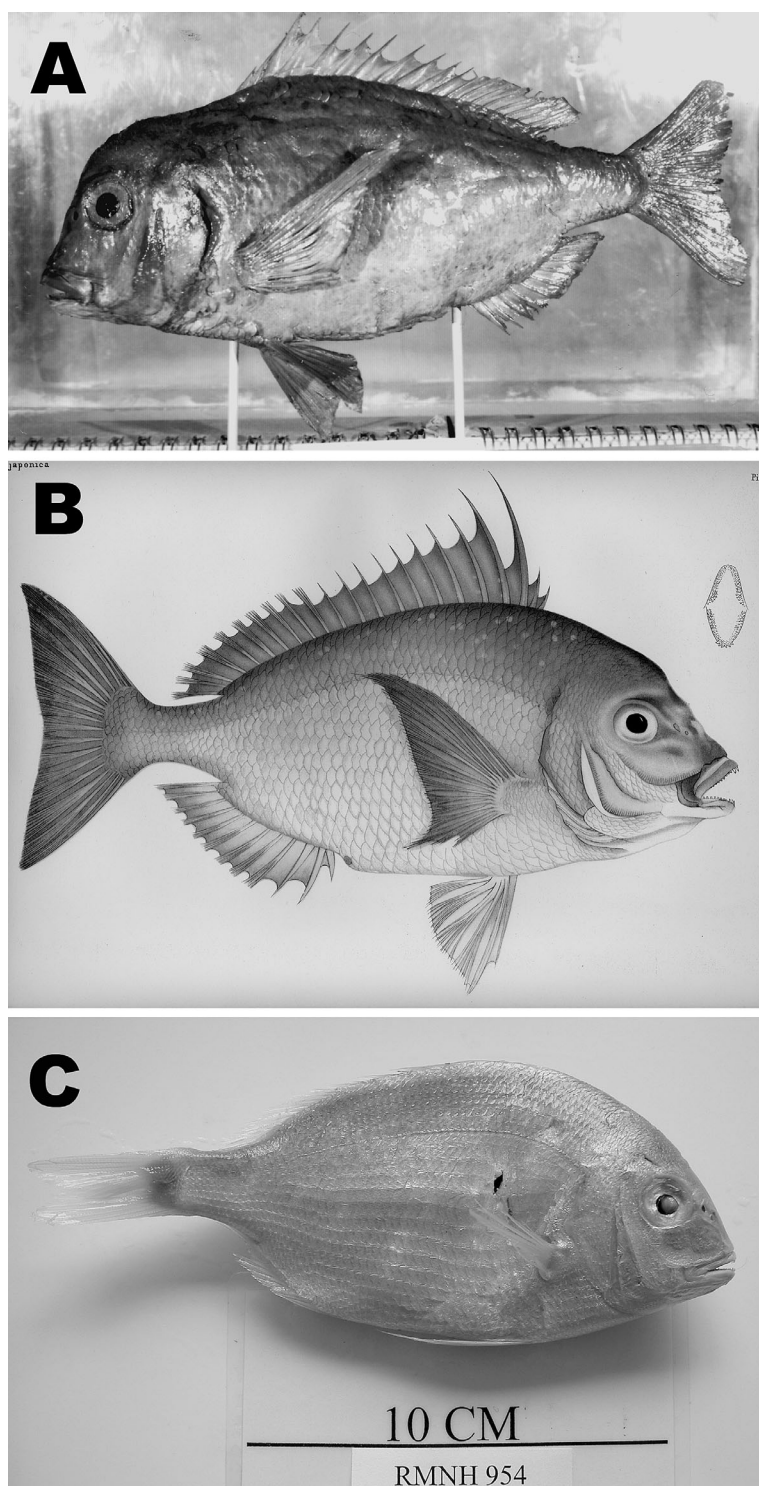


Fig. 4. Lectotype (A) of *Chrysophrys tumifrons*, a plate (B) of *Chrysophrys cardinalis* of Temminck and Schlegel, 1843, and the lectotype (C) of *Evynnis japonica*. A, RMNH D418 [Boeseman's (1947) lectotype of *Chrysophrys tumifrons* Temminck and Schlegel, 1843], stuffed, 250 mm SL, Nagasaki; B, plate 33 of Temminck and Schlegel, 1843; C, RMNH 954b, lectotype, 128 mm SL, Nagasaki, Japan.

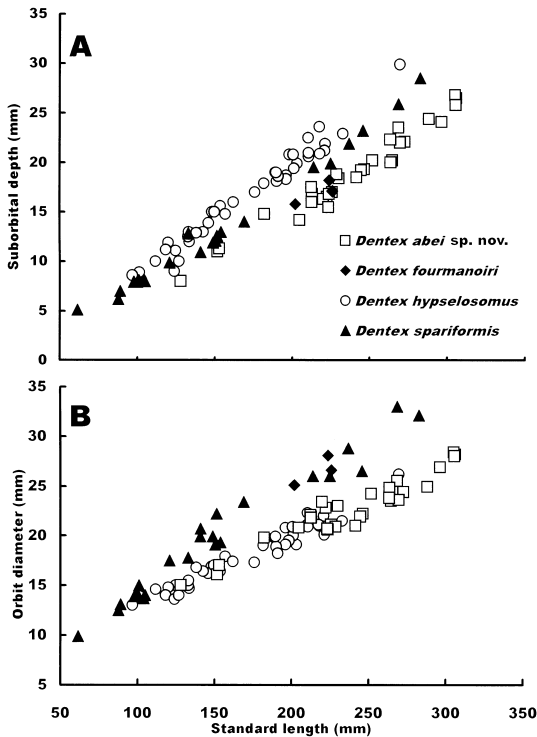


Fig. 5. Suborbital depth (A) and orbit diameter (B) relative to standard length in the four species of the *Dentex hypselosomus* complex.

Nagasaki, Japan.

Non-type specimens. 126–270 mm SL, all from Japan, $n=19$. MUFs 915, 270 mm SL, Tanabe, Wakayama; MUFs 11723, 11725, 11727, 11738–11739, 11743, 11745, 12054, 12252–12254, 12569, 12 specimens, 126–240 mm SL, Meitsu, Nango, Miyazaki, Kyushu Island; RMNH D401 (specimen of Temminck and Schlegel's *Chrysophrys cardinalis*, and paralectotype of *Eynnys japonica*), stuffed, 209 mm SL, Nagasaki, Japan, coll. Bürger; RMNH D402, stuffed, 253 mm SL, same as RMNH D401; RMNH D403, stuffed, 204 mm SL, same as RMNH D401; RMNH 954a, b, c, d (Boeseman, 1947: 47), 4 specimens [RMNH 954b, 128 mm SL, herein designated as lectotype of *Eynnys japonica*; RMNH 954d (63 mm SL), RMNH 954c (72 mm SL), RMNH 954a (143 mm SL)], Nagasaki, Japan, coll. Von Siebold.

Diagnosis. A species of *Eynnys* with the following combination of characters: dorsal fin rays XII, 10; anal fin rays III, 9; pectoral fin rays usually 15; first and second dorsal fin spines considerably shorter than third and fourth dorsal fin spines: third and fourth dorsal fin spines extend-

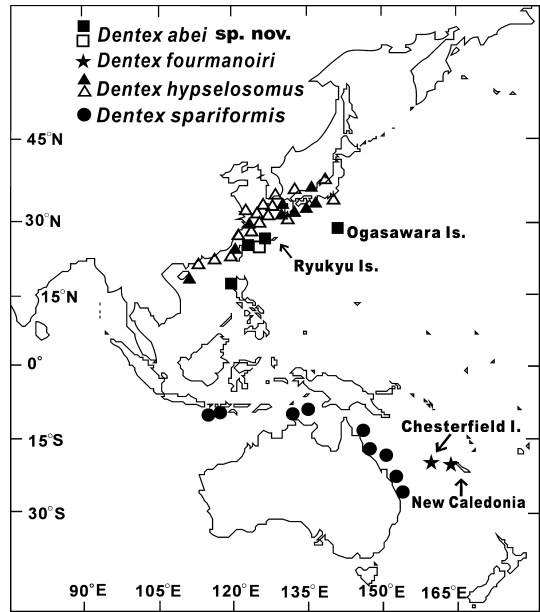


Fig. 6. Distribution of the four species of the “*Dentex hypselosomus* complex”: *Dentex abei* sp. nov. (square), *Dentex fourmanoiri* (star), *D. spariformis* (circle), and *D. hypselosomus* (triangle). Solid and open symbols represent specimens examined and literature records, respectively.

ed but third dorsal fin spine less than 2 times in fifth dorsal fin spine; no scales on preopercular flange; body depth relatively lower, standard length/body depth over 2.1; scattered cobalt blue spotted markings on side in fresh; teeth on vomer usually present.

Description. Further work is required for detailed description with a review of the genus *Eynnys* including generic definition. We presently put diagnostic characters above in this species as well as **Comparison** below.

Distribution. *Eynnys tumifrons* is currently known from Hokkaido, Honshu, Shikoku, and Kyushu islands, Japan except the Ogasawara and Ryukyu Islands, southern Korea, Taiwan, and China (Akazaki, 1962, 1984; Youn, 2002; Carpenter, 2001). Carpenter (2001) noted a single record from Bali, Indonesia.

Comparison. In the Indo-Pacific, *Eynnys tumifrons* is similar to *E. cardinalis* Lacépède,

Table 3. Counts, selected characters, and proportional measurements of *Evynnis japonica* Tanaka, 1913, expressed as percentages of standard length (means in parentheses).

<i>Evynnis japonica</i>		
	RMNH D918	Non-type specimens in MUFS collection (126–270 mm SL)
	<i>n</i> =1	<i>n</i> =12
Dorsal and anal fin rays	XII, 10; III, 9	XII, 10; III, 9
Pelvic and pectoral fin rays	I, 5; 15	I, 5; 15
Pored lateral line scales	61, clearly countable although specimen dried	58–61
Scales above and below lateral line	—	6 ¹ / ₂ / 16 ¹ / ₂ –17 ¹ / ₂
Scales between 5th dorsal fin spine base and lateral line	—	5–6
Gill rakers	—	7–8+12–13
Squamation condition just above eye	Absent	Absent
Teeth on vomer	?, not observed by enameled stuff specimen	Present
Squamation on preopercular flange	Absent	Absent
Standard length (mm)	250	126–270 (166)
Body depth	45	45–46 (46)
Head length	32	31–34 (32)
Body width at pectoral fin base	—	18–19 (18)
Snout length	13	11–17 (13)
Orbit diameter	9	10–13 (11)
Interorbital width	9	9–11 (10)
Upper jaw length	12	11–12 (11)
Caudal peduncle depth	10	10–13 (11)
Caudal peduncle length	17	18–20 (19)
Predorsal length	42	41–45 (43)
Preanal length	70	65–70 (66)
Prepelvic length	39	36–40 (38)
Dorsal fin base	53	53–58 (56)
Anal fin base	20	21–31 (24)
Caudal fin length	—	24–33 (30)
Pelvic fin spine length	—	15–17 (16)
First pelvic fin ray length	—	19–27 (24)
Longest pectoral fin ray length	—	32–37 (35)
First dorsal fin spine length	3	2–5 (4)
Second dorsal fin spine length	5	5–7 (7)
Third dorsal fin spine length	16 (broken)	20–33 (25)
First dorsal fin ray length	—	9–11 (11)
First anal fin spine length	3	4–5 (5)
Second anal fin spine length	8	9–11 (10)
Third anal fin spine length	8	8–11 (10)
First anal fin ray length	—	8–13 (10)

1802 in overall body appearance and includes the extended third and fourth dorsal fin spines, but differs from the latter in having the fourth dorsal fin spine being less than 2 times in the fifth dorsal fin spine (vs. over 3 times in *E. cardinalis*) and scattered cobalt blue spotted markings on sides (vs. several continuous prominent cobalt blue spotted lines), and usually teeth on vomer

(vs. no teeth) (Tanaka, 1931; Akazaki, 1962; Carpenter, 2001; this study). Another valid congener, *E. ehrenbergii* Valenciennes in Cuvier and Valenciennes, 1830 is known from the West African coast and Mediterranean Sea and has a unique character: the third-to-sixth dorsal fin spines gradually become shorter. Further work is required for a review of the genus *Evynnis*.

Table 4. Selected counts, morphometric and color characters of the “*Dentex tumifrons* complex”: *Dentex abei* sp. nov., *D. fourmanoiri*, *D. spariformis*, and *D. tumifrons*.

	<i>Dentex abei</i> sp. nov. 128–307 mm SL <i>n</i> =40	<i>Dentex fourmanoiri</i> ^a 199–233 mm SL (103–226 mm SL ^b) <i>n</i> =3+16 type specimens	<i>Dentex spariformis</i> 61–283 mm SL <i>n</i> =47	<i>Dentex tumifrons</i> 78–306 mm SL <i>n</i> =54
Dorsal and anal fin rays	XII, 10; III, 8	XIII, 9; III, 8	XII, 10; III, 8	XII, 9–10 (usually 10); III, 8
Pelvic and pectoral fin rays	I, 5; 15	I, 5; 14–15 (usually 15)	I, 5; 15–16	I, 5; 15–16 (usually 15)
Pored lateral line scales	48–50	48–50	48–50	47–50
Scales of transverse series	4 ¹ / ₂ –5	4 ¹ / ₂ –5	4 ¹ / ₂	4 ¹ / ₂
Scales above and below lateral line	5–6 / 12–14	5–6 / 12–15	5–6 / 13–16	5 / 13–15
Gill rakers	7–8+12–13 = 19–21	4–7+10–11 = 14–18	6–8+10–13 = 16–21	6–9 (usually 7 or 8)+10–12 (usually 11)=16–21 (usually 17–18)
Orbit diameter in head length	Small, 3.09–4.09 (3.66)	Large, 2.40–3.35 (2.78)	Large, 2.37–3.39 (2.78)	Small, 2.66–3.87 (3.32)
Suborbital depth	Shallow, mean 7.8% SL (6.2–8.8% SL)	Shallow, mean 7.8% SL (range 7.6–8.1% SL)	Moderate, mean 8.1% SL (range 7.1–10.1)	Deep, mean 9.5% SL (range 7.3–11.1% SL)
Snout angle, means (range)	Blunt, 80.8° (80°–83°) ^a	Sharp, 76.9° (70°–83°) ^a	Sharp, 76.1° (69°–84°)	Blunt, 82.9° (82°–88°) ^a
Body color	Strong pinkish-red with silvery reflection with 5 or 6 bright cobalt or blue small-spotted lines (Fig. 2A) between each horizontal scale row below lateral line, visible only from oblique dorsal view, and such lines rising obliquely above lateral line	Rosy to light red with silvery reflection, often 7 or 8 wide silver purplish longitudinal stripes between each horizontal scale row below lateral line, visible from lateral view	Light pinkish red with silvery reflection; wide purplish-silver longitudinal stripes between each horizontal scale row below lateral line	Red to light red ventrally with Yellowish-gold sheen, snout vivid yellow, three large fluorescent yellow blotches dorsally beneath dorsal fin base plus 1 iris sized-yellow spot on posteriormost soft dorsal fin ray from oblique dorsal view (Fig. 2B)
Eye color	Uniformly reddish-gold sheen	Silvery, sometimes a yellowish tint ventrally	Generally pinkish-gold or silver Sheen, sometimes yellowish tint ventrally	Uniformly strong reddish gold
Strong yellow blotch on anterior nostril and snout regions	Absent	Absent	Absent	Present
Color of dorsal fin rays	Membrane rays saffron-yellow, reddish yellow	Pale yellowish with bright yellow distal margin	Saffron-yellow in both membrane and rays	Orange-yellow to light red in both membrane and rays but longitudinal hyaline stripe beneath base, especially soft rays
Color of pectoral fin rays	Strong pinkish-red on most of part	Uniformly pale	Saffron yellow or pale yellow on most of upper part	Mostly orange-yellow to reddish
Color of anal fin rays	Uniformly reddish-yellow anteriorly and posterodorsally; posteroventrally hyaline	Uniformly pale	Light saffron-yellow membrane and rays	Reddish-yellow anteriorly; orange-yellow or yellow posteriorly except rays and lower margin hyaline
Color of caudal fin rays	Mostly strong pinkish-red or yellow	Pale yellowish with bright yellow distal margin	Mostly saffron yellow or lighter membrane and rays	Mostly red to light red; yellowish anteriorly

^a, based on Akazaki and Seret (1999).

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