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A Revision of the Black-and-White Snappers, Genus *Macolor* (Perciformes: Lutjanidae)

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Abstract *Macolor macularis* Fowler was described on the basis of adult specimens of two distinct species of the genus. Since the holotype is presumed to be lost and it is impossible to check its validity, one of the 25 paratypes is designated as the neotype of *M. macularis* to set the name as a valid species. The two species are redescribed and compared with each other. *Macolor macularis* differs from *M. niger* in the number of anal soft rays (10 versus 11) and gill rakers (110–122 versus 89–107), extent of the exposed portion of the maxillary bone (more exposed in *M. niger*), length of pelvic fin (long and pointed in young versus not elongate at any size), and coloration on body and fins in adult (blue spots on head and fins versus almost uniformly black). *Macolor macularis* is distributed in the western Pacific, from northern Australia to Iriomote-jima, Ryukyu Islands.

Sciaena nigra was described by Forsskål (1775) on the basis of an adult specimen from Djiddae, Red Sea. Fowler (1931) placed this species in the genus *Macolor* (Perciformes, Lutjanidae). The three nominal species of *Macolor*, *Diacope macolor* Lesson, 1827, *Macolor typus* Bleeker, 1860, and *Macolor macularis* Fowler, 1931, have generally been synonymized with *M. niger* (Herre, 1936; Weber and de Beaufort, 1936; Shinohara, 1966). Many specimens, which represent two species of the genus *Macolor*, were collected from the Great Chagos Bank in the Indian Ocean, the South China Sea, and Japanese waters. One of these species is *M. niger* and the other partly fits the original description of *M. macularis*, which was based on specimens of *M. niger* and the other species. As the type series comprises two species, the holotype (USNM 89996) of *M. macularis*, being the name-bearing specimen, needs to be examined. Unfortunately, the holotype could not be located and is presumed to be lost. Although 24 of the original 25 paratypes are deposited in the U. S. National Museum of Natural History, there is no record of the holotype having been received there. Such being the case, a 306 mm SL paratype registered as USNM 145811 is designated as a neotype of *M. macularis*. It is redescribed in detail and compared with *M. niger* in this paper.

The methods of measuring and counting and the terminology are mostly the same as those of Hubbs and Lagler (1947).

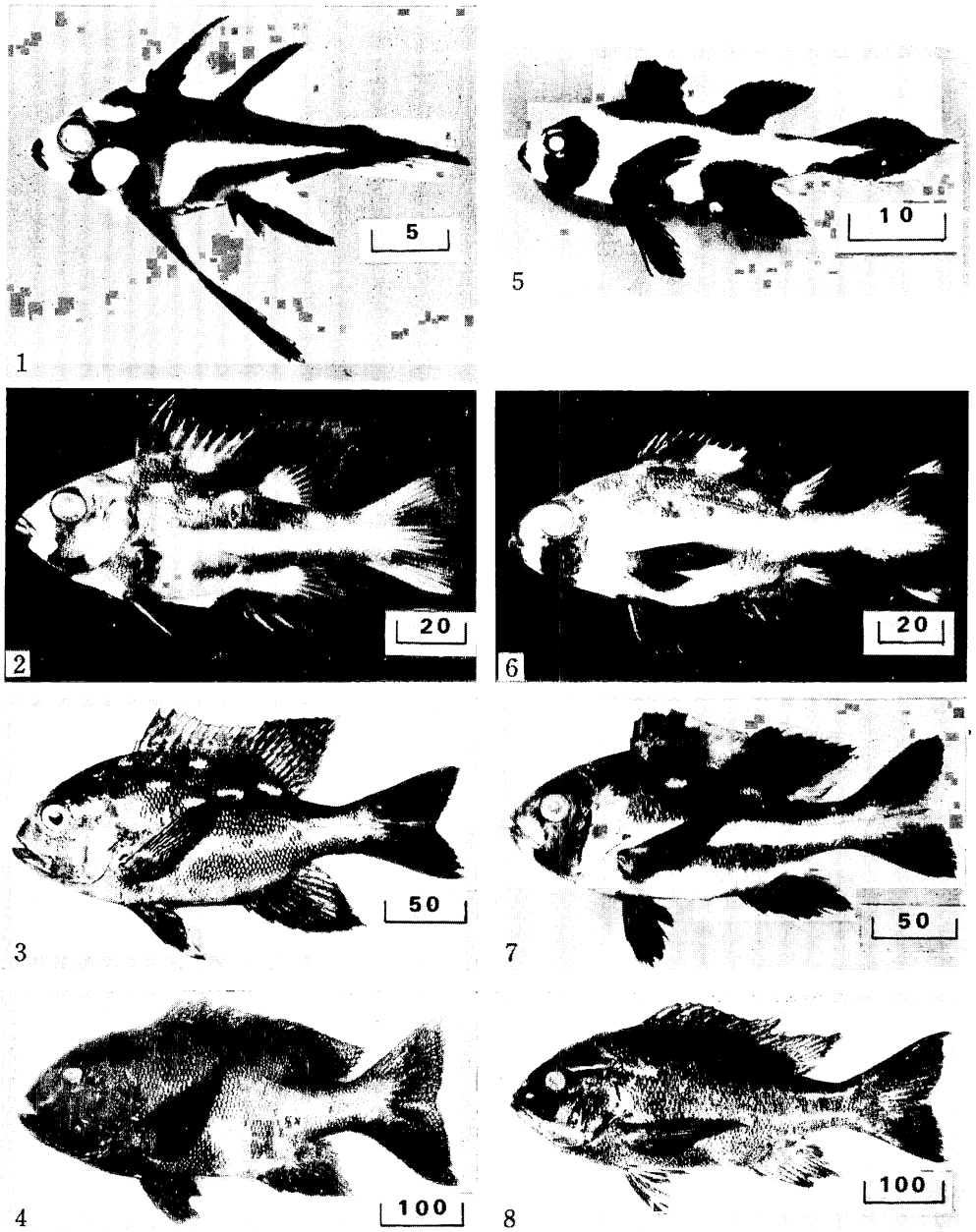
The present authors noticed that the color patterns on the young of the two species are distinct from one another, though they become almost similar as they grow. In addition, the young of the two species differ in body form, but this character also becomes less clear-cut with growth. The similarity of adults probably caused the previous confusion in identification of the two species.

Genus *Macolor* Bleeker, 1860

Macolor Bleeker, 1860: 25; type, *Macolor typus* Bleeker, 1860 (a synonym of *Sciaena nigra* Forsskål, 1775).

Proamblys Gill, 1862: 236; type, *Diacope nigra* Cuvier in Cuvier and Valenciennes, 1828 (a synonym of *Sciaena nigra* Forsskål, 1775).

Body rounded in lateral aspect in adults and laterally compressed in all stages. Teeth conical. Anterior nostril not opening through a tube above upper lip: nasal rosette not enlarged. Gill rakers quite long, slender and numerous, more than 50 on lower limb, the length of central raker 2 to 3 times length of opposing gill filament. Bases of dorsal and anal fins broadly covered with scales. Dorsal fin with 10 spines and 13 or 14 soft rays; anal fin with 3 spines and 10 or 11 soft rays. Caudal fin double emarginate in full-grown adults. Body with broad black-and-white bands and white



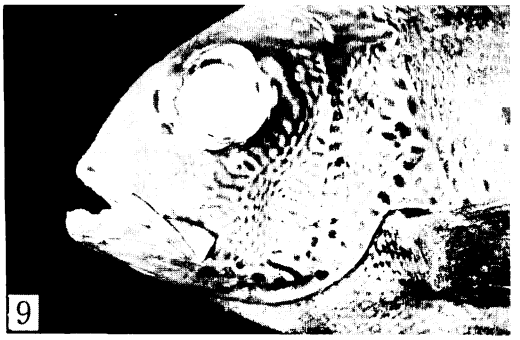
Figs. 1–4. *Macolor macularis* collected from Iriomote-jima, Ryukyu Islands. 1. 20.3 mm SL, IORD82-299A. 2. 102.0 mm SL, IORD82-244. 3. 220.3 mm SL, IORD83-410. 4. 438 mm SL, IORD84-152. Scale units mm in all.

Figs. 5–8. *Macolor niger* collected from Iriomote-jima. 5. 32.3 mm SL, IORD83-275. 6. 109.6 mm SL, SMLVO84-6. 7. 208.5 mm SL, SMLVO84-4. 8. 445 mm SL, IORD76-734. Scale units mm in all.

spots on dorsum and on head in young; adults with body almost uniformly blackish.

Key to the species

1. A. III, 10; GR. 37 to 42+71 to 81=110 to 122. Exposed portion of maxillary bone small



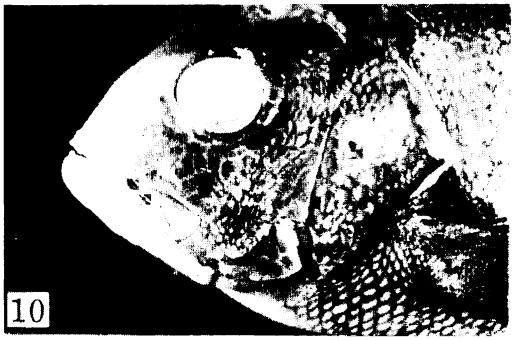


Fig. 9. The head of *Macolor macularis* collected from the South China Sea, 252.8 mm SL, HUMZ 87478.
Fig. 10. The head of *Macolor niger* collected from the Great Chagos Bank, 328 mm SL, HUMZ 89942.

and triangular. Dorsal fin notch very deep in young and weak in adult; pelvic fin very long and pointed in young, but short and rounded in adult. Adults with ground color of body, upper part of head, and all fins brownish black; cheek and opercle yellowish-brown with short blue lines, vermiculations and round spots; vertical fins covered with blue speckles. Specimens smaller than 100 mm SL with body black-and-white banded and usually more than 7 (rarely 6) white spots on dorsum, pectoral fin and tips of caudal fin translucent; body and fins change to brown then to brownish black, except the median part of the caudal fin in specimens larger than 100 mm SL ..... *M. macularis*

2. A. III, 11 (rarely 10); GR 26 to 38+60 to 71=89 to 107. Exposed portion of maxillary bone large and triangular with high apex. Dorsal fin notch always shallow; pelvic fin short and rounded at all stages. Adults with body and all fins almost uniformly brownish black, reticulate pale blue lines on head visible only in fresh specimens. Specimens smaller than 240 mm SL with body black-and-white banded and about 5 (4 to 7) white spots on dorsum, tips and middle part of caudal fin white ..... *M. niger*

Macolor macularis Fowler, 1931
(New Japanese name: Hohosuji-tarumi)
(Figs. 1–4, 9)

Lutjanus macolor (not of Lesson): Bleeker, 1873: 86

Table 1. Meristic characters of two species of the genus *Macolor*.

Fin rays	Dorsal				Anal			Pectoral		
	IX, 14	X, 13	X, 14	X, 15	III, 10	III, 11		16	17	18
M. macularis (n=12)		10*	2		12*				12*	
M. niger (n=38)	1	13	23	1	3	35		4	31	3
Scales in lateral line	49	50	51	52	53	54	55	56	57	58
M. macularis (n=11)		2	2	2	3*		2			
M. niger (n=38)	1	9	4	6	4	7	3	2		2

Scales above/below lateral line	above							below									
	8	9	10	11	12	13	14	19	20	21	22	23	24	25	26	27	28
M. macularis (n=12)			2*	2	7	1					4	3*	2	1	1	1	
M. niger (n=35)	2	1	8	12	6	5	1	1	1	4	5	8	7	5		3	1

Total gill rakers	89|90	91|92	93|94	95|96	97|98	99|100	101|102	103|104	105|106	107|108	109|110	111|112	113|114	115|116	117|118	119|120	121|122
M. macularis (n=12)											1	4*		2	2	2	1
M. niger (n=38)	3	7	4	4	6	6	1	5	1	1							

* including the neotype.

(largest specimens from 160 mm to 195 mm, East Indies).

Lutjanus niger (not of Forsskål): Bleeker, 1876–77: 75 (not of pl. 343, fig. 3; largest specimens from 160 mm to 195 mm, East Indies).

Macolor niger (not of Forsskål): Fowler, 1931: 179 (in part, Philippines); Weber and de Beaufort, 1936: 289 (in part, not of fig. 62, Nias; Makasar, Celebes; Tukang Besi Is.; Banda); Schultz, 1953: 533, pl. 47, A (Philippines); Munro, 1967: 291 (not of pl. 36, fig. 516, New Guinea); Burgess and Axelrod, 1972–76: 673 (not of fig. 147); Schroeder, 1980: 46, fig. 219-B and unnumbered fig. on p. 171 (in part of description, Sulu Sea, Philippines); Coleman, 1981: 121, unnumbered fig. (Australia, north of 30°S); Kyushin et al., 1982: 63, pl. 42 (in part, South China Sea); Akazaki, 1984: 168, pl. 155-E (not of pl. 155-F, Palau Is. according to personal communication from the photographer); Allen, 1985: top fig. on p. 128, pl. 23-83.

Macolor macularis Fowler, 1931: 181 (type locality Philippines, in part, 14 of 25 paratypes); Allen, 1985: 126 (excluding top fig.), pp. 23–82a.

Lutjanus rivulatus (not of Cuvier): Shen, 1984: pl. 60, fig. 323-19 (Taiwan, not of description on page 60).

Macolor sp.: Burgess and Axelrod, 1972–76: 1519,

Table 2. Proportional measurements in two species of the genus *Macolor*.

	M. macularis		*M. niger*
Specimens examined	Neotype	11 non-types	38 non-types
Range of standard length (SL) in mm	218	102.0–430	96.1–451
In total length:			
Body depth	2.84	2.81–2.99	2.73–3.54
Head length (HL)	3.38	3.25–3.67	3.15–3.65
Pectoral fin length	3.43	3.16–3.59	3.19–3.78
Pelvic fin length	4.66	2.89–5.51	4.62–6.26
In SL:			
Body depth (see Fig. 11, top)	2.17	2.18–2.38	2.19–2.71
Head length	2.59	2.53–2.83	2.57–2.90
Pectoral fin length	2.63	2.43–2.81	2.52–2.90
Pelvic fin length (see Fig. 11, middle)	3.57	2.22–4.56	3.59–4.91
Predorsal length	2.30	2.27–2.62	2.29–2.68
Basal length of dorsal fin	2.05	2.00–2.21	1.93–2.37
Basal length of anal fin	5.57	4.76–6.04	4.63–6.21
In HL:			
Postorbital part of head	2.16	1.89–2.28	1.95–2.19
Snout length	2.86	2.46–3.54	2.57–3.64
Interorbital width	2.71	2.59–2.95	2.51–3.54
Orbit diameter	3.63	3.35–5.06	3.02–5.42
Upper jaw length	2.14	2.08–2.78	2.18–2.83
Caudal peduncle length	1.92	1.58–2.09	1.49–1.97
Caudal peduncle depth	2.64	2.59–3.23	2.48–3.11
Longest dorsal spine length (D. sp. l.)	2.31	1.63–3.03	1.97–2.94
Penultimate dorsal spine length (D. penult. l.)	2.60	2.52–3.42	2.61–3.69
Longest dorsal soft ray length (D. s. r. l.)	1.54	1.07–1.74	1.28–1.90
Third anal spine length (A. sp. l.)	2.32	2.16–3.51	2.30–3.96
Longest anal soft ray length (A. s. r. l.)	1.48	1.02–1.79	1.18–1.89
Pectoral fin length	1.02	0.91–1.04	0.93–1.11
Pelvic fin length	1.38	0.79–1.70	1.29–1.84
Caudal fin length	1.12	1.03–1.27	1.01–1.29
Pectoral fin length/Pelvic fin length	1.36	0.80–1.66	1.33–1.88
D. s. r. l./D. sp. l.	1.50	1.53–1.95	1.35–1.82
D. sp. l./D. penult. l. (see Fig. 11, bottom)	1.13	1.05–1.56	1.05–1.42
A. s. r. l./A. sp. l.	1.68	1.39–2.11	1.66–2.26
D. sp. l./A. sp. l.	1.08	1.01–1.32	1.04–1.59
D. s. r. l./A. s. r. l.	0.96	0.96–1.14	0.91–1.14

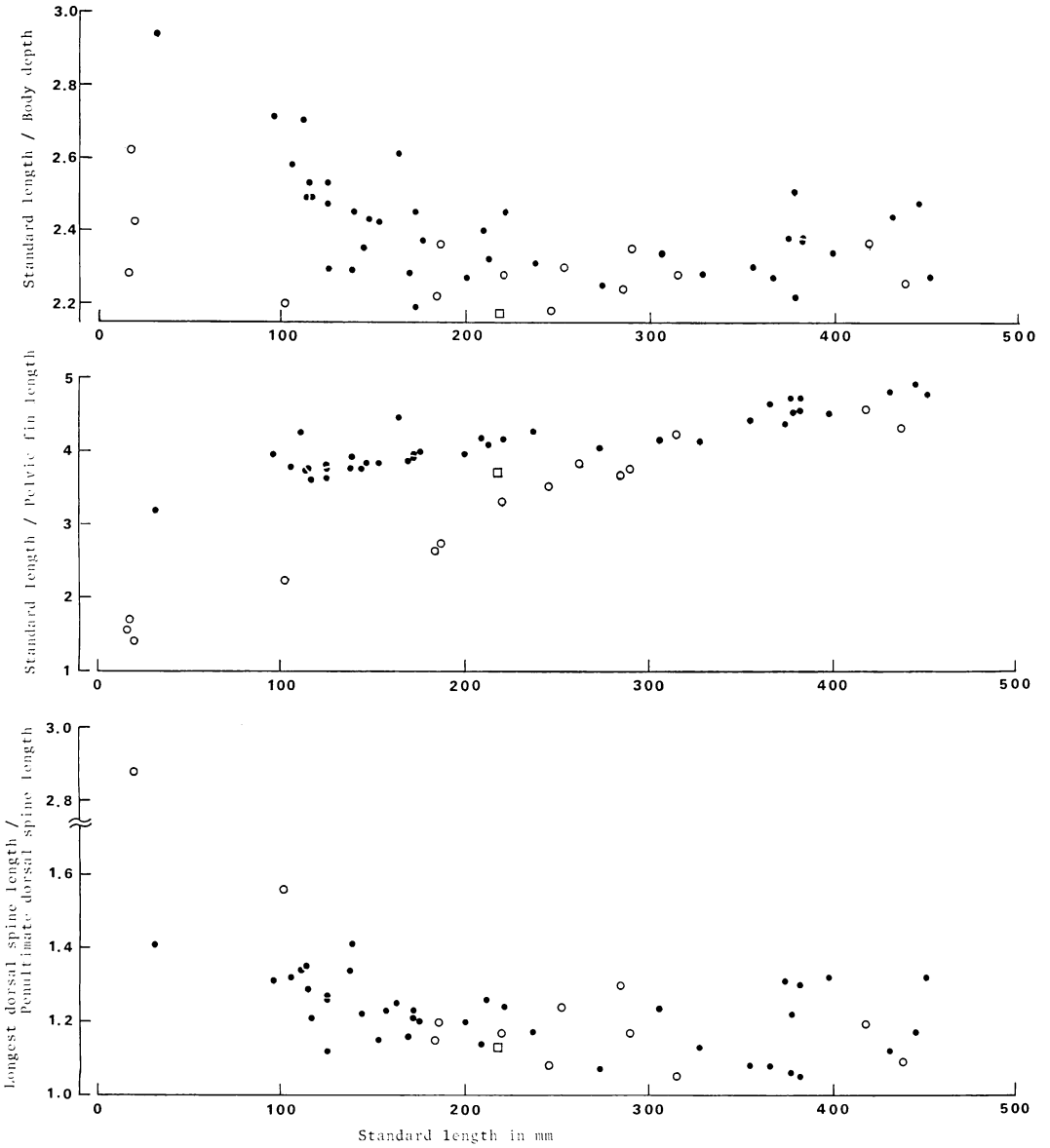


Fig. 11. Growth change of proportional measurements in the two species of *Macolor*. Top, body depth in standard length; middle, pelvic fin length in standard length; bottom, penultimate dorsal spine length in longest dorsal spine length. □, neotype of *Macolor macularis*; ○, non-types of the species; ●, *M. niger*.

figs. 234, 235 (Marau and Malaita, Solomon Is.).

Material. Neotype: USNM (U.S. National Museum of Natural History) 145811, "Albatross" No. 8886, 218 mm SL, near Palay Bay, Luzon I., Philippines, 16 June 1909. 8 paratypes: USNM 145812, 146379 (3 among 4), 146380, 146384, 146547, and 146657, 205–375 mm SL, Philippines, between 22 May 1908 and 29 December 1909. Non-type: HUMZ (Laboratory of Marine Zoology, Faculty of Fisheries, Hokkaido University) 87478, 87567, and 87590, 253–315 mm SL, South China Sea, 50–88 m deep, vertical long line, between 13 and 17 May 1975; IORD (Institute of Oceanic Research and Development, Tokai University) 82-244, 82-299, 82-299A, 83-410, 84-128, 84-134, 84-135, 84-149, 84-152, 85-102, and 85-316, 16.7–438 mm SL, Iriomote-jima, Ryukyu Is., 15–50 m

deep, hand net or spear, between 22 June 1982 and 18 August 1985.

Description. Meristic characters and proportional measurements based on 12 specimens larger than 100 mm SL are shown in Tables 1 and 2, respectively. Body laterally compressed and rounded in lateral aspect (Fig. 11, top). Dorsal profile of head straight in young, convex in adult. Dorsal fin notch very deep, penultimate spine 3 to 4 times in longest spine (2nd) in three specimens smaller than 21 mm SL, notch shallower in larger specimens, ratio of penultimate spine to longest spine 1.55 in 102 mm SL specimen (2nd spine longest) and 1.0 to 1.3 in specimens larger than 180 mm SL (3rd or 4th spine longest; Fig. 11, bottom). Pelvic fin very long and pointed in young, becoming shorter with growth (Fig. 11, middle). Caudal fin rounded in specimens smaller than 21 mm SL, concave in specimens larger than 100 mm SL, and double emarginate in specimens larger than 400 mm SL. Exposed portion of maxillary bone small and triangular with low apex (Fig. 9). Preopercular notch narrow and deep, with an ascending interopercular spine inserting into the notch; spine becomes sharp and notch becomes expanded with growth: absent in specimens smaller than 21 mm, faintly developed in 102 mm specimen, distinct in specimens larger than 200 mm SL.

Color pattern. Color pattern in some stages of this species is shown in Figs. 1 to 4 and 9. Color pattern changes with growth as follows: deep black ground color changes to brownish black gradually; number of white spots on dorsum increases from 3 in specimens smaller than 21 mm SL to 7 or more (rarely 6) in specimens larger than 100 mm SL; these and other white spots and bands on head and body disappear in preserved specimens larger than 250 to 300 mm SL but faintly recognizable in most live adult specimens; short blue lines, vermiculations and round spots appear on cheek and opercle at 200 mm SL; coloration of posterior halves of spinous dorsal, soft dorsal and soft anal fins changes from translucent at 100 mm SL, to white at about 200 mm SL, then to brownish black; color of pectoral fin and tips of caudal fin change from translucent in specimens smaller than 100 mm SL to brownish black in specimens larger than 200 mm SL; vertical fins covered with blue speckles in specimens larger than 200 mm SL.

Distribution. In Japan, *Macolor macularis* is known only from Iriomote-jima, Ryukyu Is. It also occurs in Taiwan, South China Sea, Philippines, New Guinea, East Indies, northern Australia, and the Solomon Is. Based on observations at Iriomote-jima, this species does not aggregate in large schools. Specimens larger than about 100 mm SL usually inhabit coastal waters shallower than 30 m deep, but 20 to 30 mm SL specimens have been observed only in association with black corals or gorgonians at 40–50 m depth.

Remarks. Fowler (1931) described *Macolor macularis* on the basis of the holotype and 25 paratypes (including one skeletonized specimen) from the Philippines and compared it with 23 specimens of *M. niger*. The type specimens of *M. macularis* range from 256 to 615 mm in length, excluding a "35 mm" specimen, which was apparently a misprint of 350 mm based on a measurement made by J. T. Williams (specimen now measures about 330 mm total length). The *M. niger* specimens examined by Fowler range from 133 mm to 290 mm in length. Fowler gave a gill raker count of 31 to 40+63 to 75 for *M. macularis* and 40+75 for *M. niger*. The former count appears to be based on adult specimens of both species and the latter is probably based on a specimen of *M. macularis*. Examination of the paratypes of *M. macularis* reveals the presence of both species. As Fowler did not provide data specific to the holotype and his description is based on specimens of two species, it is not possible to correctly identify the holotype of *M. macularis* without examining it. J. T. Williams kindly informed the present authors that 24 paratypes are in the U. S. National Museum of Natural History, but the holotype (USNM 89996, "Albatross" No. unknown) and a paratype ("Albatorss" No. 8084) cannot be located and may never have been at the USNM. W. F. Smith-Vaniz and S. G.Poss could not also locate the missing types in the Academy of Natural Sciences of Philadelphia and the California Academy of Sciences, respectively. G. R. Allen has examined many types of lutjanid fishes, but has not seen the holotype of *M. macularis*. In order to stabilize the nomenclature of *M. macularis*, a 218 mm paratype, registered as USNM 145811 ("Albatross" No. 8886), that is distinct from *M. niger*, is designated as the neotype of *M. macularis*.

Allen (1985) gave a short description, some notes and remarks for each *Macolor niger* and *M. macularis*. Judging from remarks concern-

ing meristic counts of the neotype of *M. maculasis*, the description of this species was made after the present authors requested Dr. Williams (U.S. National Museum) to designate USNM 145811 as the neotype. The present authors have found some discrepancies in his illustrations: The figures and plates for adult *M. macularis* (p. 126, top figure, and Plate XXIII, 82) and *M. niger* (p. 128, top figure, and Plate XXIII, 83) should be interchanged. Cheek and opercle marked with many short blue lines, vermiculations and round spots, and vertical fins with blue speckles are important diagnostic characters of *M. macularis*. In addition, the present authors have found other small misprints: On page 127, read Kishimoto for Hishimoto in Remarks and on page 128 Madaratarumi for Nadaratarumi in Local Names.

Macolor niger (Forsskål, 1775)

(Japanese name: Madara-tarumi)

(Figs. 5–8, 10)

Sciaena nigra Forsskål, 1775: 47 (type locality Djiddae, Red Sea); Klausewitz and Nielsen, 1965: 19, pls. 14, 15 (holotype).

Diacope macolor Lesson, 1827: 138 (type locality east coast of New Guinea, Moluccas); Lesson, 1828: 409 (Dorery, New Guinea); Cuvier in Cuvier and Valenciennes, 1828: 415 (New Guinea).

Mesoprion macolor: Bleeker, 1852: 752 (Makasar, Celebes).

Genyoroge macolor: Günther, 1859: 176 (Moluccas and Amboyna).

Genyoroge nigra: Günther, 1859: 176 (Red Sea).

Macolor typus Bleeker, 1860: 25 (based on *Mesoprion macolor* Bleeker, 1852).

Diacope nigra: Klunzinger, 1870: 696 (Red Sea).

Lutjanus macolor: Bleeker, 1873: 86 (smallest specimens from 75 mm to 130 mm SL, East Indies); Bleeker, 1876–77: 75, pl. 343, fig. 3 (smallest specimens from 75 to 130 mm SL, East Indies).

Lutjanus nigra: Day, 1888: 783 (Maldive Arch.).

Lutjanus niger: Day, 1889: 465 (Maldive Arch.); Weber, 1913: 253, pl. 12, figs. 1, 2 (Banda).

Macolor niger: Fowler, 1931: 179 (in part, Philippines); Weber and de Beaufort, 1936: 289, fig. 62 (in part, Nias; Makasar, Celebes; Tukang Besi Is.; Banda); Smith, 1962; 508, pl. 74, figs. A–C (East Africa north of 16°S); Smith and Smith, 1963: 29, pl. 24-G (Seychelles); Shinohara, 1966: 276, fig. 49 (Ryukyu Is.); Munro, 1967: pl. 36, fig. 516 (after Bleeker, not of description of p. 291, New Guinea); Frank, 1969: 352, fig. 547 (locality not shown); Burgess and Axelrod, 1972–76: 349, fig. 119 (locality not shown), 674, fig. 147 (Maldive Arch.), 1276, fig. 289 (Taiwan); Talbot and Chan, 1974: LUT Mac 1, pl. 3 (eastern Indian Ocean and western Central Pacific); Masuda et al., 1975: 239, pl. 65-F (Ryukyu Is.); Kyushin et al., 1977; 96, pl. 40 (Great Chagos Bank, Indian Ocean); Zeng, 1979: 184, fig. 115 (Xisha Is., South China Sea); Randall, 1980: 228, fig. 30 (Eniwetok, Marshall Is.); Jones and Kumaran, 1980: 294, fig. 249 (Kavarthi, Laccadive Arch.); Schroeder, 1980: 46, fig. 219-A (Sulu Sea, Philippines); Kyushin et al., 1982: 63 (in part, not of pl. 42, South China Sea); Randall, 1983: 68, unnumbered 3 figs. (Red Sea, description doubtful); Misaki, 1984: 99, unnumbered fig. (Shionomisaki, central Japan); Akazaki, 1984: 168, pl. 155-F (not of description nor pl. 155-E, Ryukyu Is.); Allen, 1985: 127 (excluding top fig. on p. 128), pl. 23–83a.

Macolor macularis: Fowler, 1931: 181 (in part, 10 of 25 paratypes, not neotype, Philippines); Allen, 1985: top fig. on p. 126, pl. 23–82.

Macolor macolor: Herre, 1936: 183 (Tenibuli, Ysabel I., Solomon Is.).

Lutianus niger: Kamohara, 1957: 22, fig. 15 (Naze, Amami-oshima, Ryukyu Is.).

Material. BSKU (Department of Biology, Faculty of Science, Kochi University) 6644, 162.6 mm SL, Naze, Amami-oshima, Ryukyu Is., fish market, 1956; HUMZ 39252 and 48373, 175.6–212.3 mm SL, Ishigaki-jima, Ryukyu Is., fish market, 22 Aug. and 4 May 1974; HUMZ 63047, 63074, and 63096, 124.8–146.9 mm SL, Naha, Okinawa-jima, Ryukyu Is., fish market, between 30 Apr. and 2 May 1977; HUMZ 87266 and 87564, 377 and 382 mm SL, South China Sea, 82–88 m deep, vertical long line, 5 Aug. and 17 May 1975; HUMZ 89938 to 89942, 314–431 mm SL, Great Chagos Bank, Indian Ocean, 22–90 m deep, vertical long line, between 31 Oct. and 13 Nov. 1974; IORD76-734, 77-704, 83-89, 83-261, 83-275, 83-411, 84-1, 84-123, 83-124, 84-126, 84-129, 84-147, and 84-148, 32.3–470 mm SL, Iriomote-jima, Ryukyu Is., 2–20 m deep, hand net and spear, between 4 Aug. 1976 and 28 June 1984; KSHS (Kochi Senior High School) 14366 and 14367, 116.8 and 125.1 mm SL, Naha, Okinawa-jima, Ryukyu Is., fish market, July 1973; KSHS 15150, 221.0 mm SL, Ishigaki-jima, Ryukyu Is., fish market, 26 March 1974; MPC (Marine Park Center, Wakayama Pref., Japan) 84011, 366 mm SL, Shionomisaki, central Japan, angling from the beach, 20 Sept. 1984; SMLVO (Iriomote Marine Research Station [renamed from Subtropical Marine Laboratory], Tokai University) 83-11, 84-1, 84-3 to 9, 98.2–275 mm SL, Iriomote-jima, Ryukyu Is., 3–15 m deep, spear, between July 1983 and 29 June 1984. USNM

145821 (one of the paratypes of *M. macularis*), "Albatross" No. 6926, 306 mm SL, west coast of Sabtan Island, Philippines, 8 Nov. 1908. Other 12 paratypes of *M. macularis*, examined for a few characteristics: USNM 145519(2), 145813, 146379 (1 among 4), 146381 (3), 146382 (2), 146548, 146383, and 274642, 212–475 mm SL, Philippines, between 9 June 1908 and 26 Nov. 1909.

Description. Meristic characters and proportional measurements based on 38 specimens larger than 95 mm SL are shown in Tables 1 and 2, respectively. Body laterally compressed and oblong in young, rounded in adults in lateral aspect (Fig. 11, top). Dorsal profile of head straight in young, convex in adults. Dorsal fin notch shallow, penultimate spine 1.2 to 1.4 in longest spine (4th) in young, 1.0 to 1.2 in longest spine (5th) in adults (Fig. 11, bottom); pelvic fin short and rounded at all sizes (Fig. 11, middle); caudal fin of 31.5 mm SL specimen rounded with central rays elongated, becoming slightly notched at intermediate sizes, and double emarginate in large adults above 400 mm SL. Exposed portion of maxillary bone forms a large triangle with high apex (Fig. 10). Preopercular notch narrow and deep, with an ascending interopercular spine inserting into the notch; interopercualr spine becomes sharp with growth: absent in specimens smaller than 160 mm SL, barely discernible in 160 mm specimens, well developed in fish larger than 280 mm SL.

Color pattern. Color pattern at selected stages of growth is shown in Figs. 5 to 8 and 10. Color pattern changes with increasing SL as follows: ground color gradually changes from deep black to brownish black; 31.5 mm specimen has two white spots on dorsum, subadults larger than 90 mm SL usually have 5, rarely 4 to 7, spots, but these disappear in adults larger than 270 mm SL; white spots and bands also disappear at about 270 mm and are not recognizable in preserved or live specimens; posterior half of spinous dorsal and posterior tips of soft dorsal and soft anal fins change from translucent at 31.5 mm SL, to white at about 35 to 240 mm SL, to brownish black in adults; dorsal and ventral tips of caudal fin are white in specimens smaller than 240 mm SL, brownish black in larger specimens; pectoral fin always black; no blue marks on head or blue speckles on vertical fins.

Distribution. In Japan, *Macolor niger* is known to occur at Shionomisaki, central Japan and south of Amami Is. It is widely distributed in the Indo-Pacific from South Africa to the Marshall Is. Based on our observations of *M. niger* at Iriomote-jima, adults occur in large schools in coastal waters usually less than 30 m deep and young specimens 20 to 30 mm SL occur near the reef edge, segregated from the adults.

Remarks. *Macolor niger* differs from *M. macularis* in having a higher modal number of anal soft rays (Table 1) and in the posterior exposed portion of the maxillary bone forming a longer triangle than in *M. macularis* (Figs. 9, 10). The long exposed part of the maxillary bone occurs in the holotype of *M. niger* (Klausewitz and Nielsen, 1965: Pl. 14, fig. 29, Pl. 15, fig. 31), but the anal fin ray formula of the holotype, which is III, 10, is in the area of overlap with *M. macularis*. Based on the form of maxillary bone of the holotype and the fact that *M. macularis* does not occur in the Red Sea, the holotype of *M. niger* is conspecific with the specimens the present authors identified as *M. niger*.

Lesson (1827) originally described *Diacope macolor* based on a 193 mm total length specimen collected in the Moluccas. It has white tips in the caudal fin similar to our 125 to 304 mm total length specimens (96 to 238 mm SL) of *M. niger*. A fresh specimen of *M. macularis*, total length 132 mm (102 mm SL), used in the present study has the caudal fin with wide translucent brownish tips that change to pale brown in alcohol (Fig. 2), resembling that in the young of *M. niger*. *Macolor niger*, however, has a sharp demarcation between black and white parts in the caudal fin in contrast to the color pattern of *M. macularis* in which the caudal fin is gradually discoloring to the tips, but is not white. Therefore *Diacope macolor* is identified as a young *M. niger*.

Kamohara (1957) first recorded *M. niger* from Japan, giving it the Japanese name, madara-tarumi. His specimen, BSKU 6644, agrees with *M. niger* in having a gill raker formula that is 31+68=99, although he incorrectly reported it as 40+75=115.

Comparison

Macolor niger differs from *M. macularis* in having fewer gill rakers, 89 to 107 (versus 110 to 122 in the latter), and in generally having a long triangular area of the exposed maxillary bone

(versus a small area) and anal soft rays usually 11, rarely 10 (versus 10 without exception). It is very difficult to distinguish adults of the two species based on external appearance, especially color-pattern in preserved material. However, fresh specimens are easily distinguishable as follows: head of *M. niger* usually uniform brownish black with reticulate pattern of pale blue lines as shown by Randall (1983, bottom figure on p. 71) immediately before and after death (*M. macularis* always has short lines and vermiculations on the cheek, round spots and short lines on the opercle, and round spots on lower head, all of which are blue, as shown in Fig. 9); vertical fins uniform brownish black (versus same ground color as *M. niger*, but with many blue speckles). In specimens about 100 to 250 mm SL, both species have a black-and-white banded color pattern on body and fins but *M. niger* differs from *M. macularis* in having white tips on dorsal and ventral edges of caudal fin (versus entirely brownish black tips), fewer white spots on dorsum, usually 5, rarely 4 to 7 (versus usually 7, often 6 or more), and rounded short pelvic fin, its length 3.5 to 4.5 in SL (versus pointed and long, 2 to 3.5). In specimens about 20 to 100 mm SL, *M. niger* differs from *M. macularis* externally in having a slightly notched dorsal fin (versus very deep notch), white tips on caudal fin (versus translucent tips), black pectoral fin (versus translucent), and oblong body in lateral aspect (versus round).

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マダラタルミ属（スズキ目，フエダイ科）の分類学的再検討

岸本浩和・尼岡邦夫・河野裕美・浜口拓也

従来，フエダイ科のマダラタルミ属はマダラルミ *M. niger* の1種からなる monotypic genus と考えられ，*M. macularis* はそのシノニムとされてきた．*M. macularis* は Fowler により2種混合の成魚標本にもとづいて原記載され，完模式標本 (USNM 89996) の所在は不明であるため，その有効性を検討することはできなかった．著者らは本属に明らかな2種を認めたことから，2種混合の副模式 25 標本の中から USNM 145811 を *M. macularis*（ホホスジタルミ，新称）の新模式に指定し，有効種としたうえで両種の再記載と比較を行なった．両種は次のような諸点で区別される．鰓耙数はホホスジタルミでは 110–122 で，マダラタルミでは 89–107．前者の主上顎骨の露出部は後者より狭い．前者の腹鰭は幼期に著しく長く，その先端が鋭く尖るが，後者では終生長くなく，先端は円い．前者の成魚では頭部と垂直鰭に青い斑点をもつが，後者ではほぼ一様に黒い．ホホスジタルミはオーストラリア北部から西表島に至る西部太平洋に分布し，マダラタルミは南アフリカからマーシャル諸島に至るインド・太平洋域に広く分布するものと考えられる．

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