

Reclassification of the Japanese Cirrhitid Fishes *Serranocirrhites latus* and *Isobuna japonica* to the Anthiinae

John E. Randall and Phillip C. Heemstra

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Abstract *Serranocirrhites latus* Watanabe and *Isobuna japonica* (Steindachner), both described as new genera and species of Cirrhitidae, are shown to be serranid fishes of the subfamily Anthiinae. *S. latus* is regarded as a valid genus and species; *Dactylanthias memichaeli* Whitley is a junior synonym. *I. japonica* is revealed as an earlier name for a species currently identified as *Sayonara satsumae* Jordan et Seale. The genera *Isobuna* Jordan and *Sayonara* Jordan et Seale are placed in the synonymy of *Plectranthias* Bleeker. *S. latus* and *P. japonicus* are redescribed. *S. latus* is now known from the Ryukyu Islands, Lihou Atoll and Willis Island in the Coral Sea, Palau Islands, Fiji Islands, New Caledonia, Loyalty Islands, New Hebrides, and Celebes. The range of *P. japonicus* is extended from Japan to Luzon.

Serranocirrhites latus Watanabe and *Paracirrhites japonicus* Steindachner were originally described as representing new genera and species of cirrhitid fishes. Jordan in Jordan and Herre (1907) substituted *Isobuna* for *Paracirrhites* Steindachner, preoccupied by *Paracirrhites* Bleeker. In his revision of the Cirrhitidae Randall (1963) discussed these two problematic species, which were then known only from their original descriptions. He treated *Serranocirrhites* in a footnote, pointing out that the characters of the type-species, such as ctenoid scales, all pectoral fin rays unbranched and not thickened, and its general pomacentrid-like appearance are atypical for cirrhitid fishes. Nevertheless, he did not rule out the possibility that this fish might eventually be placed in the Cirrhitidae. Matsubara (1955: 680) had also questioned the taxonomic placement of *S. latus* and suggested that a comparison with anthiines having unbranched pectoral fin rays was needed.

Smith (1951) and Randall (1963) both expressed some doubt concerning the placement of *Isobuna japonica* in the Cirrhitidae. They noted the non-cirrhitid features of this species: ctenoid scales, three opercular spines, large mouth, lower pectoral rays not thickened, and only two scales above the lateral line.

We have determined that both of these supposed cirrhitid fishes belong in the serranid subfamily Anthiinae and that each represents a senior synonym for a subsequently described anthiine species. *Serranocirrhites* is a valid

genus, but *Isobuna* is placed in the synonymy of *Plectranthias* Bleeker, 1873 (a revision of this genus by the senior author is in press in *Micronesica*). Following the redescription of each species below, we present our arguments for their new classification and synonymy.

Methods

Measurements and counts were made following Hubbs and Lagler (1964) except for the following: orbit diameter is the horizontal diameter of the bony orbit; maxilla width is the greatest width of the posterior expansion of the maxilla; the number of scales between the middle of the spinous dorsal fin and the lateral line was counted in a series from the dorsal fin base postero-ventrally to the lateral line, ignoring any smaller scales at the base of the fin; and the last dorsal and anal fin rays are usually split to their base, but counted as a single ray.

Serranocirrhites latus Watanabe
(Figs. 1 and 2)

Serranocirrhites latus Watanabe, 1949: 17, figs. 1 and 2 (type-locality, off Itoman, Okinawa); Matsubara, 1955: 680.

Dactylanthias memichaeli Whitley, 1962: 3, fig. 1 (type-locality, Lihou Atoll, Coral Sea); Fourmanoir and Laboute, 1976: 284.

Description. Based on 18 specimens, 33 to 82 mm SL. Counts of lateral line scales and gillrakers are given in Table 1.

Dorsal fin X, 18 to 20; anal fin III, 7; pectoral

Table 1. Frequency distribution for counts of lateral-line scales and gill rakers of *Serranocirrhitis latus*.

	Lateral-line scales					
	33	34	35	36	37	38
Japan and Ryukyus		1	2	2	1	
Other localities	1	3	5	2		1

	Gill-rakers					
	Upper limb		Lower limb			
	9	10	23	24	25	26
Japan and Ryukyus	2	4		2	3	1
Other localities	5	4	1	3	3	2

3.0 in SL.

fin 13 or 14 (none branched); principal caudal rays 15 (upper and lowermost unbranched); upper and lower procurrent caudal rays 7; scales between middle of spinous dorsal fin base and lateral line 2; scales below lateral line to origin of anal fin 11 or 12 1/2; circumpeduncular scales 17; gill-rakers long and numerous, none rudimentary, longest nearly twice as long as gill filaments; branchiostegal rays 7; vertebrae 26.

Body deep, the depth 2.0 to 2.2 in SL, and compressed, the width just behind gill opening 2.5 to 2.7 in depth; dorsal profile of head very steep; head length 2.7 to 3.0 in SL; diameter of orbit 3.0 (in 44.3-mm specimen) to 4.2 (in 81.5-mm specimen) in head; snout short, 4.0 to 4.3 in head; interorbital space evenly convex, the bony width 3.2 to 3.5 in head; least depth of caudal peduncle 2.2 to 2.4 in head; origin of dorsal fin slightly posterior to upper end of gill opening; tenth dorsal spine longest (but third to ninth spines nearly as long), its length 2.1 to 2.3 in head; longest dorsal soft ray (ninth to eleventh) 1.3 to 1.6 in head (longer in larger individuals); second anal spine stoutest, but third slightly longer, its length 1.7 to 2.0 in head; third anal soft ray longest, longer than head in adults, its length 2.8 to 3.2 in SL; caudal fin 1.8 to 2.2 in SL, its posterior margin deeply concave, the caudal concavity (horizontal distance between longest and shortest caudal rays) 2.8 to 4.3 in SL; pectoral fin length 2.3 to 2.6 in SL, the eighth ray longest, reaching a vertical at base of fifth or sixth anal ray; pelvic fins inserted slightly anterior to base of pectoral fins, reaching beyond spinous portion of anal fin, their length 2.6 to

Mouth very oblique; maxilla reaching or nearly reaching a vertical at center of eye, broadly expanded posteriorly, its greatest depth 1/2 to 2/3 orbit diameter; supramaxilla absent. Teeth along side of upper jaw in about three irregular rows; outer teeth enlarged (but not as canines), slightly curved and inclined obliquely forward, the largest toward front of jaw; a patch of villiform teeth at front of upper jaw in a maximum of four or five rows; the most medial and inward teeth enlarged and directed inwardly and medially; a prominent gap without teeth at symphysis; teeth on side of lower jaw inclined forward, in two rows, the inner row largest (double row less evident on small specimens); teeth toward front of lower jaw in one row, inclined backward except for a short stout canine or close-set pair of canines more anterior in jaw which jut outward; a few minute teeth on vomer and palatines. Tongue short, pointed, without teeth.

Anterior nostril in a membranous tube, with the posterior edge elevated; three prominent pores surrounding anterior nostril; posterior nostril with a slight rim anteriorly.

Three flat spines on opercle; middle one largest, slightly closer to lower than upper spine. Upper margin of preopercle finely and somewhat irregularly serrate; lower margin smooth, the edge membranous. No spinules on subopercle or interopercle.

Scales ctenoid; no auxiliary scales. Head fully scaled (including maxilla) except for lips and a zone including and below nostrils which connects with scale-free area at extreme front of snout. Six diagonal rows of scales on cheek between eye and corner of preopercle (discounting small scales at edge of eye). Small scales basally on fins; those on median fins reaching nearly half way to outer margin.

Lateral line complete, in a smooth curve, rather highly arched above pectoral region; the highest point approximately beneath base of seventh dorsal spine; last pored scale of lateral line at caudal base.

Color in alcohol entirely pale. Color in life (Figs. 1, 2): Body and nape pink; each scale with a yellow spot (except ventrally); yellow spots large dorsally, leaving only a narrow rim of pink on each scale; yellow spots on side of body vertically elongate; on lower side and



Fig. 1. *Serranocirrhitus latus* Watanabe, 63 mm SL, BPBM 9543; Palau Islands (John E. Randall).



Fig. 2. *Serranocirrhitus latus*; Willis Island, Coral Sea (underwater photograph by Roger C. Steene).

caudal peduncle, spots small and round. Head pink, shading to pale yellow on chin and throat, with a diagonal narrow yellow band from mouth to eye, two broader yellow bands running obliquely upward and backward from dorsal part of eye; bright yellow spot rimmed with violet on upper posterior part of opercle; prominent partially broken violet-edged yellow line running from lower edge of eye to lower pectoral base, and a second similar line above and parallel to it (originating behind center of eye and ending above pectoral base); iris yellow with a ring of violet; basal scaled part of dorsal fin colored like body; rest of fin light yellow, the tips of interspinous membranes magenta, membrane of soft dorsal fin with narrow wavy yellow bands; postero-medial part of caudal fin colored like soft dorsal fin; lobes of fin broadly yellow on basal half, becoming finely spotted with yellow on outer part, with a pink border which is notably broader on basal part of fin; anal fin light pink on scaled basal portion, faintly yellow with indistinct yellow dots on outer unscaled part; paired fins pale pinkish.

Materials examined. (BPBM=Bernice P. Bishop Museum; AMS=Australian Museum, Sydney; WAM=Western Australian Museum, Perth; TMBS=Tatsuo Tanaka Memorial Biological Station; URB=University of the Ryukyus, Naha, Okinawa). Holotype of *Dactylanthias memichaeli* Whitley, AMS IB.4907. PALAU: BPBM 9372, 2 (41 & 60 mm SL); BPBM 9373 (54 mm SL); BPBM 9431, 2 (31 & 60 mm SL);

BPBM 9543 (63 mm SL). FIJI: AMS I.18578-006 (55 mm SL); AMS I.18352-027, 2 (29 & 39 mm SL); BPBM 14610, 3 (41~49 mm SL). LOYALTY ISLANDS: AMS I.17470-002 (56 mm SL); AMS I.17513-006, 2 (53 & 55 mm SL). NEW HEBRIDES: WAM P 25218-001, 6 (33~69 mm SL). OKINAWA: BPBM 20810 (44 mm SL); URB 78-0-0150 (57 mm SL); URB 78-0-0151 (69 mm SL); URB 78-0-0152 (82 mm SL); School of Fisheries Sciences, Kitasato University (67 mm SL). Miyake-jima, IZU ISLANDS: TMBS 760821-1 (45 mm SL). CELEBES: BPBM 22390 (67 mm SL).

Discussion. Evidently unaware of Watanabe's description of *S. latus*, Whitley (1962) described and illustrated *Dactylanthias memichaeli* as a new species of anthiid from the Coral Sea. The only noteworthy difference between the original accounts of *S. latus* and *D. memichaeli* is in the color descriptions. The color description of the latter would fit that given by Watanabe, except for his mention of "five narrow pale yellowish longitudinal bands on both sides". Since this species has a large yellow spot on the lateral body scales, it is possible that these spots may coalesce on some specimens to give the appearance of longitudinal bands. Recent collections by the senior author and various colleagues have produced additional specimens from New Caledonia, Loyalty Islands, New Hebrides, Fiji, Palau, Okinawa and the Yaeyama Islands of the Ryukyu Archipelago, and the Izu Islands. Because all of these fish (including those from

Table 2. Comparison of *Dactylanthias* and *Serranocirrhitus*.

<i>Dactylanthias</i>	<i>Serranocirrhitus</i>
Body not very deep, the depth 2.5 in SL; caudal peduncle depth 3 in head length	Body very deep, the depth 2.0 to 2.2 in SL; caudal peduncle depth 2.2 to 2.4 in head
Dorsal profile of head not very steep; lower jaw projecting	Dorsal profile of head very steep; lower jaw not projecting
Canine teeth in jaws well developed; vomer and palatines with several rows of villiform teeth	Canine teeth not well developed; vomer and palatines with a few small teeth in one irregular row
Upper edge of preopercle strongly serrate (18 to 20 serrae)	Upper edge of preopercle finely and irregularly serrate
Middle dorsal spines longest	Posterior dorsal spines longest
Soft dorsal fin rays 17; pectoral fin rays 18	Soft dorsal fin rays 19 or 20; pectoral fin rays 13 or 14
Pelvic fins very long, 2.2 in SL	Pelvic fins not very long, 2.6 to 3.0 in SL

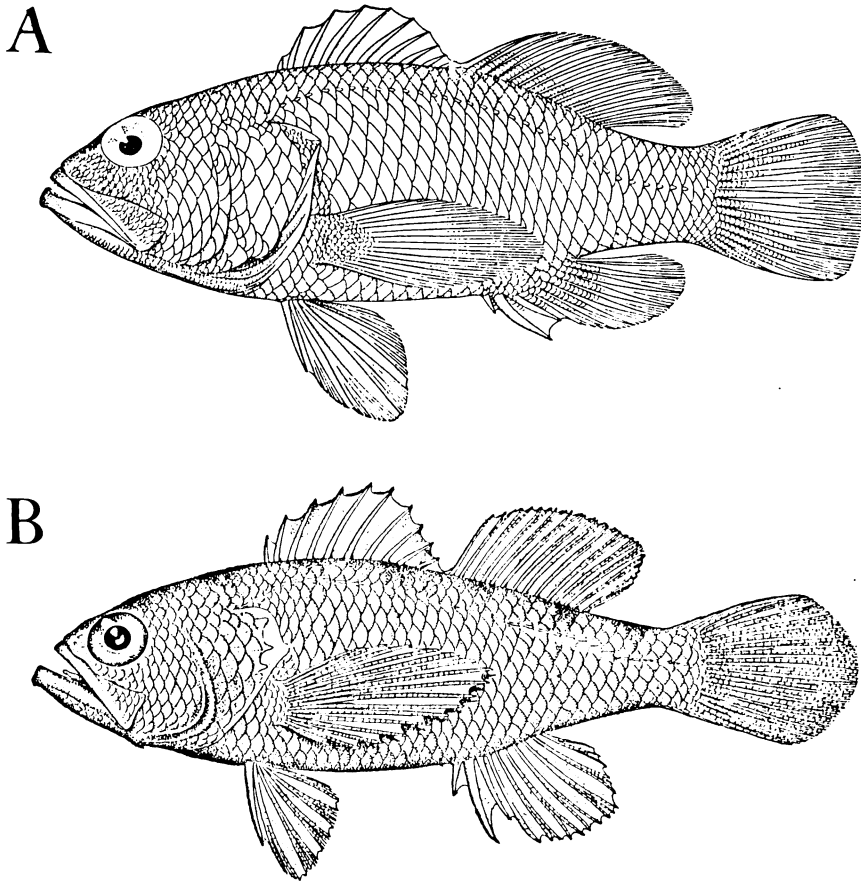


Fig. 3. *Plectranthias japonicus* (Steindachner). A: Holotype of *Sayonara satsumae* (after Jordan and Seale, 1906). B: Holotype of *Sayonara mitsukurii* (after Smith and Pope, 1906).

Okinawa, the type-locality of *S. latus*) exhibited the color pattern and other morphological characters of *D. mcMichaeli*, and since there are no significant differences between the original descriptions of these two nominal species other than the difference in color mentioned above, we concluded that they are synonyms. Nevertheless, it was decided to obtain information on the holotype of *S. latus*, so a letter was written to Dr. Watanabe. He replied that the specimen is not extant. We quote from his letter, "On December 21, 1945, a squad of U.S. Marines came suddenly to the Tokyo Fisheries Institute (now Tokyo University of Fisheries) and occupied it at the point of bayonet. The members were permitted to take out with them only their personal belongings. Thus, all the literature, specimens, and implements were left

behind. A few days later two professors were specially permitted to enter the building. From them I learned that all the specimens of fishes had been thrown into the nearby Bay of Tokyo except a few lots mostly kept in Dr. Matsubara's room." Watanabe went on to explain that his *S. latus* was not among the few specimens to escape the fate of being thrown into the bay.

Whitley (1962) noted several differences between his new species and *Anthias aplodactylus* Bleeker, the type and only known species of *Dactylanthias*. But he mentioned no characters that were shared by these two species and indicative of their congeneric status. We see no reason to assign *S. latus* to *Dactylanthias*. The senior author examined the holotype (and only known specimen) of *D. aplodactylus* at the

Rijksmuseum van Natuurlijke Histoire in Leiden. A list of the differences between *Dactylanthias* and *Serranocirrhites* is given in Table 2. Although *S. latus* does appear to be properly placed in the Anthiinae, it does not seem very closely related to any particular genus in this subfamily, and we recognize *Serranocirrhites* as a monotypic genus.

Fourmanoir and Laboute (1976) recorded this species (as *Dactylanthias mcMichaeli*) from New Caledonia, Loyalty Islands, and the New Hebrides. They illustrated two individuals in color from an underwater photograph. They reported it occurring in small groups of five or six fish in the immediate proximity of coral cliffs outside barrier reefs at depths of 20 to 40 m. Our specimens have come from depths of 15 to 61 m. At Okinawa, a large group was seen by the senior author on a dive to 50 m where a sloping rocky substratum ended in a nearly flat sand bottom. Generally the fish are found in or near caves or crevices along vertical or nearly vertical drop-offs. The specimen collected in 61 m was a solitary fish speared by the senior author from beneath a ledge at the island of Montehage just north of Manado, Celebes.

Roger C. Steene observed *S. latus* at Holmes Reef (16°30' S, 148° E) and Willis Island (16° S, 150° E) in the Coral Sea off the Great Barrier Reef. Although no specimens were collected, his underwater photograph of an individual at Willis Island, reproduced herein as Fig. 2, may be regarded as the first record for Australia.

Plectranthias japonicus (Steindachner)
(Fig. 3)

Paracirrhites japonicus Steinachner, in Steindachner and Döderlein, 1884: 25 (type-locality, Japan).

Sayonara satsumae Jordan et Seale, 1906: 145, fig. 3 (type-locality, Yamagawa, Satsuma = Kagoshima Prefecture, Japan); Jordan and Richardson, 1910: 465, fig. 15; Jordan, Tanaka and Snyder, 1913: 159, fig. 117; Matsubara, 1955: 635, fig. 219; Tomiyama and Abe, 1958: 184, fig. 546; Katayama, 1960: 124, pl. 5; Kamohara, 1961: 23, pl. 23, fig. 3; Lindberg and Krasnyukova, 1969: 82, fig. 138; Hiyama and Yasuda, 1971: 167, fig. 230; Masuda, Araga and Yoshino, 1975: 218, pl. 49,

fig. H.

Sayonara mitsukurii Smith et Pope, 1906: 469, fig. 3 (type-locality, Kagoshima, Japan).

Isobuna japonica: Jordan and Herre, 1907: 158; Smith, 1951: 626; Randall, 1963: 394.

Description. Based on 4 specimens, 35 to 123 mm SL.

Dorsal fin X, 14 to 16; anal fin III, 7; pectoral fin 15 to 17 (all rays unbranched on juveniles; uppermost and lower 2 to 7 rays unbranched on adults); principal caudal rays 16 or 17, the upper and lowermost rays unbranched; upper and lower procurrent caudal rays 7; lateral-line scales 30 to 34; scales between middle of spinous dorsal fin base and lateral line 2; scales below lateral line to origin of anal fin 10 or 11; circumpeduncular scales 15; gill-rakers 6 to 8+10 to 12 (rudimentary, except for one upper and about 7 lower rakers; the longest slightly longer than longest gill filaments); branchiostegal rays 7; vertebrae 26.

Body moderately deep, the depth 2.3 to 3.0 in SL, and moderately compressed, the width just behind gill opening 1.8 to 2.0 in depth; head length 2.3 to 2.6 in SL; orbit diameter 3.6 (in 35-mm specimen) to 5 (in large adults) in head; interorbital space flat, the bony width 7 to 10 in head; least depth of caudal peduncle 2.8 to 3.2 in head; origin of dorsal fin above third or fourth lateral-line scales; fourth or fifth dorsal spines longest, 2.5 to 3.9 in head (spines relatively shorter on larger individuals); longest dorsal soft ray (seventh to tenth) 2.0 to 2.4 in head; second anal spine longest, 2.3 to 3.6 in head; third anal soft ray longest, 1.9 to 2.3 in head; caudal fin subtruncate to rounded, 1.1 to 1.6 in head; pectoral fins moderately long, reaching past vertical at rear of last anal spine, the length 1.0 to 1.2 in head; pelvic fins not reaching anus, 1.4 to 1.9 in head.

Mouth terminal when fully closed or lower jaw slightly projecting, moderately oblique; maxilla reaching to or slightly beyond a vertical at hind edge of eye; maxilla broadly expanded posteriorly, its greatest width about 2/3 orbit diameter. Supramaxilla well developed. Villiform teeth in jaws, the upper with about 8 to 12 irregular rows along side of jaw; lower jaw with 4 to 5 rows (more rows anteriorly in jaws); a pair of short canine teeth at front of upper jaw, but none in lower jaw; villiform teeth in irregular

rows on palatines and forming a V-shaped patch on vomer. Tongue moderately pointed, without teeth.

Anterior nostril in a membranous tube that is more elevated posteriorly; posterior nostril with a slight rim, higher anteromedially.

Three flat spines on opercle, the lower two more posterior, one above the other; middle spine about equidistant from the others. Preopercle evenly rounded and finely serrate (17 serrae on a 35-mm specimen, 31 on an 82-mm specimen, and about 40 on the 123-mm holotype); lower margin smooth; subopercle and interopercle serrate.

Scales ctenoid; no auxiliary scales. Head fully scaled (including maxillae and mandibles) except snout anterior to nostrils; six diagonal rows of large scales on cheek between eye and corner of preopercle. Small scales basally on fins.

Lateral line complete, in a smooth curve, the highest point beneath middle of spinous portion of dorsal fin.

Color in alcohol: Pale, with 6 dusky blotches (very faint on some specimens) across dorsal surface of body, first in front of dorsal fin and last on caudal peduncle. We have not seen fresh specimens. Published color drawings or photographs of this species show either a generally pale brownish orange fish, with a diffuse yellow spot at the center of the scales on the lateral part of the body and caudal peduncle; or the body is pink ventrally and reddish orange dorsally, with 6 dusky saddles as described above; caudal fin yellow dorsally, the lower half red. The first pattern is apparently characteristic of the larger fish (more than 100 mm SL), while the second pattern is more typical of the smaller specimens.

Material examined. Holotype, California Academy of Sciences no. SU 9259, 123 mm SL; BPBM 20872, 2 (35 & 82 mm SL), off Manila Bay, Luzon, Philippines, 185 to 200 m; Field Museum of Natural History no. 55463, 117 mm SL, Suruga Gulf, Japan.

Discussion. Steindachner's original description of *Plectranthias japonicus* was based on a single specimen and did not include an illustration. This holotype was at the Museo Civico di Storia Naturale in Milan and was destroyed during World War II. For the past 16 years, the senior author has been looking for additional

specimens in the cirrhitid section of the major collections containing Japanese fishes, but none has turned up. In view of the lack of additional specimens of *Isobuna japonica* (despite considerable collecting efforts in recent years in Japan), we began to suspect that this fish might not be a cirrhitid but some known species of the Anthiinae. Of all the anthiines reported from Japan, *Sayonara satsumae* was clearly the best prospect. The meristic and other features given in the original description of *P. japonicus* fit *S. satsumae* very well, but the color description given by Steindachner, "Gelblich braun mit einem, nicht scharf hervortretenden, goldgelben Fleck im Centrum der Rumpfschuppen", does not agree closely with the color drawings published by Tomiyama and Abe (1958), Katayama (1960), and Kamohara (1961). The last mentioned appears to be merely a colored copy of the line drawing published by Matsubara (1955); both illustrations incorrectly show the maxilla without scales. A color photo recently published by Masuda, Araga and Yoshino (1975: pl. 49, fig. H) does match fairly well the description of *P. japonicus*. Although the figure is small, the centers of the scales show as yellowish, in contrast to the general brownish orange color of the body. The color painting of *S. satsumae* by Tomita (Hiyama and Yasuda, 1971) also shows a diffuse golden yellow spot in the center of the body scales. We therefore now believe that the holotype of *P. japonicus* was a specimen of the species later described as *Sayonara satsumae*.

Jordan and Richardson (1910: 465) were the first to synonymize *S. mitsukurii* with *S. satsumae*. They noted, "the youth and small size (2 7/8 inches) of Smith and Pole's specimen may explain its slightly larger eye, higher dorsal fins, unbranched pectoral rays, and traces of dark cross bands." The smaller (35 mm) of the two specimens sent us by P. Fourmanoir from the Philippines, has all of the pectoral fin rays unbranched; on the larger (82 mm) one, the middle rays are branched, but the upper two and lower six rays are simple.

In the senior author's recently completed revision of *Plectranthias*, 28 species (which had been placed in 8 currently accepted genera in addition to *Plectranthias*) are recognized, 12 of which described as new. Largely because

of the characters of these new species, the morphological distinctions of the 8 genera have been eliminated. Among those synonymized with *Plectranthias* is the monotypic *Sayonara* Jordan et Seale.

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(JER: Bernice P. Bishop Museum, Box 6037, Honolulu, Hawaii 96818, U.S.A.; PCH: J. L. B. Smith Institute of Ichthyology, Rhodes University, Box 94, Grahamstown 6140, South Africa.)

従来ゴンベ科に含まれていたハナゴンベとイソブナのハナダイ亜科への再分類

John E. Randall • Phillip C. Heemstra

ハナゴンベ *Serranocirrhitis latus* とイソブナ *Isobuna japonica* は、ゴンベ科でなく、ゴンベイ亜科の魚類である。どちらも、後にハナダイ科の種として記載された種の senior synonym である。 *Serranocirrhitis* は有効属であるが、 *Isobuna* は *Plectranthias* の synonym である。両種を再記載し、図示した。