

Two New Anthiine Fishes of the Genus *Plectranthias* (Perciformes: Serranidae), with a Key to the Species.

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Abstract—The literature of the anthiine fish genus *Plectranthias* is reviewed. *P. maculatus* Fourmanoir, 1982 is a junior synonym of *Selenanthias analis* Tanaka, and *P. barroi* Fourmanoir, 1982 is reclassified in *Selenanthias*. Lee (1990) was mistaken in placing *P. kamii* Randall in the synonymy of *P. anthioides* Günther. Two new species of *Plectranthias* are described: *P. jothyi* from two specimens taken in 180–400 m off the west coast of the peninsula of Malaysia, and *P. knappi* from one specimen collected in the Philippines in 90 m. Distinctive characters of *P. jothyi* are: 17–18 soft dorsal rays, 14–15 pectoral rays, 34 lateral-line scales, two antrorse spines on ventral margin of preopercle, third dorsal spine longest, caudal fin nearly truncate with a slightly prolonged upper lobe, and upper half of body with six oblique dark bands, the last two on caudal peduncle narrow, joined basally, and connected to third band. *P. knappi* is distinct in 16 dorsal soft rays, 14 pectoral rays, 29 lateral-line scales, two antrorse spines on ventral margin of preopercle, third dorsal spine longest, caudal fin slightly emarginate and no dark markings in preservative. Range extensions are given for *P. inermis*, *P. kamii*, *P. longimanus*, *P. nanus*, *P. parini*, *P. rubrifasciatus*, and *P. winniensis*. A key to the species of the genus is provided.

Introduction

Randall (1980) revised the anthiine fish genus *Plectranthias* of the family Serranidae. He placed *Sayonara*, *Isobuna*, *Xenanthias*, *Pteranthias*, *Zalanthias*, *Serranops*, *Pelontrus*, and *Zacallanthias* in the synonymy of *Plectranthias*. He pointed out that 18 of the 30 species were known from only one or two collections, and eight of these from single specimens. He added that his revision must be considered preliminary because of the lack of material of so many of the species and the knowledge that more new species remained to be described. The paucity of specimens of most species of *Plectranthias* is due to their deep-dwelling habits (beyond SCUBA-diving depths), their small size (only a few of the larger species have been caught by hook and line), and the occurrence of many species on hard substratum (hence not often taken in trawls). The few shallow-water species, such as *P. longimanus* (Weber), *P. nanus* Randall, and *P. winniensis* (Tyler), are rarely

sighted by divers due to their small size and cryptic habits. Were it not for collections made with ichthyocide, these small species would not be well represented in museums either.

None of the larger species of *Plectranthias* are known from shallow water. It would seem that they may not be able to compete with the multitude of lie-and-wait predators that occupy the shallow reefs of the Indo-Pacific region, such as those of the Epinephelinae, Cirrhitidae, and Scorpaenidae. The larger species of the serranid genus *Liopropoma* are also restricted to deeper water (Randall & Taylor 1988). Only the small species of this genus occur in the shallows where they, like their counterparts in *Plectranthias*, are highly cryptic.

Heemstra & Anderson (1983) indicated the need for more study of *Plectranthias*, especially of internal morphology, adding that one or more of the eight genera synonymized into *Plectranthias* by Randall (1980) may eventually prove to be valid. Admittedly, some of the species of *Plectranthias* seem different enough to belong in different genera, but when all the species are considered, there seem to be no obvious generic distinctions. Important external characters such as complete or incomplete lateral line; presence or absence of antrorse spines on the ventral margin of the preopercle; posterior margin of the preopercle smooth, serrate, or partially serrate; pectoral rays simple or branched; dentition, especially with respect to canine teeth in the lower jaw; and caudal-fin shape are so variously shared that generic lines are not readily drawn.

Since Randall's 1980 revision, 14 nominal new species have been described in *Plectranthias*: *P. randalli* Fourmanoir & Rivaton, 1980; *P. altipinnatus* Katayama & Masuda, 1980; *P. maculatus* Fourmanoir, 1982; *P. barroi* Fourmanoir, 1982; *P. rubromaculatus* (Borets, 1982), *P. fijiensis* Raj & Seeto, 1983; *P. exsul* Heemstra & Anderson, 1983; *P. chungchowensis* Shen & Lin, 1984; *P. bilaticlavia* Paulin & Roberts, 1987; *P. parini* Anderson & Randall, 1991; *P. pelicieri* Randall & Shimizu, 1994; and *P. lasti*, *P. pallidus*, and *P. robertsi*, these three named by Randall & Hoese (1995). Two additional new species are described in the present paper, and two more from the western Indian Ocean await description (Heemstra & Randall, MS).

Myers & Shepard (1980) recorded a specimen of *Plectranthias fourmanoiri* from Guam. Gloerfelt-Tarp & Kailola (1984) recorded *P. japonicus* and *P. sagemiensis* from trawling survey in southern Indonesia, and Sainsbury et al. (1985) extended the range of *P. japonicus* to the North West Shelf of Australia. Wass (1984) reported *P. kamii* and *P. yamakawai* from Samoa. Randall (1986) listed *P. winniensis* as a new record from Enewetak, Marshall Islands.

Lee (1990) reviewed the serranid fishes of Taiwan; he reported 85 species, all illustrated by photographs, 81 in color. He included nine species of *Plectranthias* from the island (none with depth of capture). He placed *P. chungchowensis*, described from Taiwan, in the synonymy of *P. whiteheadi* Randall, extended the range of *P. helenae* Randall, previously known only from the Hawaiian Islands, to Taiwan, and the Indonesian *P. wheeleri* Randall to Taiwan. He placed *P. kamii* Randall in the synonymy of *P. anthioides* based on three specimens from Taiwan, 98.7–100.6 mm, that he identified as *P. anthioides*. He wrote that these are more-

or-less intermediate to *anthioides* and *kamii*. At my suggestion, Lee reexamined these three specimens and concluded that they are *P. kamii*. The differences he noted are due primarily to his specimens being smaller than those previously reported.

Lin et al. (1994) reported *Plectranthias randalli* from three specimens taken by handlining in about 80 m on deep reefs off SW Taiwan. This species was previously known from a single specimen from 300 m in the Chesterfield Islands, Coral Sea.

Randall's (1994) range extension of the diminutive *Plectranthias nanus* to the Red Sea was based on two specimens in the Academy of Natural Sciences of Philadelphia (ANSP 162460, 14.8–15.6 mm). Their dorsal soft-ray count of 16 is one higher than the known range of this count, and the anterior lateral-line scale count of 15 (only one count because of scale loss on the smaller specimen) is one lower. Other features, including the complex color pattern, correspond to the description of this wide-ranging species.

Randall & Hoese (1995) placed *Plectranthias rubromaculatus* (Borets) from Hawaiian seamounts in the synonymy of *P. kelloggi* (Jordan & Evermann).

In September, 1994, the author examined the type specimens of *Plectranthias maculatus* (holotype, MNHN 1981-1438, 92 mm SL; paratype, MNHN 1981-1439, 79 mm SL) and *P. barroi* (holotype, MNHN 1979-431, 121 mm SL; paratypes, MNHN 1979-432, 3: 91–92 mm SL; MNHN 1981-1441, 117 mm) at the Museum National d'Histoire Naturelle in Paris. *P. maculatus* proved to be a synonym of *Selenanthias analis* Tanaka. *Selenanthias* was monotypic until Randall (1995) described a second species, *S. myersi*, from Guam and the South China Sea. *P. barroi* also appears to belong in the genus *Selenanthias*. This genus was characterized by Katayama (1960). Randall (1995) added a feature of the lower jaw dentition which provides further separation from *Plectranthias*; the pair of anterior canines of the lower jaw are short, stout, and project obliquely forward and laterally.

From the above it will be noted that 12 additional valid species of *Plectranthias*, including the two described herein, have been named since Randall (1980) prepared his key to 30 species of the genus. A new key is therefore presented.

Materials and Methods

Type specimens of the new species of *Plectranthias* are deposited in the Bernice P. Bishop Museum, Honolulu (BPBM). A paratype of *P. jothyi* was to be deposited in the Fisheries Research Institute, Penang, Malaysia (FRI) but was lost in shipment between Honolulu and Malaysia.

Lengths recorded for specimens are standard length (SL). Methods of counting and measuring specimens follow Randall (1980).

Twenty-six measurements were made of the type specimens of the two new species and tabulated as percentages of the standard length. Proportional measurements in the text of the descriptions of the new species are rounded to the nearest 0.05.

Bear in mind that many of the species in the key below are represented by few specimens (often only one or two). Additional material will undoubtedly increase the range in counts and proportional measurements of these species.

Key to the Species of *Plectranthias*

- 1a. Some pectoral rays branched; lateral line complete2
 1b. No pectoral rays branched; lateral line complete or incomplete 28
 2a. Head, including maxilla and chin, almost completely scaled3
 2b. Head not completely scaled (most of snout, chin, and often the maxilla scaleless).....5
 3a. Dorsal soft rays 17; ventral margin of preopercle with two antrorse spines; posterior margin of preopercle coarsely serrate (about 26 serrae); oblique rows of scales on cheek between eye and corner of preopercle 10; pale with a dark band (or series of small dark blotches) along base of dorsal fin, deflected ventrally as it passes beneath posterior soft portion of fin, ending on midside of caudal peduncle (190–290 m, Arabian Sea SW of Socotra) *intermedius*
 3b. Dorsal rays 14–16; no antrorse spines on ventral margin of preopercle; preopercle finely serrate (more than 30 serrae on posterior margin of adults); diagonal row of scales on cheek between eye and corner of preopercle 6–7; color not as in 3a4
 4a. Caudal fin rounded to truncate with rounded corners; no prolonged dorsal rays; canine teeth in lower jaw absent or very small; lower-limb gill rakers 10–12; orange-red, the scale centers yellow; no red bars on body or red spot on caudal fin (about 200 m, Japan to Indonesia and NW Australia)..... *japonicus*
 4b. Caudal fin emarginate, the second upper ray usually elongate; second dorsal soft ray prolonged as a filament; a pair of stout canine teeth at each corner at front of lower jaw, and another pair on side of jaw about one-third distance from the front; lower-limb gill rakers 14–17; red bars on body and a red spot on upper base of caudal fin in life (100–360 m, Hawaiian Islands, Japan, and New Caledonia) *kelloggi*
 5a. Body elongate, the depth 3.4 in SL; eye very large, the orbit diameter 2.9 in head; no canine teeth in jaws; margin of preopercle smooth; color mainly yellow (one 61-mm specimen, 360 m, Isle of Pines, New Caledonia) *megalophthalmus*
 5b. Body not elongate, the depth 2.2–3.2 in SL; eye not very large, the orbit diameter 3.0–4.75 in head; canine present in both jaws; posterior margin of preopercle usually serrate (smooth in two species); color (when known) not mainly yellow6
 6a. Lateral-line scales 37–46 (except one of 19 *exsul* with 36 on one side) ..7
 6b. Lateral-line scales 27–36 10
 7a. Dorsal soft rays 18; two antrorse spines on ventral margin of preopercle; red in life without bars or bands, the scale centers paler than edges (183 m, Phoenix Islands)..... *taylori*

- 7b. Dorsal soft rays 15–17; no antrorse spines on ventral margin of preopercle (except *exsul* with 0–1); two red bars or one or two oblique red bands on body in life..... 8
- 8a. Dorsal soft rays 17; second soft dorsal and second branched caudal rays not filamentous; pectoral rays 14; gill rakers 20; body moderately deep, the depth 2.3 in SL; third dorsal spine longest; two oblique red bands on body and a third narrower one from eye to thorax; a small red spot at upper base of caudal fin (80–300 m, Chesterfield Islands in the Coral Sea and Taiwan) *randalli*
- 8b. Dorsal soft rays 15–16; second soft dorsal and second branched caudal rays filamentous; pectoral rays 15–17; gill rakers 26–31; body not deep, the depth 2.5–3.0 in SL; fourth or fifth dorsal spine longest; color not as in 8a..... 9
- 9a. Scales dorsally on head not extending anterior to nostrils; two broad red bars on body in life, one below posterior half of spinous portion of dorsal fin and one below posterior half of soft portion of dorsal fin and adjacent caudal peduncle (260–272 m, Easter Island and Sala y Gómez Ridge)..... *parini*
- 9b. Scales dorsally on head extending nearly to upper lip except for triangular premaxillary groove; a broad oblique red band below posterior half of soft portion of dorsal fin (enclosing posterior part of lateral line), narrowing to end posteriorly at ventral edge of caudal peduncle (140–225 m, Juan Fernandez Island and Nazca Ridge) *exsul*
- 10a. Margin of preopercle smooth..... 11
- 10b. Posterior margin of preopercle serrate 12
- 11a. Body depth 2.7 in SL; dorsal soft rays 15; lateral-line scales 32; supra-maxilla absent; longest dorsal spine 3.3 in head; orange with yellow spots in life (one 74.7-mm specimen, 293 m, Fiji) *fijiensis*
- 11b. Body depth 3.05 in SL; dorsal soft rays 14; lateral-line scales 30; supra-maxilla present; longest dorsal spine 2.9–3.0 in head; life color unknown (202–370 m, NW Australia and Queensland) *lasti*
- 12a. No antrorse spines on ventral margin of preopercle 13
- 12b. Two antrorse spines on ventral margin of preopercle 16
- 13a. Dorsal soft rays 14; lower-limb gill rakers 11–12; a narrow blackish stripe from front of upper lip to eye; a faint dusky stripe from eye across upper side of body, and a faint small dusky spot at midbase of caudal fin (stripe and spot more evident on smaller individuals) (90–192 m, Western Australia)..... *alleni*
- 13b. Dorsal soft rays 15–16; lower-limb gill rakers 15–17; color not as in 13a 14
- 14a. Top of head scaled nearly to front of snout; a blackish spot about two-thirds size of eye posteriorly on caudal peduncle (110–155 m, New Zealand and New South Wales) *maculicauda*
- 14b. Top of head scaled to posterior nostrils; no blackish spot posteriorly on caudal peduncle..... 15

- 15a. Lower-limb gill rakers 17; no scales on maxilla; longest dorsal spine 2.0–2.5 in head; caudal fin slightly emarginate without filamentous rays; two slightly oblique orangish brown bars on body in preservative (perhaps red in life), the first commencing on posterior half of spinous portion of dorsal fin, and the last on posterior third of soft portion of fin (164–270 m, Kermadec Islands) *bilaticlavina*
- 15b. Lower-limb gill rakers 13–14; scales present on maxilla; longest dorsal spine 2.6–3.1 in head; caudal fin emarginate, the second to fourth branched rays filamentous; tan, shading to silvery white ventrally, with some indistinct small orange-yellow spots dorsally on body; first four lateral-line scales and adjacent scales above dusky (220–240 m, Queensland)..... *robertsi*
- 16a. Lateral-line scales 31–35 (*whiteheadi* with 30–35) 17
- 16b. Lateral-line scales 28–30 22
- 17a. Dorsal soft rays 16; body very deep, the depth 2.35 in SL; a long cirrus from behind tip of each dorsal spine, the longest on third spine one-third spine length (one 81.7-mm specimen, 140–180 m, Madagascar) *bauchotae*
- 17b. Dorsal soft rays 17–18 (except *yamakawai* rarely with 16); body depth 2.4–2.9 in SL; cirri, if present on dorsal spines, not long 18
- 18a. Caudal fin rounded; red with some indistinct irregular blackish blotches dorsally on body; a median blackish band on nape (one 83-mm specimen, Sulawesi) *anthioides*
- 18b. Caudal fin emarginate or truncate with a slightly prolonged upper lobe; color not as in 18a..... 19
- 19a. Third dorsal spine distinctly longest 20
- 19b. Fourth or fifth dorsal spine longest 21
- 20a. Pectoral rays 14–15; scales above lateral line to origin of dorsal fin 4; six irregular oblique dark bands on upper half of body, the second and third joined ventrally, as are the last three (180–400 m, west coast of Malay Peninsula) *jothyi*, new species
- 20b. Pectoral rays 13; scales above lateral line to origin of dorsal fin 5 1/2; light red with two longitudinal rows of diffuse blackish blotches, the upper row on body of eight blotches (183–350 m, western Pacific to Society Islands)..... *kamii*
- 21a. Body moderately deep, the depth 2.4–2.7 in SL; pectoral rays 13; large for the genus (to 200 mm SL); red, suffused with yellow dorsally, yellow ventrally and on fins, with numerous small dark brown blotches dorsally on head and body (also on much of dorsal fin and base of caudal fin); a large pale-edged red spot in middle of body just below lateral line (about 200 m, Ryukyu Islands, Taiwan, and Samoa) .. *yamakawai*
- 21b. Body not deep, the depth 2.85–3.0 in SL; pectoral rays 14–15; not a large species (to 100 mm SL); pink with two rows of dark red blotches dorsally on body, one above and one below lateral line; fins yellow (236 m, Kai Islands, Indonesia; and Taiwan) *whiteheadi*

- 22a. Fourth dorsal spine longest (though third nearly as long); six sharply defined bright red bars in life, the first from nape across opercle, the last two on caudal peduncle (may be replaced by spots) (100–200 m, New Caledonia and Tuamotu Archipelago) *rubrifasciatus*
- 22b. Third dorsal spine longest; color not as in 22a 23
- 23a. Inner row of teeth on side of lower jaw about twice as long as outer rows; two sharply defined red bars on body, the first from edge of dorsal fin where most deeply notched and the second on caudal peduncle (one 61.8-mm specimen, 200 m, New Caledonia) *retrofasciatus*
- 23b. Inner row of teeth on lower jaw about equal in length to those of outer rows; color not as in 23a 24
- 24a. Scales above lateral line to origin of dorsal fin 4 1/2–5; caudal fin emarginate, the caudal concavity 4–6 in head; whitish with irregular orange-red and yellow bars and spots which interconnect variously dorsally on body (110–168 m, Hawaiian Islands and Taiwan) *helenae*
- 24b. Scales above lateral line to origin of dorsal fin 3–3 1/2; caudal fin slightly emarginate, the caudal concavity 10.5–12 in head (caudal-fin shape not known for *knappi*) 25
- 25a. Pectoral rays 14; lower-limb gill rakers 10; body depth 2.45 in SL (one 66-mm specimen, 90 m, Philippines) *knappi*, new species
- 25b. Pectoral rays 13; lower-limb gill rakers 11–12; body depth 2.5–2.85 in SL 26
- 26a. Third dorsal spine decidedly longest, 1.55–2.2 in head; some scales ventrally on head and gill membranes (58.5–210 m, Atlantic coast of Florida and West Indies) *garrupellus*
- 26b. Third dorsal spine 1.95–2.45 in head; no scales ventrally on head or gill membranes 27
- 27a. Third dorsal spine 1.95 in head; caudal fin 1.6 in head, the rays not exerted; color in preservative entirely pale (one 76-mm specimen, 220 m, Queensland) *pallidus*
- 27b. Third dorsal spine 2.35–2.45 in head; caudal fin 1.85–1.9 in head, the rays exerted; whitish with large irregular orange-red blotches suffused with yellow (100–236 m, Indonesia and Taiwan) *wheeleri*
- 28a. Lateral line incomplete, 12–22 tube-bearing scales in anterior series .. 29
- 28b. Lateral line complete, 25–31 tube-bearing scales to caudal-fin base 33
- 29a. Third dorsal spine longest with a long pennant-like flap from behind spine tip; no antrorse spines on ventral margin of preopercle; posterior margin of preopercle smooth or with only a few weak serrae; pectoral fins very long, reaching posterior to rear base of anal fin, 2.2–2.5 in SL (15–60 m, Philippines and New Guinea to Mauritius) *inermis*
- 29b. Fourth dorsal spine longest; one or two antrorse spines on ventral margin of preopercle; posterior margin of preopercle strongly serrate; pectoral fins not very long, 2.4–3.2 in SL 30

- 30a. One antrorse spine on ventral margin of preopercle (may be poorly developed); scales present on maxilla; top of head scaled anteriorly to nostrils; oblique rows of scales on cheek 6; body depth 2.55–2.7 in SL; longest dorsal spine 1.9–2.15 in head; red in life with scattered irregular whitish blotches (no dark markings) (46–64 m, Seychelles) ... *gardineri*
- 30b. Two antrorse spines on ventral margin of preopercle; no scales on maxilla; top of head not scaled anterior to mid-interorbital space; oblique rows of scales on cheek 4 or 5; body depth 2.8–3.6 in SL; longest dorsal spine 2.3–3.0 in head; dark markings often present on head and body 31
- 31a. Pectoral rays 12–13; tube-bearing lateral-line scales 12–15; coarse serrae on subopercle 2–7, on interopercle 1–8; pale with large brown blotches interconnecting to form irregular bars; a small dark brown spot at rear base of dorsal fin, one at upper edge of caudal peduncle just in front of caudal-fin base, one at rear base of anal fin, and one on lower edge of caudal peduncle between last two spots (less distinct small dark spots along base of dorsal and anal fins) (6–73 m, western Pacific to western Indian Ocean) *longimanus*
- 31b. Pectoral rays 14–18; tube-bearing lateral-line scales 14–22 (usually 16 or more); weak serrae on subopercle 0–2 (one of 46 *nanus* with 4), and none on interopercle (except one *P. nanus* with 1); color not exactly as in 31a (that of *P. nanus* very similar) 32
- 32a. Dorsal soft rays 13–15; pectoral rays 14–16 (usually 14 or 15); color as in 31a except a vertical brown line on caudal-fin base separated by a pale zone from the two dark spots posteriorly on caudal peduncle (6–55 m, Indo-Pacific) *nanus*
- 32b. Dorsal soft rays 16–17; pectoral rays 16–18 (usually 17); pale in preservative (in life, mottled orange anteriorly, becoming red and white posteriorly, with a red spot at origin of dorsal fin and a white spot at rear base of fin) (23–58 m, Indo-Pacific) *winniensis*
- 33a. Third dorsal spine longest, with a pennant-like flap near tip 34
- 33b. Fourth or fifth (usually the fourth) dorsal spine longest, without a conspicuous flap at tip 37
- 34a. Dorsal soft rays 13–15; body depth 2.5–2.6 in SL; longest dorsal spine 1.6–1.8 in head; pale in preservative with dark pigment on lateral-line scales 9–16 (73–237 m, Kenya) *morgansi*
- 34b. Dorsal soft rays 16–18; body depth 2.7–2.9 in SL; longest dorsal spine 2.05–2.4 in head; color not as in 34a 35
- 35a. Branched caudal rays 13; caudal fin slightly rounded; dorsal soft rays 18; dark red with yellow spots, shading to white ventrally (one 42-mm specimen, 40 m, Izu Peninsula, Honshu) *altipinnatus*
- 35b. Branched caudal rays 15; caudal fin emarginate; dorsal soft rays 16–17; color not as in 35a 36

- 36a. No antrorse spines on ventral margin of preopercle; oblique rows of scales on cheek from eye to corner of preopercle about 7; scales dorsally on head nearly reaching nostrils; caudal fin emarginate with filamentous lobes; gill rakers 6 + 13; pale in preservative with four irregular longitudinal rows of large brown blotches (one 82.4-mm specimen, 49–63 m, Gulf of Oman) *vexillarius*
- 36b. Two or three antrorse spines on ventral margin of preopercle; oblique rows of scales on cheek from eye to corner of preopercle 4 1/2; scales dorsally on head not reaching into interorbital space; caudal fin slightly emarginate without filamentous lobes; gill rakers 5 + 12; red, the head with irregular yellow bands, the body with narrow vertical bars of lavender, pale blue, and white (50–70 m, Mauritius) *peliciieri*
- 37a. Caudal fin rounded; serrae on posterior margin of preopercle 1–4; oblique rows of scales on cheek between eye and corner of preopercle 4–5; dark bars on body; a large black spot at base of anal fin 38
- 37b. Caudal fin truncate to emarginate; serrae on posterior margin of preopercle 18–29; oblique rows of scales on cheek between eye and corner of preopercle 6; no dark bars on body; no black spot at base of anal fin..... 39
- 38a. Dorsal soft rays 15; branched caudal rays 15; lower six pectoral rays notably thickened (about twice as thick as shorter upper rays); palatine teeth present; lateral-line scales 29–30; top of head scaled anteriorly to nostrils; black spot at anal-fin base from third spine to third soft ray; a large black spot at base of pectoral fins, but none on dorsal fin or abdomen (3–18 m, Rapa) *cirrhitoides*
- 38b. Dorsal soft rays 16–18; branched caudal rays 13–14; lower pectoral rays only slightly thickened; palatine teeth absent; lateral-line scales 25; top of head scaled nearly to mid-interorbital space; black spot at anal-fin base on last four soft rays; no black spot at pectoral-fin base but one in spinous portion of dorsal fin, one at rear base of soft portion of fin, and one on abdomen in front of anus (5–44 m, Oceania and Christmas Island, Indian Ocean) *fourmanoiri*
- 39a. Two antrorse spines on ventral margin of preopercle; a few serrae on margin of subopercle and interopercle; caudal fin emarginate with upper lobe prolonged, but without filamentous rays; whitish, densely mottled with light red and yellow, large blotches resulting from concentrations of red and yellow (50 to at least 120 m, Honshu, Okinawa, and Indonesia)..... *sagamiensis*
- 39b. No antrorse spines on ventral margin of preopercle; no serrae on margin of subopercle and interopercle; caudal fin truncate or emarginate with filamentous rays; color not as in 39a 40
- 40a. Caudal fin truncate without filamentous rays; branched caudal rays 15; no filamentous dorsal rays; rose red with irregular blackish patches on dorsal half of body (one 62-mm specimen, 236 m, Kai Islands, Indonesia)..... *megalepis*

- 40b. Caudal fin emarginate with filamentous rays; branched caudal rays 14; some anterior dorsal soft rays filamentous; a series of dark blotches dorsally on head and body; life color unknown 41
- 41a. Scales dorsally on head nearly reaching mid-interorbital space; longest dorsal spine 2.35–2.45 in head; pale in preservative with small dark blotches dorsally on head and body, four at base of dorsal fin, those on nape transversely linear; two larger dark blotches on side of body just below lateral line (183–185 m, Philippines) *foresti*
- 41b. Scales dorsally on head nearly reaching nostrils; longest dorsal spine 2.15–2.25 in head; eight small dark blotches dorsally on head and body, four at base of dorsal fin; two irregular dusky bars on lower two-thirds of caudal peduncle, and a small dusky spot at midbase of caudal fin (250 m, Madagascar) *maugei*

***Plectranthias jothyi*, n. sp.**

Fig. 1, Table 1

HOLOTYPE: BPBM 30230, male, 92.0 mm SL, Strait of Malacca, northern part off west coast of Peninsular Malaysia, 180–400 m, trawl, A.A. Jothy, 14 April 1972.

DIAGNOSIS: Dorsal rays X,17–18; pectoral rays 14–15; lateral-line scales 34; oblique rows of scales on cheek 7; scales dorsally on head extending forward to midinterorbital space; no scales on maxilla or ventrally on head; posterior margin of preopercle serrate, the ventral margin with 2 antrorse spines; subopercle and

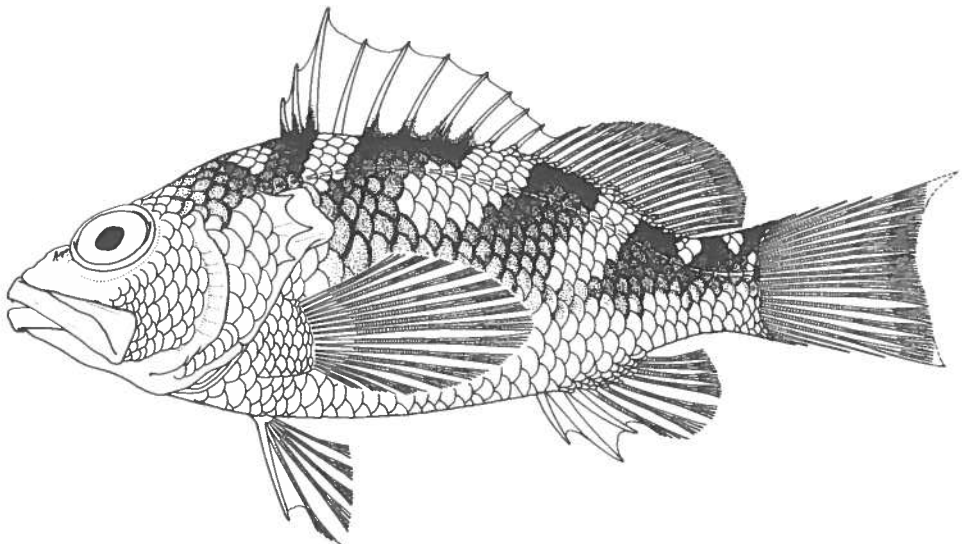


Figure 1. Holotype of *Plectranthias jothyi*, BPBM 30230, 92 mm SL, Strait of Malacca, Malaysia.

interopercle not serrate; gill rakers 18–19; body depth 2.7–2.9 in SL; third dorsal spine longest, 2.25–2.4 in head; caudal fin slightly emarginate with a prolonged upper lobe; pale with six oblique dark bars on upper half of body, the posterior two narrow.

DESCRIPTION: Dorsal rays X,18 (17), anal rays III,7; all dorsal and anal soft rays branched, the last to base; pectoral rays 14 (15), all rays branched except uppermost; pelvic rays 1,5; branched caudal rays 8 + 7; upper and lower segmented simple caudal rays 3; upper and lower procurrent caudal rays 5; lateral-line scales 34; scales above lateral line to origin of dorsal fin 4; scales above lateral line to base of middle dorsal spines 3; scales below lateral line to origin of anal fin 14; oblique rows of scales on cheek 7; circumpeduncular scales 16; gill rakers 6 + 12 (6 + 13) (2 + 10 developed); pseudobranchial filaments 25 (33); branchiostegal rays 7; vertebrae 10 + 16; supraneural (predorsal) bones 3, their arrangement with neural spines and dorsal pterygiophores as follows: 0/0 + 0/2/1 + 1/1/1/, where 0 is a supraneural bone, / a neural spine, and numerals are the number of dorsal spines borne by each pterygiophore (Ahlstrom et al. 1976).

Body moderately deep, the depth 2.9 (2.7) in SL, and compressed, the width 1.8 (1.75) in depth; dorsal profile of head nearly straight; head length 2.3 (2.25) in SL; snout length 4.05 (4.0) in head; orbit diameter 3.9 (4.15) in head; interorbital space slightly concave, the least bony width 4.1 in head; least depth of caudal peduncle 3.45 (3.5) in head; caudal peduncle length 2.5 in head.

Mouth large, the maxilla reaching posterior to a vertical at rear edge of pupil, the upper jaw length 2.05 (2.1) in head; supramaxilla present; mouth terminal and oblique, the gape forming an angle of about 25° to horizontal axis of body; upper jaw with a band of villiform teeth in about eight irregular rows anteriorly, narrowing to four or five along most of side of jaw, and ending in one or two rows; inner teeth of villiform band at front of jaw enlarged and inwardly depressible; a large incurved canine tooth on each side at front of upper jaw (two on one side of holotype), the symphyseal gap between canines one-third orbit diameter; lower jaw with a band of villiform teeth in about five rows anteriorly, narrowing to two along most of side of jaw, the inner teeth more than twice as long as outer, erect but inwardly depressible; a single row of teeth posteriorly in jaw; two inner symphyseal teeth of lower jaw enlarged and inwardly depressible; no canine teeth anteriorly in lower jaw, but a large incurved canine nearly half way back in jaw (two on one side of holotype); a narrow band of villiform teeth forming a V-shape on vomer, with two to three rows at apex of the V, narrowing to one row posteriorly; a narrow band of villiform teeth on palatines in one to two irregular rows. Tongue slender and short with rounded tip, the dorsal surface smooth. Longest gill raker at angle, longer than longest gill filaments on first gill arch and half orbit diameter.

Opercle with three flat spines, the middle one largest and most posterior, slightly closer to lower than upper spine; upper opercular spine more anterior than lower, both acute; opercular flap pointed; posterior edge of preopercle with 13–16 (27–28) serrae, the corner irregular, the ventral margin with two retrorse

Table 1. Proportional measurements of type specimens of species of *Plectranthias* expressed as percentages of the Standard Length

	<i>P. jothyi</i>		<i>P. knappi</i>
	holotype	paratype	holotype
Standard Length (mm)	92.0	158.0	66.0
Body depth	34.8	37.3	40.7
Body width	19.2	21.5	21.7
Head length	43.6	44.8	45.5
Snout length	10.8	11.2	9.6
Orbit diameter	11.1	11.1	13.6
Interorbital width	4.1	4.1	4.6
Upper jaw length	21.2	21.5	21.4
Caudal peduncle depth	12.7	12.9	13.5
Caudal peduncle length	17.4	17.8	19.5
Predorsal length	39.1	40.8	43.4
Preanal length	69.2	70.0	66.4
Prepelvic length	38.4	37.9	37.5
Dorsal fin base	50.0	52.9	35.5
First dorsal spine	6.5	6.5	7.6
Longest dorsal spine	19.5	18.4	21.1
Tenth dorsal spine	8.8	8.8	10.4
Longest dorsal ray	19.5	18.4	broken
Anal fin base	16.3	15.9	16.2
First anal spine	9.3	9.2	13.6
Second anal spine	19.6	17.5	24.3
Third anal spine	16.2	15.8	16.6
Longest anal ray	24.4	broken	23.0
Caudal fin length	broken	29.2	broken
Pectoral fin length	32.2	31.5	broken
Pelvic spine length	15.0	14.8	17.1
Pelvic fin length	23.9	22.4	26.7

spines; margin of subopercle and interopercle smooth; free edge of suprascapular bone smooth.

Nostrils in front of upper fourth of eye, the anterior in a membranous tube distinctly higher posteriorly, the posterior larger but a slit due to membrane nearly covering aperture from both sides; posterior nostril slightly more than a nostril diameter from edge of orbit.

Lateral line complete, broadly arched over pectoral fin, its highest point below base of seventh dorsal spine, then paralleling dorsal contour of back to straight peduncular section; scales ctenoid; scales progressively smaller anteriorly on dorsal part of head, extending forward to middle of interorbital space; scales on cheek extending forward to below anterior fourth of eye; no scales on maxilla, outer narrow flange of preopercle, or ventral part of head except on interopercle; small scales basally on dorsal fin posterior to fourth dorsal spine, those on soft portion reaching more than one-third distance to margin (many scales missing); small scales on anal fin reaching half way to margin; too many small scales missing from base of caudal fin and paired fins to determine their full extent.

Origin of dorsal fin over base of third lateral-line scale; first dorsal spine short, 6.7 in head, slightly more than half length of second dorsal spine; third dorsal spine clearly the longest, 2.25 (2.4) in head; tenth dorsal spine 4.95 (5.1) in head; fourth dorsal soft ray longest, 2.2 (2.5) in head; dorsal and caudal rays appear to be filamentous at their tips, but this may be due to damage to these fins; origin of anal fin below base of second dorsal soft ray; first anal spine 4.7 (4.9) in head; second anal spine longest, 2.2 (2.55) in head; third anal spine 2.7 (2.85) in head; second anal soft ray longest, 1.8 in head; caudal fin of holotype with many rays broken; fin of paratype slightly emarginate with a prolonged upper lobe (first branched ray longest, the second and third also elongate), the fin length 1.55 in head, the caudal concavity 8.15 in head; pectoral fins pointed, the seventh or eighth ray longest, 1.35 (1.4) in head, 3.1 (3.2) in SL; origin of pelvic fins on a vertical through base of first dorsal spine; pelvic fins not reaching anus, their length 1.8 (1.85) in head.

Color in alcohol light brown with six diagonal blackish bars on upper half of body, the first from above anterior part of lateral line to nape and anterior first two dorsal spines, the second from base of fifth to eighth dorsal spines, the third from second to eighth dorsal soft rays, the fourth from twelfth to sixteenth dorsal soft rays, the narrow fifth from center of dorsal edge of caudal peduncle and the even narrower sixth at upper base of caudal fin; second and third dark bars joined ventrally, as are the last three; narrow diagonal spaces between dark bars paler than rest of body; fins pale except for dark bars extending a short distance into basal part of dorsal fin; a small dark spot slightly below center of caudal-fin base. Color in life unknown.

REMARKS: This species is named in honor of Alexander A. Jothy, formerly of the Fisheries Research Institute of Penang, Malaysia, who collected both specimens.

Plectranthias jothyi appears to have no closely related species among those of the genus. It shares the same meristic data with *P. anthioides* (Günther), known from a single specimen from Sulawesi, except for the number of oblique rows of scales on the cheek (7 for *jothyi*, 5 for *anthioides*), and the dentition and scalation of the head are very similar. The two species differ as follows: only the uppermost pectoral ray unbranched on *jothyi* (upper two and lowermost pectoral rays unbranched on *anthioides*); margin of interopercle smooth on *jothyi* (serrate on *anthioides*); head of *jothyi* larger, 2.25–2.3 in SL (2.5 in SL of *anthioides*); third dorsal spine shorter on *jothyi*, 2.25–2.4 in head (2.05 in head of *anthioides*); second anal spine shorter on *jothyi*, 2.2–2.55 in head (2.05 for *anthioides*); pelvic fins shorter in *jothyi*, 1.8–1.85 in head (1.75 in *anthioides*); caudal fin emarginate with prolonged upper lobe in *jothyi* (rounded in *anthioides*), and in color. *P. anthioides* is described as having indistinct blackish spots on the back and a blackish band along the median line of the nape.

Plectranthias jothyi bears some resemblance to *P. kamii*. The latter differs in having 13 instead of 14 or 15 pectoral rays; 5 1/2 scales above the lateral line to the origin of the dorsal fin (4 in *jothyi*); and in color. *P. kamii* has three series of

diffuse dark blotches, eight in the series along the back, the last four of the second series extending as faint bars to the ventral part of the body.

Plectranthias knappi, n. sp.

Fig. 2, Table 1

HOLOTYPE: USNM 219865, mature female, 66.0 mm SL, Philippine Islands, Visayan Sea between northern Negros and Masbate Island, southwest of Caruruan Point (11°38'0"N, 123°52'38"E), 89.7 m, 24.5-m otter trawl, "Sting Ray V", L. W. Knapp, 5 June 1978.

DIAGNOSIS: Dorsal rays X,16; pectoral rays 14; lateral-line scales 29; oblique rows of scales on cheek 6; scales extending dorsally on head to nostrils; maxilla and ventral part of head naked; posterior margin of preopercle serrate, the ventral margin with 2 antrorse spines; a few serrae on subopercle and interopercle; gill rakers 16; body depth 2.45 in SL; eye large, 3.35 in head; third dorsal spine longest, 2.15 in head; color in alcohol uniform light yellowish brown.

DESCRIPTION: Dorsal rays X,16; anal rays III,7; pectoral rays 14, all branched except uppermost; pelvic rays I,5; branched caudal rays 8 + 7; upper and lower segmented simple caudal rays 3; upper and lower procurrent caudal rays 5; lateral-line scales 29; scales above lateral line to origin of dorsal fin 3; scales above lateral line to base of middle dorsal spine 2; scales below lateral line to origin of anal fin 10; diagonal scale rows on cheek 6; circumpeduncular scales 14; gill rakers 6 + 10 (2 + 8 developed); pseudobranchial filaments 18; branchiostegal rays 7; vertebrae 10 + 16; supraneural (predorsal) bones 3, their arrangement with neural spines and dorsal pterygiophores as follows: 0/0 + 0/2/1 + 1/1/1/, where 0 is a supraneural bone, / a neural spine, and numerals the number of dorsal spines borne by each pterygiophore (Ahlstrom et al., 1976).

Body deep, the depth 2.45 in SL, and compressed, the width 1.85 in depth; dorsal profile of head slightly convex; head length 2.2 in SL; snout length 4.75 in head; eye large, the orbit diameter 3.35 in head; interorbital space flat, the least bony width 9.9 in head; depth of caudal peduncle 3.4 in head.

Mouth large, the maxilla extending nearly to a vertical at rear edge of orbit, the upper jaw length 2.1 in head; supramaxilla present; mouth terminal and slightly oblique, the gape forming an angle of about 20° to horizontal axis of body; upper jaw with a band of small villiform teeth in about seven or eight rows anteriorly, narrowing to one or two rows posteriorly; a few inner depressible medial teeth at front of jaw enlarged; a moderate canine tooth anteriorly on each side of upper jaw, the symphyseal gap 2.35 in orbit diameter; lower jaw with a narrower band of small villiform teeth, in about five to six rows anteriorly; no canine teeth at front of lower jaw; a close-set pair of canine teeth about half way back on side of lower jaw; a V-shaped band of small villiform teeth on vomer, the apex with about five rows of teeth, narrowing posteriorly on each side to two rows; a band of small villiform teeth in three to four rows on palatines. Tongue slender with rounded tip, the dorsal surface smooth. Gill rakers not long, the

longest on lower limb adjacent to one at angle slightly shorter than longest gill filaments on first gill arch, 3.3 in orbit diameter.

Anterior nostril in front of center of eye, in a membranous tube which is higher posteriorly; posterior nostril large and ovate with a low fleshy rim, separated from edge of orbit by about a nostril diameter. A large pore at lower edge of suborbital below posterior nostril and another below anterior edge of orbit; five prominent mandibular pores, the last just in front of anterior free edge of preopercle.

Three flat spines on opercle, the middle one largest, most posterior, closer to lower than upper spine, and slightly upcurved; upper spine more anterior than lower, both acute; posterior margin of preopercle with 22 serrae, the short lower margin with two antrorse spines; a few indistinct serrae on margin of subopercle and interopercle; free edge of suprascapular bone with a few irregular serrae; opercular flap pointed, projecting diagonally upward.

Lateral line complete, highly arched over pectoral region, paralleling dorsal contour of body, the last pored scale at base of caudal fin; scales moderately ctenoid; scales dorsally on head extending forward to nostrils, only slightly smaller anteriorly, those across middle interorbital space in one to two rows; small scales on suborbital extending forward to below anterior edge of pupil; maxilla and ventral part of head naked; small scales basally on all fins (many scales lost).

Origin of dorsal fin above second lateral-line scale; first dorsal spine 6.0 in head length, about half length of second spine; third dorsal spine distinctly longest,

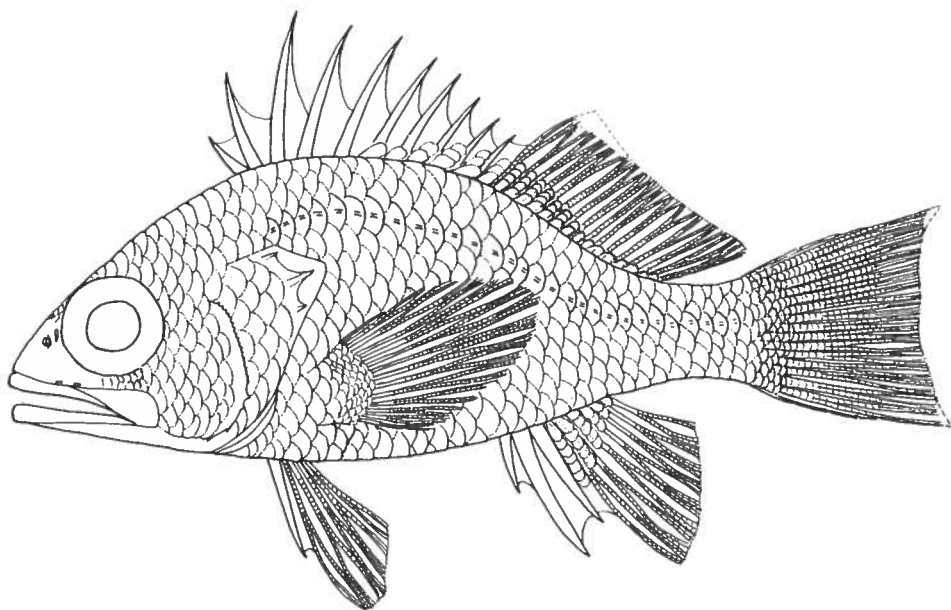


Figure 2. Holotype of *Plectranthias knappi*, USNM 21985, 66 mm SL, Visayan Sea, Philippines.

2.15 in head; tenth dorsal spine 4.4 in head; anterior dorsal soft rays broken; origin of anal fin below base of third dorsal soft ray; first anal spine 3.35 in head length; second anal spine longest, 1.85 in head; third anal spine 2.75 in head; second anal soft ray longest, 2.0 in head; caudal-fin rays broken, the fin shape probably slightly emarginate; middle pectoral rays broken, the fin probably longer and more pointed than illustrated; origin of pelvic fins anterior to base of pectoral fins, on a vertical below first lateral-line scale; pelvic fins just reaching edge of anus, their length 1.7 in head.

Color in alcohol light yellowish brown; life color unknown.

REMARKS: This species is named in honor of Leslie W. Knapp of the National Museum of Natural History who collected the holotype and recognized it as probably representing an undescribed species.

Plectranthias knappi is very closely related to *P. wheeleri* Randall, the two having many characters in common. *P. knappi* differs in having 14 instead of 13 pectoral rays, a larger eye (3.35 in head, compared to 3.75 for a 70.7-mm paratype of *wheeleri*), a greater body depth (2.45 in SL, versus 2.6–2.8 for *wheeleri*), longer third dorsal spine (2.15 in head, compared to 2.45–2.85 in *wheeleri*), and a longer second anal spine (1.85 in head, versus 2.25–3.05 for *wheeleri*). The above comparisons with the holotype of *knappi* were made with the two type specimens of *wheeleri*, 70.7 and 82.8 mm SL, and two reported from Taiwan by Lee (1990), 78.1 and 78.9 mm SL. Sin-Che Lee kindly provided measurements of the third dorsal and second anal spines of these specimens.

Range Extensions for Species of *Plectranthias*

Pierre Fourmanoir collected two specimens of *Plectranthias kamii* from 280 m off Moorea and provided a color photograph, thus establishing the presence of this species in the Society Islands. One was deposited in the Bishop Museum (BPBM 24784, 209 mm), and the other, 191 mm SL, sent to the Museum National d'Histoire Naturelle in Paris.

The author and Daniel Pelicier collected three specimens of *Plectranthias inermis* (BPBM 24777, 37–40 mm) from 57 m off Mauritius.

Joseph Poupin sent fishes collected in French Polynesia to the Bishop Museum which included a specimen of *Plectranthias rubrifasciatus* (BPBM 35809, 71 mm), otherwise known only from one 49-mm specimen taken in 100 m in New Caledonia. This second specimen of the species was taken by trap in 200 m. It is very unusual for the genus in having XI dorsal spines, hence probably abnormal in this count.

Louis H. DiSalvo provided the second specimen of *Plectranthias parini* Anderson and Randall (BPBM 33460, 164 mm) (Fig. 3). It was collected by hook and line from a depth of 230 m at Easter Island (27°S, 109.2°W). This species was previously known only from the holotype taken by trawl in 260–272 m on the Sala y Gómez Ridge at 25°S, 97.5°W.

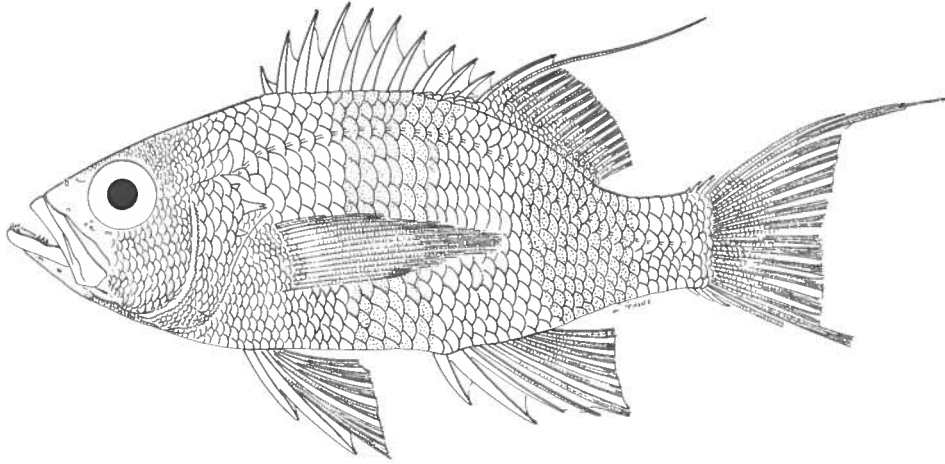


Figure 3. *Plectranthias parini*, BPBM 33460, 164 mm, Easter Island.

Additional specimens of *P. longimanus* were collected at Ulithi, Caroline Islands (BPBM 21111, 19 mm); Sumilon Island, Philippines (BPBM 21088, 22 mm); Batangas, Luzon (BPBM 21089, 26 mm; BPBM 23464, 34 mm); and Seychelles (BPBM 35570, 2: 11–19 mm).

The range of *P. nanus* is extended to Tahuata, Marquesas (BPBM 16429, 19 mm); Osprey Reef, Coral Sea (BPBM 31762, 2: 12–22 mm); and Bougainville Reef, Coral Sea (BPBM 31789, 2: 15–19 mm).

Localities of *P. winniensis* not reported previously include Enewetak, Marshall Islands (BPBM 19626, 25 mm); Kwajalein, Marshall Islands (BPBM 19964, 30 mm); Bega, Fiji (BPBM 20866, 2: 29–64 mm); and Bougainville Reef, Coral Sea (BPBM 31790, 24 mm).

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