

Parapercis phenax* from Japan and *P. banoni* from the Southeast Atlantic, New Species of Pinguipedid Fishes Previously Identified as *P. roseoviridis

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John E. Randall and Takeshi Yamakawa (2006) *Parapercis phenax* from Japan and *P. banoni* from the south-east Atlantic, new species of pinguipedid fishes previously identified as *P. roseoviridis*. *Zoological Studies* 45(1): 1-10. The pinguipedid fish *Parapercis phenax*, formerly identified as *P. roseoviridis* (Gilbert), is described as a new species from 42 specimens, 87.2-179.7 mm SL, taken by trawl in 322-600 m on the Kyushu-Palau Ridge. It differs from the endemic Hawaiian *P. roseoviridis* in having 60-64 lateral-line scales (vs. 54-57), 10-13 lower-limb gill rakers (vs. 8-10), and in larger size (largest *roseoviridis*, 159 mm SL). *Parapercis banoni*, trawled in 220-235 m on the Valdivia Bank in the southeastern Atlantic and first identified as *P. roseoviridis* by Bañón et al. (2000), is described from 4 specimens, 148-191.5 mm SL. It is closest to *P. phenax*, but differs in having a broader interorbital width (5.5-5.7% SL vs. 3.2-5.1% SL for *phenax*), shorter pelvic fins (17.0-17.6% SL vs. 18.3-23.1% SL for *phenax*), and no black pigment on the spinous portion of the dorsal fin. *Parapercis maritzi* Anderson (1992), described from 12 specimens, 131-167 mm SL, collected in 80-200 m off Transkei and KwaZulu-Natal, South Africa, represents a 4th species of the *roseoviridis* complex. <http://zoolstud.sinica.edu.tw/Journals/45.1/1.pdf>

Key words: Fish taxonomy, Pinguipedidae, *Parapercis*, New species.

The fish genus *Parapercis* Bleeker, species of which are known by the English common name sandperches, has been classified in the Parapercidae and Mugiloididae, but Rosa and Rosa (1987) showed that the correct family name is Pinguipedidae. Cantwell (1964) revised the genus, treating 26 species. Randall and Francis (1993) described *P. colemani* from Norfolk I. noting that it represented the 43rd valid species, but they were unaware at the time that Anderson (1992) had described *P. maritzi* from 80-200 m off Transkei and KwaZulu-Natal, South Africa. Anderson listed *P. ventromaculata* Manilo (1990) from the Maldive Is. as valid; however, it is a synonym of *P. maculata* Randall (1984), as noted by Randall and Francis (1993).

The genus *Parapercis* is well represented in

Japan by 22 species (Masuda et al. 1984), one of which was identified as *P. roseoviridis* (Gilbert), otherwise known only from the Hawaiian Is. The Japanese record of this species is from Yamakawa in Okamura et al. (1982), a report on fishes collected on the Kyushu-Palau Ridge in 1978-1979 from the fishery research vessels *Shinei-Maru No. 53* and *Kyoyo-Maru No. 2*. Forty-two specimens, 87.2-176.6 mm SL, were taken by trawling at depths of 322-600 m. The color of the small Japanese specimens matched the color description of the 2 type specimens of *P. roseoviridis* (62 and 71 mm total length) from Maui given by Gilbert (1905), "light rose above, crossed by 5 pairs of broad brownish green bars,..." The color of larger adults from Japan is almost identical to that of Hawaiian specimens.

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In an unpublished PhD thesis on fishes taken by trawling from the National Marine Research vessel *Townsend Cromwell* in Hawaiian waters in 1967-1968, Struhsaker (1973) reported "about 690 specimens" of *Parapercis roseoviridis* from a depth range of 183-296 m. He provided the length of 40 specimens from 1 station as 84-146 mm SL. The Bishop Museum in Honolulu has 17 lots of this species totaling 131 specimens, of which the two largest is 148 and 159 mm SL. The larger size of the Japanese specimens (11 of 42 specimens over 159 mm SL) aroused suspicion that they might represent a different species. A comparative study revealed species-level differences, notably 54-57 lateral-line scales for the Hawaiian specimens, compared to 60-64 for the Japanese. A description of the new Japanese species is provided here.

Much more surprising than the record of *Parapercis roseoviridis* in Japan was the report of 4 specimens of this species, 148-190 mm SL, from the Valdivia Bank in the southeastern Atlantic at depths of 220-235 m, described in detail by Bañón et al. (2000). These were taken during 2 experimental surveys of the bank by Spanish commercial bottom trawlers, one in 1996 and one in 1998. Only one other species of the genus is known from the Atlantic, *P. atlantica* (Vaillant), endemic to the Cape Verde Is. The Valdivia Bank specimens have 61-63 lateral-line scales, hence within the range of the scale counts of Japanese specimens. However, the spinous portion of the dorsal fin is not largely black as in both the Japanese species and *P. roseoviridis*, and there are morphometric differences. A new name is provided here for these 4 specimens, with additional descriptive information and a color illustration.

MATERIALS AND METHODS

Specimens of the new species from Japanese waters have been deposited in the Australian Museum, Sydney, (AMS); Museum of the Institute of Zoology, Academia Sinica, Taipei, Taiwan (ASIZP); the Natural History Museum, London (BMNH); Bernice P. Bishop Museum, Honolulu, HI (BPBM); Department of Biology, Faculty of Science, Kochi University, Kochi, Japan (BSKU); California Academy of Sciences, San Francisco, CA (CAS); Natural Science Museum, Tokyo (NSMT); and the National Museum of Natural History, Washington, D.C., USA (USNM). Specimens from the Valdivia Bank have been deposited in the Instituto Español de

Oceanografía, Vigo, Spain (IEOV) and the Bishop Museum.

Two of the 4 Valdivia Bank specimens were sent on loan to the authors so that direct comparisons could be made with the Hawaiian and Japanese material. Proportional measurements of the species are based on these 2 specimens.

Standard length (SL) is taken from the front of the upper lip to the base of the caudal fin (end of hypural plate). Body depth is the maximum depth, adjusting for any obvious malformations of preservation. Body width is measured just behind the gill opening (anterior to the base of the pectoral fins). Head length is measured from the front of the upper lip to the end of the opercular membrane. Orbit diameter is the greatest diameter to the fleshy edges of the orbit. Interorbital width is the least fleshy width. The length of the upper jaw is measured from the front of the upper lip to the posterior fleshy edge of the jaw. The depth of the caudal peduncle is the least depth, and the length of the caudal peduncle is taken horizontally from the rear base of the anal fin to the base of the caudal fin. Lengths of the dorsal and anal spines and rays are measured from the point they depart from the contour of the body (not to their extreme bases as can be detected by x-ray). Pectoral- and pelvic-fin lengths are the lengths of the longest ray.

Counts of lateral-line scales do not include the last pored scale, which is on the caudal-fin base. Gill-raker counts contain all rudiments, with the counts of the upper limb given first (no gill raker is at the angle of the gill arch).

In the description of the new species, data in parentheses refer to paratypes. Proportional measurements were rounded to the nearest 0.05.

Parapercis phenax sp. nov.

(Tables 1-4, Figs. 1-5)

Parapercis roseoviridis (non Gilbert) Okamura et al. 1982: 253, fig. 172 (Kyushu-Palau Ridge).

Parapercis roseoviridis (non Gilbert) Okamura in Masuda et al. 1984: 290, pl. 260, fig. D (Kyushu-Palau Ridge).

Holotype: BSKU 29292, male, 158.3 mm, Palau-Kyushu Ridge, 26°46'N, 135°22'E, 320-395 m, 18 Dec. 1979.

Paratypes: BSKU 26239, 141.5 mm, Kyushu-Palau Ridge, 26°13'N, 135°46'E, 360 m, 11 Feb. 1978; BSKU 26207, 161.8 mm and NSMT-P 69429, 163.6 mm, 26°46'N, 135°24'E, 324 m, 13 Feb. 1978; BSKU 28956, 157.5 mm, 26°12'N, 135°46'E, 510 m, 19 Nov. 1978; BSKU 29312, 147.0 mm, 26°6'N, 134°39'E, 550-600 m, 18 Dec. 1979;

BSKU 29387, 94.3 mm, 26°46'N, 135°23'E, 330-350 m, 18 Dec. 1979; BSKU 29470, 176.6 mm, 26°5'N, 135°50'E, 360-370 m, 16 Dec. 1979; BSKU 30452, 179.7 mm, 26°5'N, 135°50'E, 381 m, 16 Dec. 1979; BSKU 30674-80, 7: 146.4-167.9 mm, 16 Dec. 1979; CAS 220646, 170.5 mm, 26°11'N, 135°45'E, 355-375 m, 16 Dec. 1979; BPBM 39608, 3: 141.8-153.8 mm, 26°5'N, 135°50'E, 358-375 m, 16 Dec. 1979; BSKU 31522-23, 2: 147.1-162.0 mm, 26°46'N, 135°19'E, 322-340 m, 17 Dec. 1979; USNM 379992, 3: 121.8-162.8 mm, 26°46'N, 135°19'E, 322-340 m, 17 Dec. 1979; AMS I.43450-001, 150.2 mm, ASIZP 62963, 158.2 mm, and BMNH 2004.10.26.2, 144.1 mm, 26°45'N, 135°22'E, 326-340 m, 17 Dec. 1979; BSKU 31938-47, 10: 135.3-169.6 mm, 26°46'N, 135°23'E, 18 Dec. 1979; BSKU 32045-48, 4: 87.2-146.5 mm, 18 Dec. 1979.

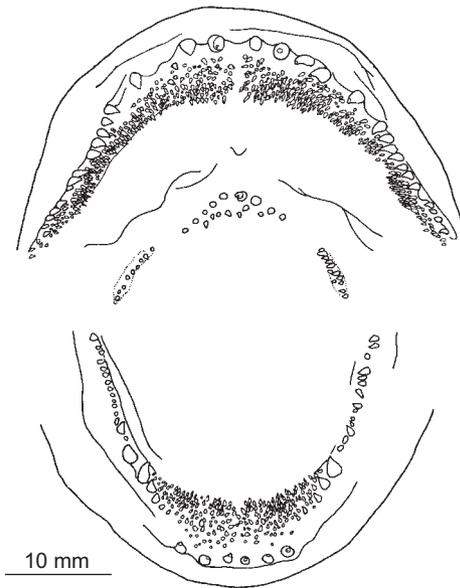


Fig. 1. Dentition of *Parapercis phenax* sp. nov., from BSKU 31524, nontype dissected specimen.

Table 1. Proportional measurements of type specimens of *Parapercis phenax* as percentages of the standard length

	Holotype		Paratypes						
	BPBM 29292	BSKU 32048	BSKU 29387	BSKU 32047	BSKU 26239	BSKU 29312	BSKU 28956	BSKU 31522	BSKU 29470
Sex	male	immature	female	female	female	female	male	male	male
Standard Length (mm)	158.3	87.2	94.3	112.4	141.5	147.0	157.5	162.0	176.6
Body depth	18.1	17.0	17.5	16.8	17.0	20.4	19.7	20.1	19.3
Body width	18.9	17.9	18.3	18.0	17.5	21.0	20.3	20.8	20.2
Head length	28.1	28.4	28.5	27.7	28.5	27.9	28.4	29.0	28.9
Snout length	9.3	8.9	8.6	8.8	9.2	9.5	9.3	9.6	9.9
Orbit diameter	8.4	9.2	9.1	9.0	9.1	8.9	8.6	8.7	8.0
Interorbital width	4.6	3.2	3.4	3.3	3.5	3.8	4.1	4.3	5.1
Upper-jaw length	12.0	11.4	11.4	11.2	11.7	11.7	11.8	12.0	12.2
Caudal-peduncle depth	9.6	9.4	9.5	9.1	8.9	9.5	9.7	9.8	9.6
Caudal-peduncle length	8.2	8.0	8.5	7.9	7.9	8.0	8.3	8.4	8.3
Predorsal length	30.6	30.5	30.1	29.6	30.4	30.6	29.9	29.9	30.2
Preanal length	48.2	47.9	48.1	47.8	48.8	49.6	46.5	46.2	48.9
Prepelvic length	25.7	24.7	24.4	24.1	25.3	29.3	25.8	27.2	29.2
Dorsal-fin base	61.2	62.8	62.2	62.1	61.8	61.2	63.5	63.0	61.3
First dorsal spine	3.2	3.2	3.3	2.8	3.5	3.4	3.7	3.1	broken
Fourth dorsal spine	6.9	6.9	6.9	7.0	6.5	6.6	6.9	7.5	6.8
Fifth dorsal spine	6.8	6.8	7.5	7.3	6.9	7.0	7.0	7.4	missing
Longest dorsal ray	13.6	13.2	13.9	13.8	13.4	14.1	13.1	13.0	12.9
Anal-fin base	46.5	43.6	43.7	44.6	44.2	44.0	46.4	46.2	45.2
First anal spine	4.0	4.8	5.2	5.3	4.7	5.2	5.3	4.4	3.9
Longest anal ray	12.0	13.3	13.7	12.4	12.8	12.3	12.4	12.2	11.9
Caudal-fin length	19.1	22.3	21.5	19.4	19.8	20.1	19.3	19.2	19.5
Pectoral-fin length	20.1	23.1	22.0	20.5	20.4	20.0	18.9	19.0	19.7
Pelvic spine length	7.6	9.1	9.0	7.9	7.8	7.5	7.3	7.4	7.9
Pelvic-fin length	18.6	23.1	22.5	21.2	18.5	18.3	18.4	19.6	18.8

Diagnosis: Dorsal rays IV or V (rarely IV), 23-24 (rarely 24); anal rays I, 19-20 (usually 19); pectoral rays 19 or 20 (usually 19); lateral-line scales 60-64; gill rakers 4-7 + 10-13; 3 pairs of canine teeth anteriorly in lower jaw; palatine teeth present; body depth 5.0-5.95 in SL; head length 3.45-3.6 in SL; last 2 dorsal spines subequal, the last usually longest, 3.8-4.15 in head length; last interspinous membrane of dorsal fin attached to 1st dorsal soft ray nearly 1/2 length of ray from its base; caudal fin slightly rounded; pelvic fins reaching or extending slightly beyond anus, 1.25-1.55 in head length; body pink dorsally, lavender-white ventrally, with a series of 10 short dusky green to yellow bars on upper side of body (indistinct dorsally), the last 2 on caudal peduncle nearly merged; spinous portion of dorsal fin largely black. Size to 180 mm SL.

Description: Dorsal rays V (IV or V, 5 of 42 with IV), 23 (23-24, 1 of 42 with 24); anal rays I, 19 (19 or 20, 4 of 42 with 20); all dorsal and anal rays branched, the last to base; pectoral rays 21 (20 or 21, 17 of 42 with 20), all rays except uppermost branched; pelvic rays I, 5, all rays branched; branched caudal rays 15; upper and lower simple segmented rays 2; upper unsegmented procurrent caudal rays 8 (7-9); lower unsegmented procurrent

caudal rays 7 (6-8); lateral-line scales 62 (60-64), not including 1 on caudal-fin base; scales above lateral line to origin of dorsal fin 5; scales below lateral line to origin of anal fin 16 (15-17); predorsal scales about 9; circumpeduncular scales 30; gill rakers 5 + 10 (4-7 + 10-13); branchiostegal rays 6; pseudobranchial filaments 23 (18 in 87.3-mm paratype, 20 in 112.4 mm paratype, 21 in 147.0 mm paratype, and 25 in 176.6 mm paratype); vertebrae 32 (31-33, usually 32).

Body moderately elongate, the depth 5.5 (4.9-5.8) in SL, and nearly cylindrical anteriorly, the width slightly greater than depth; ventral part of head and chest flat; head length 3.55 (3.45-3.6) in SL; snout length 3.0 (2.9-3.3) in head length; eye moderately large, the fleshy orbit diameter 3.35 (3.1-3.6) in head length; interorbital space flat to slightly concave, the least fleshy width 6.1 (5.65-8.9) in head length; caudal-peduncle depth 2.9 (2.95-3.05) in head length; caudal-peduncle length 3.4 (3.15-3.6) in head length.

Mouth large, terminal, and oblique, forming an

Table 2. Pectoral-ray counts of species of *Parapercis*

	19	20	21
<i>banoni</i>		1	3
<i>phenax</i>		17	25
<i>roseoviridis</i>	8	32	2

Table 3. Lateral-line scale counts of species of *Parapercis*

	54	55	56	57	58	59	60	61	62	63	64
<i>banoni</i>								1	2	1	
<i>phenax</i>							1	7	16	11	7
<i>roseoviridis</i>	3	16	17	6							

Table 4. Gill-raker counts of species of *Parapercis*

	Upper limb					Lower Limb					
	3	4	5	6	7	8	9	10	11	12	13
<i>P. banoni</i>	1	2		1				3	1		
<i>P. phenax</i>		1	15	23	3			6	22	13	1
<i>P. roseoviridis</i>		2	17	21	2	3	24	15			

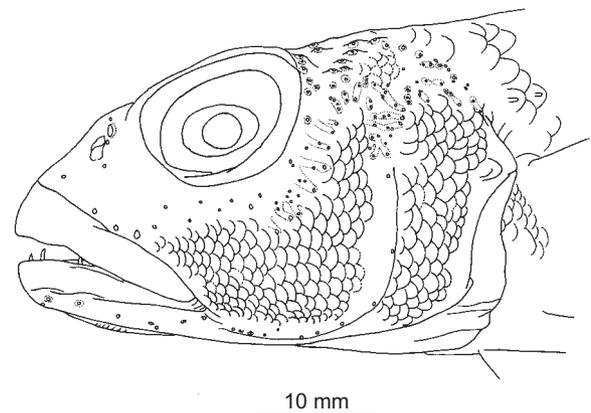


Fig. 2. Side view of the head of the holotype of *Parapercis phenax* sp. nov.

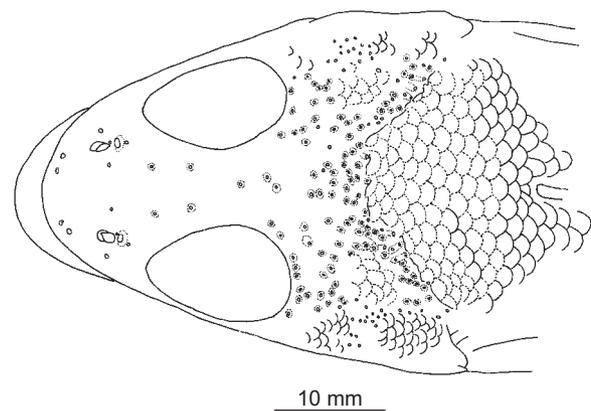


Fig. 3. Dorsal view of the head of the holotype of *Parapercis phenax* sp. nov.

angle of about 20° to horizontal axis of head and body; maxilla reaching a vertical at front edge of pupil, the upper-jaw length 2.35 (2.35-2.5) in head length; front of upper jaw typically with 5 moderately large incurved canine on each side, followed by a slight gap and a series of about 12 progressively smaller incurved teeth on side of jaw; a band of incurved villiform teeth medial to upper canines, broadest anteriorly (in a maximum of 6 or 7 rows in holotype); front of lower jaw with 3 strong incurved canines on each side, followed in outer row by a gap (villiform teeth visible medially in gap), then a series of 3 to 5 larger teeth, 1 or 2 of which are as large or larger than anterior canines of lower jaw; outer row ending with a series of about 12 much-smaller teeth; a band of villiform teeth medial to outer row of teeth in lower jaw, broadest anteriorly (in a maximum of 7 or 8 rows), the band quickly narrowing on side of jaw; vomer with small conical teeth in 2 irregular rows forming a broad V-shape; an irregular double or single row of very small conical teeth on palatines (dentition illustrated in Fig. 1). Inner surface of lips with large fleshy papillae that interdigitate with outer row of teeth. Tongue small and pointed, set far back in mouth.

Gill membranes free from isthmus, with a broad fold across. Gill rakers as small spinous tubercles. Nostrils small, in front of center of eye (as viewed from side), the anterior nostril a short membranous tube, the posterior part elevated; posterior nostril about 2 nostril diameters behind anterior nostril, with only a slight rim. Sensory pores of lateral system prominent (Figs. 2, 3), with 1 between anterior and posterior nostrils, and 1 above posterior nostril; a pore at front of snout in line with nostrils, followed by 3 along edge of upper lip, the last followed by an irregular series of suborbital pores; 2 pairs of pores forming a square



Fig. 4. Holotype of *Parapercis phenax* sp. nov, BSKU 29292, male, 158.3 mm, Palau-Kyushu Ridge.

in anterior 1/2 of interorbital space, and 3 pores medially in posterior 1/2; a transverse series of pores anteriorly on occiput continuing behind upper part of each eye; numerous pores more posteriorly in occipital region; a series of 6 prominent pores along edge of preopercle (sometimes with a few secondary pores along ventral edge); 5 mandibular pores on each side, in line with 1st preopercular pore.

Opercle with a stout sharp spine, angling slightly upward, at level of lower edge of eye and upper end of pectoral-fin base; upper edge of subopercle with a very small spine (1 to 3 on paratypes); preopercle broadly rounded, its free edge extending from level of opercular spine to below middle of orbit; fleshy posterior edge of preopercle usually with a close-set series of very small papillae (difficult to see on many specimens, and seem to be absent from some).

Scales on body ctenoid, becoming cycloid below 1st few dorsal spines and progressively smaller on nape; scales dorsally on nape extending slightly anterior to upper end of preopercle; opercle and subopercle covered with small ctenoid scales except for a naked marginal zone; naked



Fig. 5. Paratype of *Parapercis phenax*, BSKU 29312, female, 147 mm, Palau-Kyushu Ridge.



Fig. 6. *Parapercis roseoviridis*, BPBM 17340, male, 142 mm, Maui, Hawaiian Is.

zone below eye about two-thirds pupil diameter in depth; naked zone at margins of opercular bones about 1/4 to 1/2 pupil diameter; snout naked; prepectoral scales and those on side of chest mainly ctenoid, becoming cycloid ventrally; no scales on dorsal and anal fins; small cycloid scales on a semicircular patch on base of pectoral fins, extending at most to 1/3 length of fin; small ctenoid scales basally on caudal fin, becoming smaller out on rays to about 2/3 length of fin (scales variably missing on caudal fin of type specimens). Lateral line beginning just above upper end of gill opening, arched over pectoral fin, then gradually descending to midlateral position on posterior 2/5 of body.

Origin of dorsal fin above 3rd and 4th lateral-line scales, the predorsal length 3.25 (3.25-3.4) in SL; 1st dorsal spine short, 8.8 (7.7-10.2) in head length; last 2 dorsal spines subequal, the last usually longest, 4.1 (3.8-4.15) in head length; membrane between last dorsal spine and 1st soft ray attached to ray nearly 1/2 ray length above base; 20th to 22nd dorsal soft rays longest, 2.05 (2.0-2.25) in head length; origin of anal fin below base of 6th or 7th dorsal soft rays, the preanal length 2.15 (2.15-2.3) in SL; anal spine slender and close to 1st anal soft ray, its length 7.05 (5.35-7.4) in head length; 16th-18th anal soft rays longest, 2.35 (2.1-2.4) in head length; caudal fin slightly rounded, 5.25 (4.5-5.2) in SL; pectoral fins slightly pointed, the 10th or 11th rays longest, 5.0 (4.35-5.3) in SL; origin of pelvic fins on a vertical with opercular spine; pelvic spine very slender, the distal end difficult to determine, the spine length 3.7 (3.1-3.9) in head length; pelvic fins reaching or extending slightly beyond anus, the 4th pelvic soft ray longest, 1.5 (1.25-1.55) in head length.

Color of holotype in alcohol uniform pale brown, the fins pale yellowish except spinous portion of dorsal fin which is dusky, with black over most of last 3 membranes.

Color of male holotype when fresh as in figure 4: pink on about dorsal half of body, the scale edges darker than centers, lavender-white ventrally, with a longitudinal series of 10 short yellow bars on upper side, indistinct dorsally, as pairs from closer spacing, the last 2 on caudal peduncle nearly confluent; a prominent deep pink to red quadrangular spot between anterior part of lateral line and basal part of pectoral fin; lateral line conspicuous due to darker pink color; head deep pink dorsally with broad irregular yellow markings, pale lavender-pink below; spinous portion of dorsal fin dusky pink with a large vertically elongate black spot on each of last 3 membranes, the black of each spot covering most of its membrane; membranes of soft portion of dorsal fin lavender-white, grading to pale yellowish distally, the rays pale yellow; anal fin lavender-white; caudal fin pale pink with a trace of a lengthwise yellow band in upper middle part of fin; paired fins pale lavender-pink.

Color of 147 mm female paratype of BSKU 29312 shown in figure 5; pattern basically that of holotype, but body paler pink dorsally with dusky yellowish green bars, and pale lavender-blue ventrally; postorbital head and nape red with a coarse reticulum of dull yellowish green; a broad yellow streak just visible in caudal fin. The dark bars of this fish may still be seen in preservative, in contrast to the larger male specimens with yellow bars in life.

Etymology: This species is named *Parapercis phenax* from the Greek for imposter, in reference

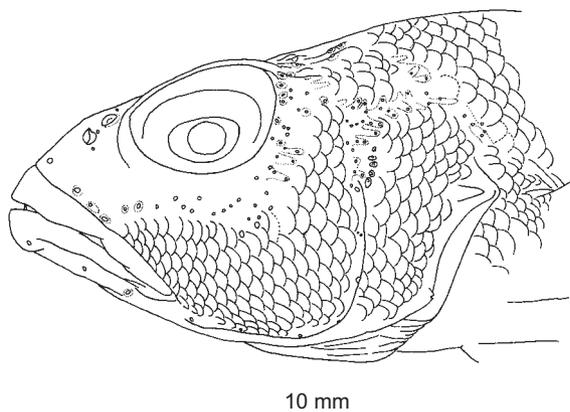


Fig. 7. Side view of the head of *Parapercis roseoviridis* (BPBM 17340).

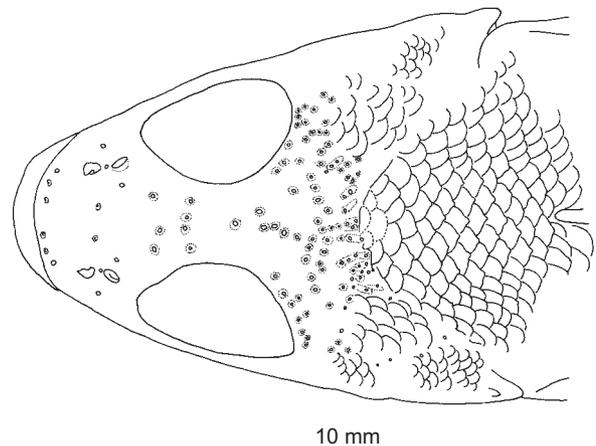


Fig. 8. Dorsal view of the head of *Parapercis roseoviridis* (BPBM 17340).

to its resemblance to, and previous misidentification as, *P. roseoviridis*.

Remarks: Marshall (1950) was the first to recognize that a species of *Parapercis* is sexually dichromatic when he discovered that *P. polyophthalma* (Cuvier) is the female, and hence a junior synonym of the male *P. hexophthalma* (Cuvier). He also noted the larger size of males than females and suspected that this species is a protogynous hermaphrodite. Nakazono et al. (1985) showed that *P. snyderi* Jordan and Starks undergoes sex change from female to male from histological examination of the gonads. It seems likely that this sex change takes place in all species of the genus. The difference in size with sex is evident in *P. phenax*, as can be seen in Table 1. The smallest specimen is immature, the next 4, 94.3 to 147 mm, are females, and the remaining 4, 157.5–176.6 mm, are males. Our other paratypes conform to the female-male size difference.

Table 3 shows the complete separation in lateral-line scale counts of *Parapercis phenax* and *P. roseoviridis*. Table 4 documents the difference in the lower-limb gill-raker counts for the 2 species. Little was found in proportional measurements to differentiate them. The diameter of the eye is greater on the average for *P. phenax*, but this is not a useful character because there is too much variability in eye size at the same length in the same species. One difference is the presence of a distinct naked border on the free edges of the preopercle, opercle, and subopercle of *phenax* and its near-absence (when scales are intact) on *roseoviridis* (compare Figs. 2 and 7). Also it seems clear that *phenax* attains larger size, to 180 mm SL, compared to the maximum length of 159 mm for *roseoviridis*.

The color patterns of *Parapercis phenax* and *P. roseoviridis* (Fig. 6) are remarkably similar. While one can find slight differences by comparing color photographs of the 2 species, these tend to disappear with the examination of more photographs. One consistent difference, however, is the more-conspicuous lateral line of *P. phenax* due to its darker coloration. Another is the presence of small pale yellow spots basally on the soft portion of the dorsal fin of *P. roseoviridis* except on the 1st few membranes; these are absent in our photographs of *P. phenax*.

***Parapercis banoni* sp. nov.**

(Tables 2-5, Figs. 9-12)

Parapercis roseoviridis (non Gilbert) Bañón et al. 2000: 411, fig.

1 (Valdivia Bank, southeastern Atlantic).

Holotype: IEOV 01598, 191.5 mm, southeast Atlantic, Valdivia Bank, 26°11'S, 6°21'E, 228 m, trawl, 18 Nov. 1998.

Paratypes: IEOV 03596, 186 mm, Valdivia Bank, 26°13'S, 6°15'E, 220 m, trawl, 15 Aug. 1996; BPBM 39628, 162 mm, Valdivia Bank, 26°13'S, 6°15'E, 220 m, 30 Aug. 1996; IEOV 01698, 148 mm, Valdivia Bank, 26°6'S, 6°21'E, 235 m, 16 Nov. 1998.

Diagnosis: Dorsal rays V,23 or 24; anal rays I,19; pectoral rays 20 or 21; lateral-line scales 61–63; gill rakers 3–6 + 10 or 11; 3 pairs of canine teeth anteriorly in lower jaw; palatine teeth present; body depth 4.9–5.1 in SL; head length 3.6–3.7 in SL; last 2 dorsal spines longest and subequal; last interspinous membrane of dorsal fin attached to 1st dorsal soft ray nearly 1/2 length of ray from base; caudal fin slightly rounded; pelvic fins not reaching anus, 1.55–1.65 in head length; orangish pink dorsally, shading to white below, with 5 pairs of yellow bars on upper side, narrowing ventrally and becoming diffuse dorsally; a red spot above base of pectoral fin; spinous portion of dorsal fin without dark pigment. Size to 191.5 mm SL.

Description: Dorsal rays V,23 (23 or 24); anal rays 19; all dorsal and anal rays branched, the last to base; pectoral rays 21 (20 or 21), all rays except uppermost branched; pelvic rays I,5, all rays branched; branched caudal rays 15; upper and lower simple segmented caudal rays 2; upper unsegmented procurrent caudal rays 8 (7); lower unsegmented procurrent caudal rays 7 (6); lateral-line scales 62 (61–63), not including 1 on caudal-fin base; scales above lateral line to origin of dorsal fin 5; scales below lateral line to origin of anal fin 18 (17); predorsal scales about 9–10; circumpeduncular scales 30 (28); gill rakers 6+10 (4–6 + 10–11); branchiostegal rays 6; pseudobranchial filaments of 162 mm paratype 21; vertebrae 32.

Body moderately elongate, the depth 4.9 (5.1) in SL, and nearly cylindrical anteriorly, the width slightly greater than the depth; ventral part of head and chest flat; head length 3.6 (3.7) in SL; snout length 2.85 (2.8) in head length; eye moderately large, the fleshy orbit diameter 3.9 (3.4) in head length; interorbital space flat to slightly concave, the least fleshy width 4.9 in head length; caudal-peduncle depth 2.7 (2.9) in head length; caudal-peduncle length 3.65 (3.45) in head length.

Mouth large, terminal, and oblique, forming an angle of about 25° to horizontal axis of head and body; maxilla reaching a vertical at front edge of

pupil, the upper-jaw length 2.2 (2.3) in head length; front of upper jaw with 5 moderately large incurved canine on each side, followed by a slight gap and a series of 13 progressively smaller incurved teeth on side of jaw; a band of incurved villiform teeth medial to upper canines, broadest anteriorly (in a maximum of 8 rows in holotype); front of lower jaw with 3 strong incurved canines on each side, then a gap (showing the more-medial villiform teeth), before 4 or 5 outer-row teeth (the 2 middle ones nearly as large as anterior canines), and about 15 small teeth to end of jaw; a band of villiform teeth medial to anterior canines in about 6 rows at front of jaw in holotype, the band narrowing and ending about 1/2 way back in jaw; vomer with small conical teeth in 2 or 3 irregular rows forming a broad V; palatines with small conical teeth in 1 or 2 irregular rows. Inner surface of lips with large fleshy papillae that interdigitate with outer row of teeth. Tongue small and pointed, set far back in mouth.

Gill membranes free from isthmus, with a broad fold across. Gill rakers as small spinous

tubercles. Nostrils small, in front of center of eye (as viewed from side), the anterior nostril a short membranous tube, elevated posteriorly; posterior nostril about 2 nostril diameters behind anterior nostril, with only a slight rim. Sensory pores of lateralis system prominent (Figs. 9, 10), 1 between anterior and posterior nostrils, 1 behind posterior nostril, 1 at front of snout in line with nostrils, followed by 3 along edge of upper lip, the last followed by an irregular series of suborbital pores; a transverse pair of pores in middle of interorbital space, each preceded by a pore (the 4 nearly forming a square); a median series of 3 pores in posterior interorbital space; rows of pores in occipital region and behind eye; a series of 6 prominent pores along edge of preopercle; 5 mandibular pores on each side, in line with 1st preopercular pore. Figure 12 provides for comparison of the nostrils and nearby sensory pores of *Parapercis roseoviridis*, *P. phenax*, and *P. banoni*.

Opercle with a stout sharp spine, angling slightly upwards, at level of suborbital series of

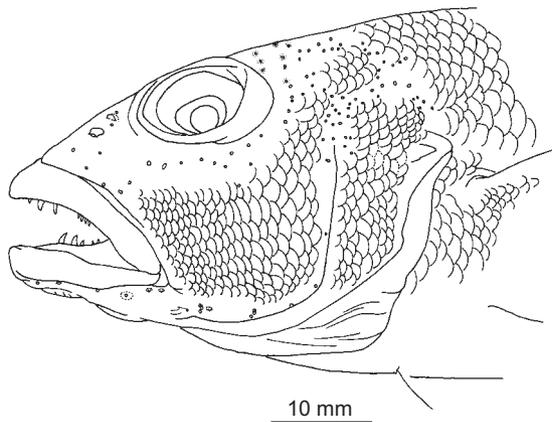


Fig. 9. Side view of the head of the holotype of *Parapercis banoni* sp. nov.

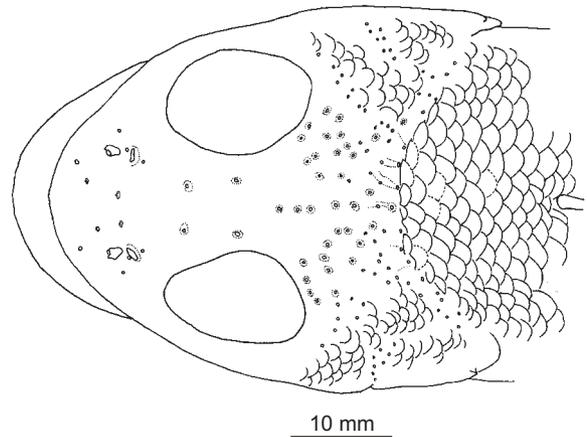


Fig. 10. Dorsal view of the head of the holotype of *Parapercis banoni* sp. nov.



Fig. 11. Holotype of *Parapercis banoni* sp. nov., IEOV 01598, 191.5 mm, Valdivia Bank, southeastern Atlantic.

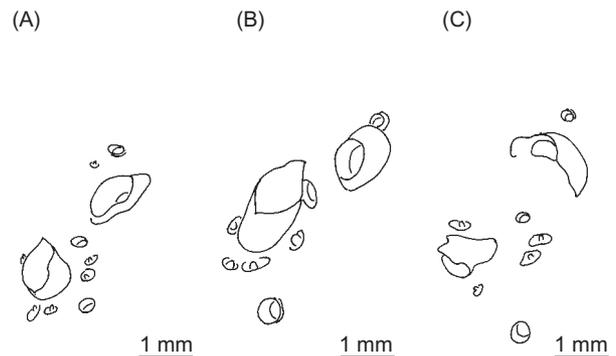


Fig. 12. Nostrils of (A) *Parapercis roseoviridis*; (B) *P. phenax* sp. nov.; (C) *P. banoni* sp. nov.

pores and well above pectoral-fin base; upper edge of subopercle with 1 or 2 very small blunt spines; preopercle broadly rounded, its free edge extending from level of opercular spine to a vertical at anterior edge of pupil; no very small papillae detected along fleshy posterior edge of preopercle.

Scales on body ctenoid, becoming cycloid below 1st few spines of dorsal fin and on nape where progressively smaller; scales dorsally on nape extending to above upper end of preopercle; cheek and opercle covered with small ctenoid scales except for a broad marginal zone (depth of naked suborbital zone equal to pupil diameter, that of preopercular margin 1/2 that wide); ctenoid scales on cheek variable in forward extension, reaching slightly anterior to front of orbit on some specimens, and not reaching on others; snout naked; scales on prepectoral area and side of chest ctenoid, becoming cycloid ventrally on chest. No scales on dorsal and anal fins; small ctenoid

scales in a semicircular patch on base of pectoral fins, extending out on rays to at least 1/2 length of fin; ctenoid scales basally on caudal fin, quickly becoming smaller and cycloid as they extend out on rays to at least 2/3 length of fin. Lateral line beginning just above upper end of gill opening, arched over pectoral fin, then gradually descending to midlateral position on posterior 1/3 of body.

Origin of dorsal fin above 3rd lateral-line scale, the predorsal length 3.45 (3.5) in SL; 1st dorsal spine short, 11.5 (11.2) in head length; last 2 dorsal spines subequal, the last usually longest, 4.15 in head length; membrane between last dorsal spine and 1st soft ray attached to ray about 1/2 ray length above base; 21st or 22nd dorsal soft rays longest, 2.05 (2.0) in head length; origin of anal fin below base of 5th dorsal soft ray, the pre-anal length 2.1 (2.15) in SL; anal spine slender and close to 1st anal soft ray, its length 6.95 (7.5) in head length; 16th to 18th anal soft rays longest, 2.35 in head length; caudal fin slightly rounded, 5.2 (5.3) in SL; pectoral fins slightly pointed, the 10th to 12th rays longest, 5.1 (5.2) in SL; origin of pelvic fins on a vertical with base of opercular spine; pelvic spine very slender, the distal end difficult to determine, the spine length 4.1 (3.9) in head length; pelvic fins not reaching anus, the 4th pelvic soft ray longest, 1.65 (1.55) in head length.

Color of holotype in alcohol: Pale orangish brown dorsally, pale yellowish ventrally; a vertically elongate, near-rectangular, dusky spot between the pectoral-fin base and 2nd to 4th lateral-line scales; fins pale translucent yellowish.

Color of holotype when fresh (Fig. 11): Orangish pink dorsally, shading to white on side, with faint pale pink edges on scales; 5 pairs of yellow bars on upper side, the spacing between pairs only slightly greater than that separating a single pair; yellow bars narrowing ventrally and fading dorsally, the edges of scales within bars pink; a conspicuous red spot between pectoral-fin base and anterior lateral line, hence encroaching on 1st yellow bar; head orangish pink, suffused with yellow dorsally, pale pink ventrally; iris pink with a yellow arc dorsally and a dark red spot posteriorly; spinous portion of dorsal fin pale pink; remaining median fins pale pink, the anal fin, caudal fin, and about posterior half of dorsal fin suffused with pale yellow; basal scaled part of pectoral fins pink, the outer part mainly pale yellow; pelvic fins pale yellow and pink.

Etymology: Named *banoni* for Rafael Bañón who first reported the species with his coauthors and provided us with specimens and color pho-

Table 5. Proportional measurements of type specimens of *Parapercis banoni* as percentages of the standard length

	Holotype	Paratype
	IEOV 01598	BPBM 39628
Sex	male	female
Standard Length (mm)	191.5	162.0
Body depth	20.3	19.6
Body width	20.3	20.7
Head length	27.8	27.0
Snout length	9.7	9.7
Orbit diameter	7.3	8.0
Interorbital width	5.7	5.5
Upper-jaw length	12.5	11.7
Caudal-peduncle depth	10.3	9.4
Caudal-peduncle length	7.6	7.8
Predorsal length	29.0	28.8
Preanal length	47.5	46.9
Prepelvic length	24.7	23.4
Dorsal-fin base	64.3	65.4
First dorsal spine	2.4	2.4
Fourth dorsal spine	6.8	broken
Fifth dorsal spine	6.7	broken
Longest dorsal ray	13.6	13.3
Anal-fin base	45.8	45.2
First anal spine	4.0	3.6
Longest anal ray	11.8	11.9
Caudal-fin length	19.2	18.8
Pectoral-fin length	19.7	19.3
Pelvic spine length	6.8	6.9
Pelvic-fin length	17.0	17.6

tographs.

Remarks: The lateral-line scale and lower-limb gill raker counts and the presence or absence of a naked border on opercular bones that separate *Parapercis phenax* from *P. roseoviridis* also serve to distinguish *banoni* from *roseoviridis*. The absence of dark pigment on the 1st dorsal fin of *banoni* provides a quick separation of *banoni* from *phenax* (and *roseoviridis* as well). Several differences in proportional measurements of *banoni* and *phenax* may be seen from a comparison of tables 1 and 5. The most trenchant are the greater interorbital width, shorter 1st dorsal spine, and shorter pelvic fins of *banoni* (not reaching anus, but extending to or slightly beyond anus in *phenax*).

DISCUSSION

Parapercis roseoviridis, *P. phenax* and *P. banoni* are 3 of a complex of 4 deep-dwelling species of the genus. The 4th is *P. maritzi* Anderson, described from 2 lots of a total of 10 specimens from off Tranzkei and KwaZulu-Natal, South Africa. One lot was taken by a bottom trawl at 80-150 m, and the other from a dredge haul at 200 m. The life color of *P. maritzi* is not known, but this species has the series of 10 paired blotches along the upper side, the 2 on the caudal peduncle which merge as a band. However, the blotches as shown in Anderson's figure 1 of both an 81-mm juvenile and the 159 mm holotype, an adult male, are distinct and dark. A male specimen of either *phenax* or *roseoviridis* of 159 mm SL would have yellow blotches in life that would not persist in preservative. The spinous portion of the dorsal fin of *P. maritzi* is described and illustrated as uniform dusky, in contrast to the black of much of the spinous fin of *roseoviridis* and the pale pink fin of *banoni*. One morphological difference in *maritzi* is the attachment of the last interspinous membrane of the dorsal fin to the 1st soft dorsal ray at the level of the tip of the 5th spine, hence about 2/3 of the ray length from the fin base (Anderson's fig. 4).

These 4 species are unique in their limited and highly disjunct distributions. It seems likely that their distributions will be enlarged, and it is

possible that other species in this complex remain to be discovered.

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