



Redescription of *Parapercis rufa* Randall, 2001, a replacement name for *P. rosea* Fourmanoir, 1985, based on specimens newly collected from southern Taiwan

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Abstract

The red sandperch *Parapercis rufa* Randall, 2001 is redescribed on the basis of three specimens newly collected from Taiwan that represent the second record of the species and first record from Taiwan. The species is now redefined as a species of *Parapercis* with a large black spot with whitish rim above the pectoral-fin base, upper lobe of caudal fin with a prolongation extending about 1.0–1.5 times orbital diameter posterior to rear fin margin, and a combination of coloration and morphometric and meristic data.

Key words: Pisces, Teleostei, *Parapercis rosea*, *Parapercis rufa*, taxonomy, Taiwan

Introduction

The red sandperch *Parapercis rufa* Randall, 2001 is one of the most poorly known species within the pinguipedid sandperch genus *Parapercis*. Fourmanoir (1985) described *Parapercis rosea* based on four specimens collected from the Philippines. The original description contains mostly non-diagnostic characters, except for the description of a relatively unique coloration based on a fine drawing.

Randall (2001) noticed that the name was secondarily preoccupied in *Parapercis* by *Percis rosea* Sauvage, 1891 (= *Parapercis punctulata*) and was subjectively invalid. He proposed *Parapercis rufa* to replace *Parapercis rosea* Fourmanoir, 1985, however, no additional information was provided, except for some characters in the key which may have been adapted from the original description.

Recently, three specimens of a *Parapercis* form were collected by hook and line from off Maobitou, the southern tip of Taiwan, at depths between 50–80 m. These specimens were formerly recognized as a new species due to a unique coloration and combination of characters. However, after comparing them with the original description, they are considered to be conspecific with *Parapercis rosea* Fourmanoir, 1985 (= *P. rufa*). With this suspicion, the holotype (MNHN 1984–0431) and two paratypes (MNHN 1984–0432) of *Parapercis rosea* were examined by the second author, which confirmed that the three Taiwanese specimens belonged to the same species.

The purpose of this paper is to redescribe and redefine *Parapercis rufa* Randall, 2001, previously described as *Parapercis rosea* Fourmanoir, 1985.

Materials and methods

Specimens for this study are housed at National Museum of Marine Biology & Aquarium, Pingtung, Taiwan (NMMB-P). Methods for taking measurements and counts followed Randall et al. (2008), except for the caudal-fin length which is measured in two lengths, one with prolongation and one without. The holotype (MNHN 1984-

0431) and two paratypes (MNHN 1984–0432) of *Parapercis rosea* Fourmanoir, 1985 were also examined. Abbreviations of institutes follow Fricke and Eschmeyer (2011).

Results

Parapercis rufa Randall, 2001

New English name: Red sandperch

Figs. 1A–C, 2A–B, 3; Table 1

Specimens examined. MNHN 1984–0431 (holotype, 87.0 mm SL) and MNHN 1984–0432 (paratype, 2 specimens), Campagne Musorstom 2, R/V Coriolis, sta. CP08, 13°55'01"N, 120°19'59"E, NE Lubang Island, the Philippines, beam trawl, 85–90 m, 21 Nov. 1980. NMMB–P11688 (132.4 mm SL), NMMB–P11689 (1, 122.7 mm SL) and NMMB–P11690 (1, 110.7 mm SL), ca. 21°53'N, 122°46'E, off Maobitou, Hengchun, Pingtung, S. Taiwan, N. South China Sea, ca. 50–80 m, hook and line, purchased from Hengchun market by H.-C. Ho.

Diagnosis. A species of *Parapercis* with a relatively depressed head; 8 brown blotches on dorsal surface; a large blackish spot with a whitish rim above pectoral-fin base; upper lobe of caudal fin with a prolongation, extending about 1–1.5 orbit diameters posterior to rear fin margin; relatively few pores on occiput; a yellow patch above posterior one-third of upper jaw; a yellow patch at lower margin of orbit, with a orange-yellow line extended ventral-posteriorly to lower corner of preopercle; iris circled by red color; spinous dorsal fin bluish with a narrow yellow band; a very broad yellow band on soft dorsal fin with a row of small orange dots at upper one-third of the fin; a broken yellowish band below body axial; anal fin yellowish with a bluish base; a narrow purple band with a series of orange-red spots at inter-membranes of fourth to the last anal-fin rays; caudal fin with upper rays bright yellow throughout the prolongation, middle rays bluish and lower rays red-yellowish. The combination of following characters also distinguishes *P. rufa*: dorsal-fin rays V, 21; anal-fin rays I, 17; pectoral-fin rays 17; three pairs of canine teeth anteriorly in lower jaw; no palatine teeth; vomerine teeth stout, in a single irregular row; scales on body ctenoid, becoming cycloid on nape, prepectoral and prepelvic areas; margin of preopercle smooth with some indentation on posterior margin; five dorsal-fin spine, fourth the longest; appressed pelvic fin reaching anal fin origin.

Description. Based on three specimens newly collected from Taiwan. Morphometric and meristic data are provided in Table 1.

Dorsal-fin rays V, 21 (the 110.7-mm specimen with damaged 17th and 18th rays); anal-fin rays I, 17; all dorsal and anal soft rays branched, the last to base; pectoral-fin rays 17, branched except uppermost; pelvic-fin rays I, 5; principal caudal-fin rays 17, the uppermost and lowermost ones relatively short and unbranched; upper procurrent caudal-fin rays 8–9; lower procurrent caudal-fin rays 7–9; lateral-line scales 52–53 (not including 3 or 4 smaller pored scales on base of caudal fin); scales above first lateral-line scale to origin of dorsal fin 5.5–6.5; scales above highest part of lateral line to base of dorsal fin 3.5–4.5; scales below lateral line posteroventrally to origin of anal fin about 15; median predorsal scales 8–9; circumpeduncular scales 24; gill rakers 3–5+10–11=13–16, the 110 mm specimen lacks two anterior small rakers; pseudobranchial filaments 17; branchiostegal rays 6; vertebrae 10+20.

Body depth 5.2–5.5 in SL, 1.5–1.6 in HL; body nearly cylindrical anteriorly, the width 5.5–5.7 in SL, 1.6–1.7 in HL, strongly compressed posteriorly; head relatively depressed, its length 3.3–3.4 in SL; ventral part of head, chest and abdomen slightly convex; snout relatively pointed, its length 2.5–3.3 in HL; orbit diameter 3.6–3.9 in HL; interorbital space flat, the least fleshy width 7.2–8.2 in HL; caudal-peduncle depth 3.1–3.2 in HL; caudal-peduncle length 3.0–3.2 in HL.

Mouth large, maxilla nearly reaching a vertical through center of eye, upper-jaw length 2.3–2.4 in HL; mouth oblique, forming an angle of about 20° to horizontal axis of body, the lower jaw projecting; front of upper jaw with 3 pairs of recurved canine teeth, the middle one on each side twice as large as the rest; side of upper jaw with a row of about 25 conical teeth that curve medially and posteriorly, the anterior 6–8 increasingly larger and more strongly recurved; remaining teeth in outer row on side of jaw decreasing in length; a broad band of villiform teeth medial to canines in about 7 rows at front of upper jaw, gradually narrowing posteriorly to a narrow band of about 3 irregular rows; front of lower jaw with 3 pairs of incurved canine teeth, increasing in length laterally, the 3rd twice as large as 2nd and strongly curving laterally as well as posteriorly; a band of about 5 rows of villiform teeth medial to canines at front of lower jaw, the medial row continuing laterally in jaw posterior to last canine as a row of 7

increasingly larger and more strongly recurved teeth, followed by a single row of small teeth to end of jaw; vomer with an irregular row of 5–7 stout conical teeth, the middle largest, the lateral teeth progressively smaller; no palatine teeth; lips smooth, their inner surface with large fleshy papillae that interdigitate with anterior teeth; tongue broadly rounded, reaching forward to posterior vomerine teeth.

Gill membranes free from isthmus, with a broad free fold across. Gill rakers short and spinous, the longest about 1/3 length of longest gill filaments. Nostrils small, the anterior in front of center of eye (as viewed from side), a little more than half way to groove at edge of upper lip, with a slight anterior rim and a pointed posterior flap that reaches 3/4 internarial distance when laid back; posterior nostril dorsoposterior to anterior nostril, the aperture ovate, with a slight rim.

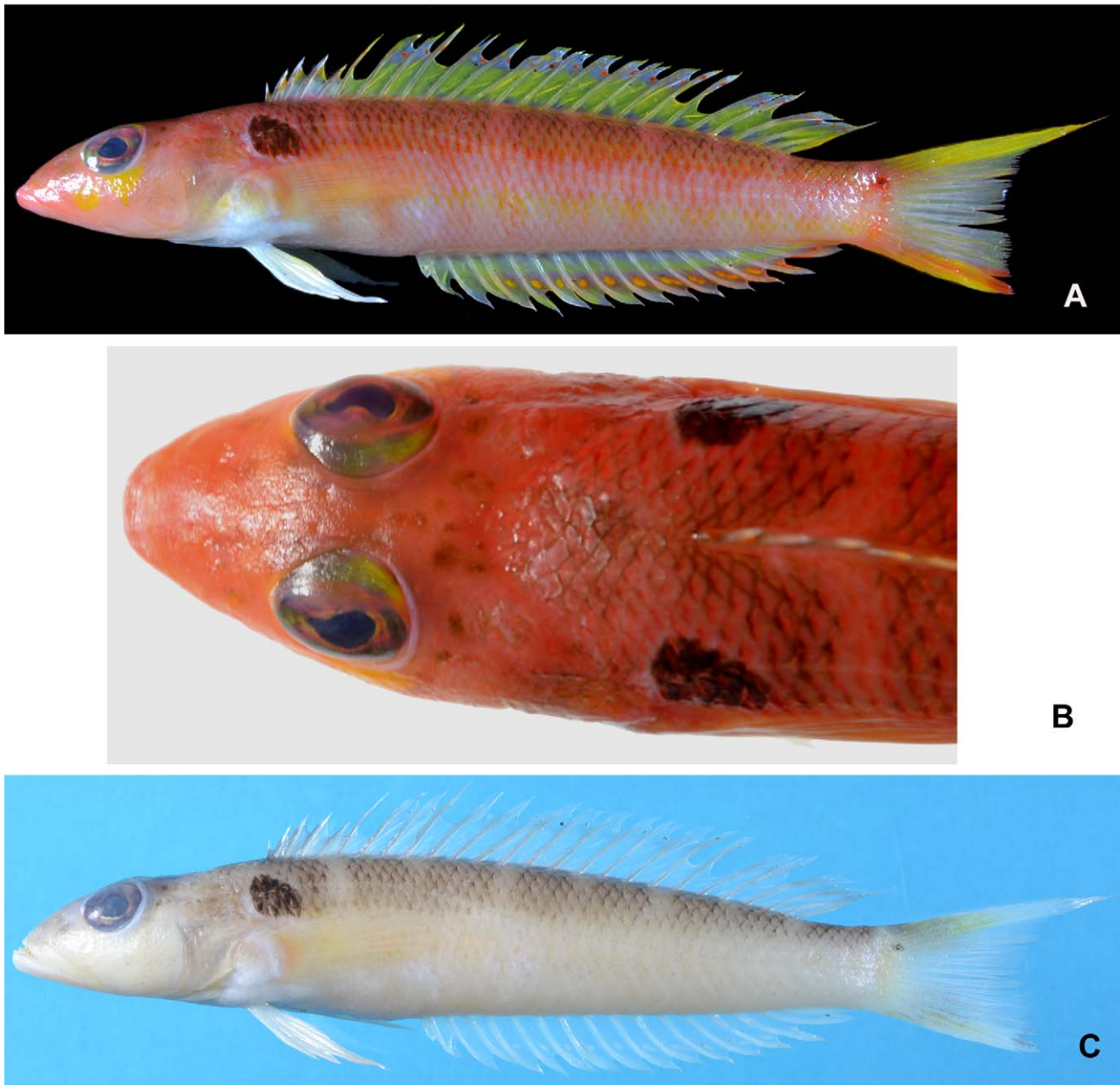


FIGURE 1. *Parapercis rufa* Randall, 2001, NMMB-P11688, 132.4 mm SL. A. Fresh condition. B. Dorsal view of head, fresh. C. Preserved condition.

TABLE 1. Morphometric and meristic data of holotype *Parapercis rufa* Randall, 2001 and the three specimens newly collected from Taiwan.

	NMHN 1984–0431	NMMB– P11688	NMMB– P11689	NMMB– P11690
	Holotype	Taiwan specimens		
SL (mm)	83.1	132.4	122.7	110.7
Morphometrics (% SL)				
Body depth	23.9	18.6	19.3	18.3
Body width	15.9	17.8	18.3	17.6
Head length	31.2	29.0	29.9	29.3
Snout length	9.1	9.7	10.4	10.3
Orbital diameter	9.2	8.1	7.6	7.8
Interorbital width	2.6	3.5	4.2	3.8
Upper jaw length	12.3	11.9	12.9	12.1
Caudal-peduncle depth	8.8	9.2	9.4	9.1
Caudal-peduncle length	9.4	9.5	9.5	9.3
Predorsal length	33.1	30.2	30.4	30.3
Preanal length	51.1	46.8	48.1	45.9
Prepelvic length	29.9	26.3	26.6	26.2
Dorsal-fin base length	60.1	62.6	62.2	63.7
1st dorsal-fin spine length	3.2	2.3	1.1	2.3
2nd dorsal-fin spine length	5.3	4.3	3.8	4.4
3rd dorsal-fin spine length	7.4	6.2	5.1	6.4
4th dorsal-fin spine length	7.9	7.4	6.6	7.2
5th dorsal-fin spine length	5.9	6.1	5.9	6.4
Longest dorsal-fin ray	16.2	13.8	14.4	14.1
Anal-fin base length	42.8	44.2	44.3	45.9
Anal-fin spine length	5.6	3.2	3.7	4.3
Longest anal-fin ray	12.9	12.5	12.4	12.9
Caudal-fin length (with prolongation)	24.5	30.4	broken	24.4
Caudal-fin length (without prolongation)	21.9	18.8	19.6	18.3
Pectoral-fin length	20.9	20.5	20.3	19.9
Pelvic-fin spine length	6.7	8.0	7.6	7.9
Pelvic-fin length	22.8	20.3	20.6	20.3
Meristics				
Dorsal-fin rays	V, 21	V, 21	V, 21	V, 19*
Anal-fin rays	I, 17	I, 17	I, 17	I, 17
Pectoral-fin rays	17	17	17	17
Vertebrae	9+21	10+20	10+20	10+20
Predorsal scales	9	8	8	9
Lateral-line scales	53+4	52+3	52+3	53+4
Gill rakers on 1st gill arch	5+10	5+11	5+10	3+10
Pseudobranchial filaments	–	17	17	17
Transverse scale rows	5.5/15	5.5/15	5.5/15	6.5/15
Circumpeduncular scales	24	24	24	24
Caudal-fin rays	–	9+17+9	9+17+7	8+17+8

*With damaged 17th and 18th rays.



FIGURE 2. *Parapercis rufa* Randall, 2001. A. NMMB-P11689, 122.7 mm SL. B. NMMB-P11690, 110.7 mm SL.

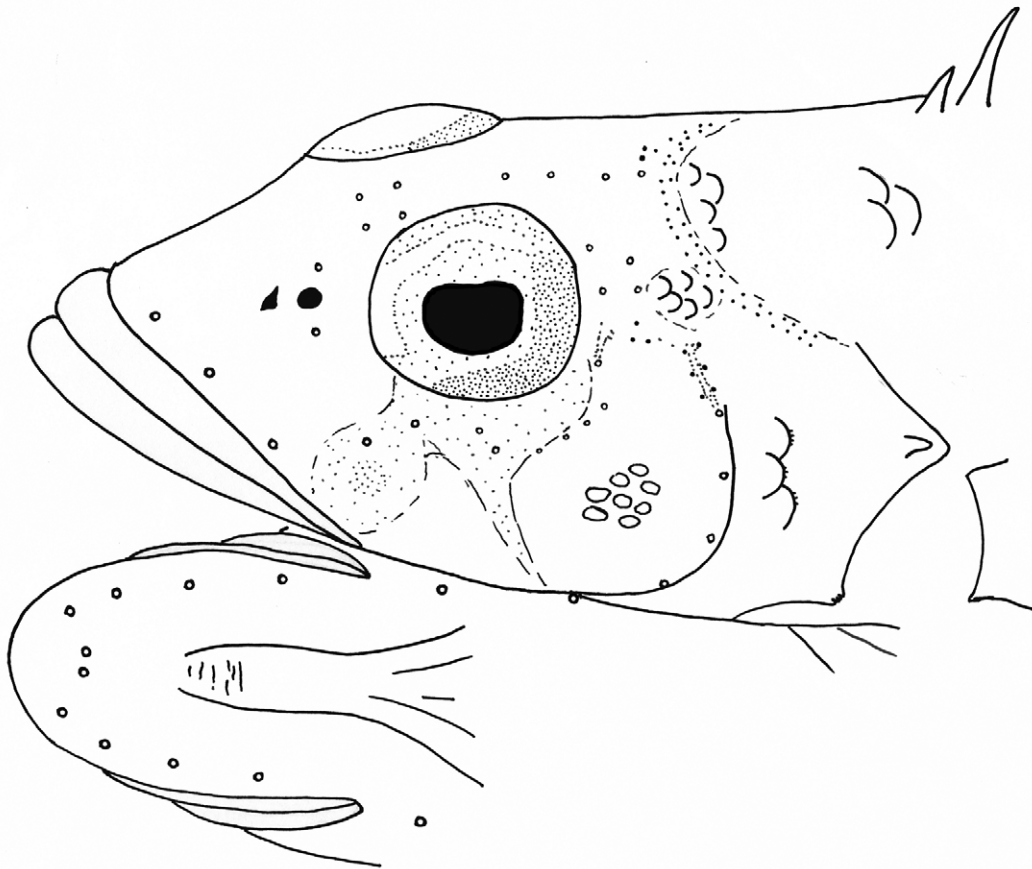


FIGURE 3. Dorsal-lateral view (upper figure) and ventral view (lower figure) of head showing the head pores of *Parapercis rufa*, from NMMB-P11689.

Pores of cephalic sensory system as shown in Fig. 3. A row of 3 large pores on each side of maxilla; 2 median pores nearby posterior nostril, one above and one below; 2 median pores in anterior interorbital space; a series of 4 pores on posterior interorbital space, followed by 2 irregular transverse series of pores posteriorly on occiput, relatively few and scattered, forming a canal under the skin; a single series of small pores at lower posterior corner of eye and a double series of small pores above the free end of preopercle, but the connections of these two series with the occipital series are not obvious; two double series of median pores at upper posterior corner of eye which possibly connect to the occiput series; 4 pores below anterior half of eye; a series of 6 large pores along the inner margin of preopercle, continuing to a series of 4 large pores on mandibular; a pair of large pores at front of chin.

Opercle with a single sharp spine at level of ventral edge of pupil (when viewed from side); margin of interopercle smooth except for 4 tiny, close-set serrae on a small bony prominence at upper edge; preopercle broadly rounded, its free edge smooth except for slight indentation at pore sites, extending from level of ventral edge of orbit to slightly anterior to a vertical at posterior edge of orbit.

Scales finely ctenoid on body, becoming cycloid anterior to a line from base of third dorsal spine to anterior end of lateral line, and on prepectoral and prepelvic areas, those on belly weakly ctenoid; scales on opercle cycloid or very weakly ctenoid; scales on cheek cycloid, small, mostly nonimbricate, in about 10–11 irregular horizontal rows, from below center of eye to posterior edge of preopercle, with 7 or 8 additional short rows of scales extending dorsally to behind ventral half of orbit; no scales on dorsal, anal, or pelvic fins; progressively smaller scales extending out on caudal fin to at least 2/3 length of fin; base of pectoral fins with up to 4 rows of small cycloid scales; lateral line broadly arched over pectoral fin, then gradually declining to straight midlateral portion on about posterior fourth of body.

Origin of dorsal fin over second to third lateral-line scales, predorsal length 3.3 in SL, equal to head length; 1st dorsal spine relatively short, 12.8–13.0 (28.2 in 110.7-mm specimen) in HL; 2nd dorsal spine 6.6–7.8 in HL; 3rd dorsal spine 4.6–5.8 in HL; 4th dorsal spine longest, 3.9–4.5 in HL; 5th dorsal spine 4.6–5.0 in HL, entirely attached to 1st soft ray by membrane; last second dorsal soft ray longest, 2.1 in HL; origin of anal fin below base of 4th dorsal soft ray, the preanal length 2.1–2.2 in SL; anal spine 6.8–8.9 in HL; last second anal soft ray longest, 2.3–2.4 in HL; caudal fin rounded, with a prolonged upper lobe centered on third branched ray, extending about 1.0–1.5 orbit diameters posterior to central margin of fin, total fin length 3.3–4.1 in SL, 1.0–1.2 in HL; pectoral fins broadly rounded when spread, the tenth ray longest, 4.9–5.0 in SL, 1.4–1.5 in HL; origin of pelvic fins anterior to that of pectoral fin, below base of exposed part of opercular spine, prepelvic length 3.8 in SL, 1.1 in HL; pelvic spine slender, 3.6–3.9 in HL; pelvic fins relatively short, reaches the anus to origin of anal fin, the fourth pelvic-fin ray longest, 4.8–4.9 in SL, 1.4–1.5 in HL.

Color when fresh. See Figs. 1A–B, 2A–B. Light reddish brown dorsally, grading to pinkish ventrally; forming many alternative reddish and white oblique lines on anterior half of lateral body, followed by many short ones along the lateral line on posterior half of lateral body; bright white between pectoral and pelvic fins; both jaws and anterior portion of snout reddish; 8 brownish blotches evenly distributed on dorsal surface of body; a large blackish spot with a whitish rim above pectoral-fin base; a yellow patch above posterior third of upper jaw; a yellow patch at lower margin of orbit, with an orange-yellow line extended ventral-posteriorly to lower corner of preopercle; iris circled by red; a gray-yellow band on upper margin of eye; pelvic fin bright white; pectoral light yellow; spinous dorsal fin bluish with a narrow yellow band; a very broad yellow band on soft dorsal fin with a row of small orange dots at upper one-third of the fin; a broken yellowish band below body axial; anal fin yellowish with a bluish base; a narrow purple band with a series of orange-red spots at intermembranes of fourth to the last rays of anal fin; caudal fin with upper rays bright yellow throughout the prolongation, middle rays bluish and lower rays red-yellowish.

Color in alcohol. See Fig. 1C. Grayish above and creamy white below; eight blackish blotches on dorsal surface of body, the first one between posterior margin of neurocranium and fifth dorsal-fin spine, the middle six at soft dorsal fin base, and the last one at caudal peduncle; three symmetric pairs of gray spot on posterior portion of neurocranium; a grayish patch above posterior one-third of upper jaw; a grayish bar at lateral-posterior corner of cheek; a large black spot, about 5 scales width, above the pectoral-fin base; a row of very small spots at two-thirds height of soft dorsal fin; a pair of gray spots at caudal-fin base, the lower one lighter than the upper one; spinous dorsal fin lightly grayish; peritoneum white; and gill cavity pale to grayish.

Distribution. Known from the type series collected from Lubang Island, the Philippines and off Maobitou, inside the Kenting National Park, Pingtung, southern tip of Taiwan. Depth range 50–80 m.

Remarks. Some proportional variations are observed among the holotype and the Taiwanese specimens. The proportions of head length, eye diameter, predorsal length, preanal length, prepelvic length, first to fourth dorsal-fin spines, longest dorsal-fin ray, pectoral-fin length, pelvic-fin length, anal-fin spine, and caudal fin without prolongation in the holotype are relatively large compared to the Taiwanese specimens. Proportions of snout length, interorbital width, dorsal-fin base, anal-fin base, and pelvic-fin spine are relatively small compared to the Taiwanese specimens. Moreover, the caudal fin extension is relatively short in the three examined type specimens, but relatively long in two of three Taiwanese specimens (one with broken caudal fin). These differences may be attributed to their asymmetric growth, either positive or negative, because all three Taiwanese specimens are much larger than the holotype. It is also possible that these variations may be attributed to variations in the state of preservation among these specimens. Morphometric ranges of *P. rufa* are extended accordingly, as well as its geographic distribution.

In the original description of *Parapercis rosea*, the author mentioned there are four specimens, including the holotype. However, only two specimen were registered, the holotype (MNHN 1984-31) and BMBP 29666. A search for the type series revealed that the registration number for holotype is actually MNHN 1984-0431 and two other specimens were registered as MNHN 1984-0432. The numbers were revised herein accordingly.

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