

Parapercis lata, a New Species of Sandperch (Perciformes: Pinguipedidae) from the Central Pacific

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Parapercis lata is described from 12 specimens from the Line Islands and one from the Phoenix Islands collected over sand or rubble substrata in 6–55 m in both lagoon and outer-reef areas. It is distinct in having the anterior body broader than its depth, three pairs of canine teeth at the front of the lower jaw, no palatine teeth, a short spinous portion of the dorsal fin with V spines, the last connected by membrane directly across to first soft ray, 59–60 lateral-line scales, and a unique color pattern of eight narrow black bars on the body, the middle six bars branching dorsally to a Y-shape.

The Pinguipedidae, established as the current name to replace the Paraperidae and Mugiloididae of the older literature (Rosa and Rosa 1987), consists of six genera. The four that are universally recognized are *Kochichthys*, *Parapercis*, *Pinguipes*, and *Prolatilus*. We include the monotypic freshwater genus *Cheimarrichthys* from New Zealand, following McDowell (1973), and *Pseudopercis*, demonstrated as valid for the family by Rosa and Rosa (1997). The largest genus is *Parapercis*, all species of which are found in marine habitats, mostly in the Indo-Pacific region, with a single southeastern Pacific species (McCosker 1971). Cantwell (1964) first revised *Parapercis*, recognizing 27 species. In a brief review of the genus, Randall (1984) raised the total to 40 species. Manilo (1990) described *P. ventromaculata* as new from the Maldive Islands, but this is a junior synonym of *P. signatus* Randall, 1984, also from the Maldives. Six more species have been described to date (Anderson 1992; Randall and Francis 1993; Randall, in press), but others await description.

The first author has long planned a second revision of this genus, but this has been repeatedly postponed. The species described herein was first collected in the Line Islands in 1968; its description was intentionally delayed for the revision. However, after finding a specimen in the collection of the California Academy of Sciences from the Phoenix Islands, it was decided to describe the species so the name will be available for a large manuscript in progress by the first author on the reef and shore fishes of the South Pacific.

The species of *Parapercis*, popularly known as sandperches, are generally found on sedimentary or rubble substrata, often near coral reefs. They are usually seen at rest on the bottom, propped on their pelvic fins, but they often move short distances as they forage for food—chiefly small benthic crustaceans and demersal zooplankton. Several authors have noted the sexual dichromatism of species of the genus, and protogynous hermaphroditism has been demonstrated for some; also males are known to be harem (Randall 1984; Nakazono et al. 1985; Clark et al. 1991; T. J. Donaldson, pers. comm.).

MATERIALS AND METHODS

Type specimens of the new *Parapercis* have been deposited at the following institutions: Australian Museum, Sydney (AMS); Bernice P. Bishop Museum, Honolulu (BPBM); California Academy of Sciences, San Francisco (CAS); Museum National d'Histoire Naturelle, Paris (MNHN); and the U. S. National Museum of Natural History, Washington, D. C. (USNM).

Lengths of specimens are given as standard length (SL), the distance from the front of the upper lip to the base of the caudal fin (posterior end of the hypural plate). Body depth is measured vertically from the origin of the anal fin; body width is taken just posterior to the gill opening. Head length is measured from the front of the upper lip to the posterior end of the opercular membrane, and snout length from the same anterior point to the fleshy edge of the orbit. Orbit diameter is the greatest fleshy diameter, and interorbital width the least fleshy width. Upper-jaw length is taken from the front of the upper lip to the fleshy end of the maxilla. Dorsal and anal spines and soft rays are measured from the point they depart from the contour of the body.

Counts of lateral-line scales are made to the base of the caudal fin, hence do not include the series of six or seven small pored scales on the base of the fin.

In the description of the new species, data in parentheses apply to paratypes. Proportional measurements in the text are rounded to the nearest 0.05.

SPECIES DESCRIPTION

Parapercis lata n. sp.

Plate 1, Figs. a–d; Table 1

MATERIAL EXAMINED. — HOLOTYPE: BPBM 28063, male, 212.0 mm, Line Islands, Tabuaeran Atoll (Fanning Island), about one-half mile southeast of entrance to English Harbor, ocean reef slope, sand and rubble, 36.5 m, net, J. L. Earle, 3 April 1981. PARATYPES: BPBM 7575, 186.0 mm, Tabuaeran, lagoon end of English Harbor off settlement, sand bottom with isolated coral heads, spear, J. E. Randall, 29 October 1968; AMS I.141173-001, 128.6 mm, same locality, 6 m, spear, J. E. Randall, 31 October 1968; CAS 42102, 174.0 mm, Phoenix Islands, Canton Atoll, Shark Alley, spear, D. Diener, 15 August 1978; BPBM 28066, 2: 143.2–164.5 mm, Line Islands, Tabuaeran, ocean side off cable station, sand channel with coral heads, soft coral, and rubble, 20–21 m, spear and quinaldine, J. E. Randall, 4 April 1981; BPBM 30657, 74.8 mm, Line Islands, Kiritimati Atoll (Christmas Island), net, D. Wilder, July 1985; USNM 367667, 145.4 mm, Kiritimati, NE side off Captain Cook Hotel, outer reef, rubble and sand, 55 m, spear, J. E. Randall, 29 July 1987; BPBM 31908, 3: 97.3–178.8 mm, Kiritimati, off London, north of Bridges Point, rubble, sand, and patch reefs, 12–13 m, spear, J. E. Randall, 2 August 1987; MNHN 2002-0138, 132.0 mm, Kiritimati, west side, rotenone, 6–12 m, D. R. Robertson, September 1996.

DIAGNOSIS. — Dorsal rays V,21; anal rays I,17; pectoral rays 18–19 (usually 18); lateral-line scales 59–60; predorsal scales about 15; scales on cheek small and cycloid; gill rakers 6–7 + 10–12; three pairs of canine teeth anteriorly in lower jaw, the medial pair small, the lateral largest; palatine teeth absent; no serrae or spines on edges of opercular bones except a single stout spine on opercle; body elongate, the depth 5.7–6.2 in SL; body cylindrical anteriorly, the width slightly greater than depth; third or fourth dorsal spines longest; membrane of fifth dorsal spine connected directly across from spine tip to first soft ray; caudal fin slightly rounded, the upper corner projecting as a short, broad-based filament in adults; whitish with eight narrow dark bars on body, all but first and last broadly expanded dorsally to a Y-shape; largest specimen, 212 mm SL.

DESCRIPTION. — Dorsal rays V,21; anal rays I,17; pectoral rays 18 (18, three of 11 paratypes with 19); pelvic rays I,5; principal caudal rays 16, the median 14; branched; upper procurent caudal

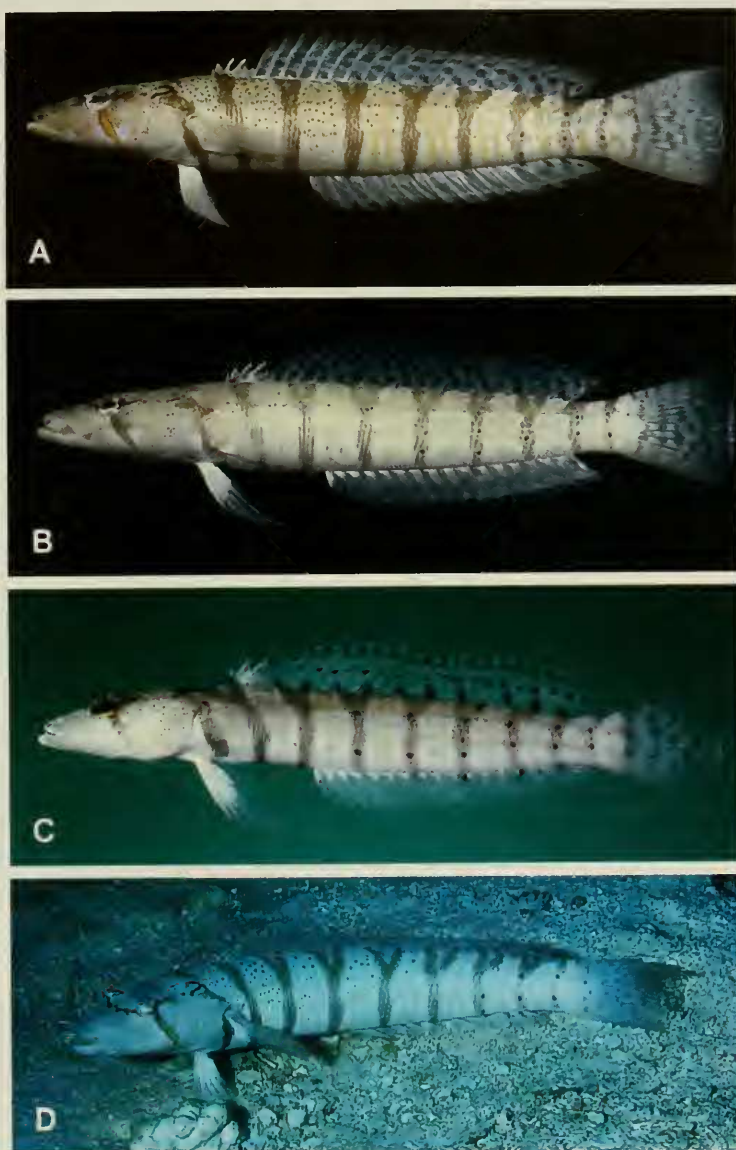


PLATE I

- A. Holotype of *Parapercis lata*, BPBM 28063, 212 mm SL, Tabuaeran, Line Islands.
 B. Female of *Parapercis lata*, BPBM 28066, 143.2 mm SL, Tabuaeran, Line Islands.
 C. Subadult of *Parapercis lata*. BPBM 30657, 74.8 mm SL, Kiritimati, Line Islands.
 D. Underwater photograph of male of *Parapercis lata*, about 225 mm TL, Kiritimati, Line Islands.

rays 9 (9–10), the last segmented; lower procurrent caudal rays 8 (8–9), the last segmented; lateral-line scales 59 (59–60) + 6–7 progressively smaller pored scales on caudal-fin base; scales above lateral line to origin of dorsal fin 9; scales below lateral line to origin of anal fin 14; circumpeduncular scales 30; predorsal scales about 15; gill rakers 6 + 10 (6–7 + 10–12); pseudobranchial filaments 32 (14–28, increasing with growth); branchiostegal rays 6; vertebrae 30.

Body elongate, the depth 6.2 (5.7–7.2) in SL; body width just behind gill opening greater than depth, the width 5.8 (5.45–7.0) in SL; head length 3.35 (3.25–3.4) in SL; snout pointed, its length 2.7 (2.7–2.95) in head length, its anterior end rounded in dorsal view; orbit diameter 6.1 (4.4–5.9) in head; interorbital space slightly concave, its width 6.65 (6.6–9.6) in head; caudal-peduncle depth 3.0 (2.9–3.3) in head; caudal-peduncle length 3.5 (3.45–3.9) in head.

Mouth slightly oblique, forming an angle of about 20° to horizontal axis of head and body, the lower jaw projecting; upper jaw extending to or slightly posterior to a vertical at front edge of orbit, the upper-jaw length 2.6 (2.5–2.9) in head; front of upper jaw with 6–7 pairs of incurved canine teeth, the most posterior usually the largest, followed by a row of slender incurved conical teeth (24 on side of jaw of holotype); a broad band of villiform teeth immediately behind anterior canines, narrowing to a single row posteriorly in jaw; front of lower jaw with 3 pairs of incurved canine teeth, progressively larger laterally, the third pair larger than largest canine of upper jaw; a broad band of villiform teeth immediately behind anterior canines, narrowing to a single row of slender conical teeth posterior to canines that enlarge to a series of 4 or 5 recurved canines on midside of jaw; a narrow band of small conical teeth in a broad arc on vomer; no teeth on palatines. Inner surface of lips with ridges of fleshy papillae that extend between anterior canines. Tongue narrowly triangular with a slightly rounded tip.

Gill membranes united, not attached to isthmus, with a broad free fold across. Gill rakers short and stout, less than one-fourth length of longest gill filaments on first gill arch. Anterior nostril small with a rim and posterior flap (not reaching posterior nostril when laid back), in front of middle of eye a distance of three-fourths eye diameter in holotype; posterior nostril about twice as large, with a slight rim, dorsoposterior to anterior nostril, the internarial distance one-fifth orbit diameter in holotype.

Opercle with a strong horizontal spine in line with front of upper lip; no other spines on head, and no serrae on edges of opercular bones; preopercle broadly rounded, its free posterior margin ending at level of lower edge of orbit; opercular membrane broadest ventrally where it joins branchiostegal membrane.

Lateral line continuous, approximately following contour of back; lateralis system of head well developed, with numerous sensory pores, the four on each side of mandible and one symphyseal the most prominent. Scales on body ctenoid, those on side of body with about 50 cteni on holotype and about 25 on smallest paratype; scales on opercle and cheek very small and cycloid, partially embedded on opercle and fully embedded on cheek, those on cheek reaching slightly anterior to corner of mouth; no scales on dorsal, anal, or pelvic fins; small scales on about basal one-fourth to one-fifth of pectoral fins; very small scales extending about three-fourths length of caudal fin.

Origin of dorsal fin over fourth lateral-line scale, the predorsal length 3.2 (3.05–3.2) in SL; spinous portion of dorsal fin low, the spines progressively shorter with growth; first dorsal spine 15.5 (11.5–15.0) in head length; third and fourth dorsal spines subequal, the longest 6.35 (4.4–6.5) in head; fifth dorsal spine 9.1 (7.35–9.55) in head; membrane from fifth dorsal spine attached directly across to first soft dorsal ray; dorsal soft rays except first two and last subequal, the longest 2.1 (2.05–2.6) in head; membranes of anterior soft portion of dorsal fin incised about one-half length of rays, grading to one-third posteriorly; origin of anal fin below base of fifth dorsal soft ray, the preanal length 2.05 (2.05–2.1) in SL; anal-fin spine very slender and closely applied to first soft ray. 6.25 (5.35–7.05) in head; 15th and 16th anal soft rays longest, 2.65 (2.4–2.75) in head; caudal fin slightly rounded, the first two branched rays slightly prolonged, forming a broad-based filament; caudal-fin length 5.0 (4.8–5.05) in SL; pectoral fins rounded, the middle rays longest, 5.75 (5.3–5.85) in SL; origin of pelvic fins slightly anterior to base of pectoral fins, the prepelvic length 3.75 (3.5–3.8) in SL; pelvic spine

TABLE 1. Proportional measurements of type specimens of *Parapercis lata* expressed as percentages of the standard length.

	Holotype			Paratypes				
	BPBM 28063	BPBM 30657	BPBM 31908	BPBM 31908	BPBM 28066	BPBM 28066	BPBM 31908	BPBM 7575
Sex	male	female	female	female	female	male	male	male
Standard length (mm)	212.0	74.8	97.3	125.0	143.2	164.5	178.8	186.0
Body depth	16.2	13.9	14.5	17.5	15.4	15.1	16.8	16.5
Body width	17.9	14.3	16.5	18.4	16.8	16.4	17.9	17.4
Head length	29.9	29.4	29.3	30.8	30.3	30.0	29.6	30.0
Snout length	11.1	10.1	10.0	11.1	11.1	10.6	10.6	10.6
Orbit diameter	4.9	6.7	6.2	6.1	5.6	5.4	5.1	5.1
Interorbital width	4.5	3.1	3.4	3.2	4.2	3.8	4.5	4.5
Upper-jaw length	11.4	10.8	11.2	10.7	12.2	12.0	11.3	11.5
Caudal-peduncle depth	9.9	9.1	9.0	10.5	9.4	9.1	10.1	10.0
Caudal-peduncle length	8.5	7.6	8.0	8.0	8.2	8.6	8.2	8.7
Predorsal length	31.5	32.0	31.3	32.7	32.0	31.3	31.7	31.1
Preanal length	47.5	48.3	48.1	49.1	47.3	48.8	48.2	47.6
Prepelvic length	26.7	27.0	26.7	29.6	26.5	27.0	27.1	27.4
Dorsal-fin base	60.6	61.7	60.5	61.0	60.3	60.4	61.2	60.4
First dorsal spine	1.9	2.6	2.5	2.3	2.4	2.3	2.2	2.0
Longest dorsal spine	4.7	6.7	5.9	5.6	5.4	5.1	4.7	4.6
Fifth dorsal spine	3.3	4.0	3.3	3.5	3.4	3.2	3.1	3.4
Longest dorsal ray	11.7	12.4	12.2	11.9	11.8	11.6	11.5	11.9
Anal-fin base	43.2	44.7	43.4	44.2	43.0	42.7	43.7	43.1
Anal-fin spine	4.8	5.5	5.3	4.8	4.3	4.6	4.9	4.7
Longest anal ray	11.3	12.4	11.6	11.2	11.3	11.1	11.2	11.5
Caudal-fin length	20.0	20.7	19.8	20.8	20.2	20.1	20.4	20.3
Pectoral-fin length	17.4	18.8	18.2	18.4	18.4	18.1	17.1	17.2
Pelvic-spine length	7.4	8.4	8.1	8.3	8.4	8.5	7.8	7.6
Pelvic-fin length	18.6	23.1	22.6	22.0	21.6	19.7	19.0	18.8

very slender and closely applied to first soft ray, its length 4.05 (3.5–3.95) in head; fourth pelvic soft ray longest, just reaching anus in holotype, but extending beyond origin of anal fin in smaller paratypes, 5.4 (4.3–5.3) in SL.

Color of holotype, a male, in alcohol very pale brown (nearly white) with eight dark brown bars less than half width of pale interspaces, the middle six of which bifurcate dorsally to form a broad Y-shape; a brown bar containing small brown spots and short lines across occiput, angling down to cross pectoral-fin base and chest; scales of pectoral base and chest bar and first five bars on body with dark brown centers and pale edges thus giving a vertical linear effect within these bars; pale interspaces on body with one to three faint irregular pale yellowish brown bars; a curved brown band across top of snout from eye to eye; a dark brown line and two small dark brown spots extending posteriorly from eye in line with a curving dark brown line within brown bar of posterior part of head; an oblique dark-edged band (yellow in life) from lower edge of orbit across operculum; last three dark bars on body with two small dark brown spots; scattered dark brown dots dorsally on postorbital head and anterodorsally on body from beneath pectoral fin to upper part of fifth dark bar on body; four dark brown dots in interorbital space and a median one just before; a dark brown spot anteriorly on side of upper lip; dorsal and anal fins translucent with pale yellowish rays, the dorsal with a row of small dark brown spots at base, one on every other membrane, and a second row of fainter spots above on mem-

branes without a dark spot below, except posterior six membranes with an upper spot on each membrane, these now darker; a dark brown dot at tip of each membrane of soft portion of dorsal and anal fins; anal fin with four small dark brown spots posteriorly; caudal fin pale yellowish with five faint irregular narrow brown bars containing dark brown dots; paired fins with translucent membranes and pale yellowish brown rays. Color of holotype when fresh shown in Plate 1a.

The following color note was made of the 186-mm male paratype of BPBM 7575 when fresh: pale olive, shading on sides and ventrally to white, with eight blackish bars on body and one posteriorly on head crossing to chest, the median six of these bars branched dorsally; bar on head and last three bars on body with small black spots; white interspaces on body with one to three irregular light olivaceous yellow bars; black dots on postorbital head and anterodorsal part of body; a diagonal dark-edged olive bar passing posteroventrally from eye; a narrow black band curving on top of snout just before interorbital space, passing horizontally through eye to upper end of preopercular margin; a dotted black line across middle of interorbital space; fins pale, the dorsal and caudal with black dots; dorsal fin with a pinkish margin (mainly ray tips); anal fin and middle of caudal fin with a narrow white margin and broad pinkish submarginal zone.

The color of the 143.2-mm female paratype of BPBM 28066 is shown in Plate 1b, and that of the 74.8-mm subadult of BPBM 30657 in Plate 1c. The underwater photograph of Plate 1d provides the life color of a male estimated at 225 mm total length.

Males can be distinguished from females by the oblique, dark-edged, yellow or olive band on the cheek, more numerous black dots dorsally on the head and dorsoanterior part of the body, and the more pointed membrane at the tips of the dorsal spines.

ETYMOLOGY. — This species is named *Parapercis lata* from the Latin for wide, in reference to the width of the anterior part of the body, greater than the depth for all specimens examined.

REMARKS. — *Parapercis lata* is presently known only from the atolls of Tabuaeran and Kiritimati in the Line Islands and Canton in the Phoenix Islands; it appears to be endemic to this part of the Central Pacific. Because it is large and easily approached, it surely would be known from well-collected island groups, such as the Marshall Islands, Samoa Islands, and the islands of French Polynesia, if it were there.

Specimens were collected from sand or sand and rubble substrata in both lagoon and seaward reef areas at depths of 6–55 m.

Of the known species of *Parapercis*, *P. lata* is closest to *P. xanthozona* (Bleeker) which occurs from East Africa to the western Pacific, ranging east in Oceania only to Palau, New Caledonia, and Fiji. The two species share the same meristic data, the same general morphology, dentition, and large size. *P. lata* differs in having a shorter spinous portion of the dorsal fin, the longest spine less than one-half the length of the longest soft ray, whereas in *P. xanthozona* the longest spine is from one-half to two-thirds the length of the longest soft ray. The width of the body measured just behind the gill opening is greater than the body depth in *P. lata*, but it is equal to or less than the depth in *P. xanthozona*. Also the two are very different in color, *P. xanthozona* having a conspicuous midlateral white stripe that extends to the end of the caudal fin, dark bars only below the white stripe, a large yellow spot at the base of the pectoral fins, and the male with a brownish yellow cheek crossed by oblique dark-edged white lines.

The four largest type specimens are males, the rest are females. The gonad of the smallest male, BPBM 28066, 164.5 mm SL, contains yellow inclusions which seem to be ova in the process of being resorbed. This suggests that *Parapercis lata* is a protogynous hermaphrodite, as has been shown for a few other species of the genus.

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