



<http://dx.doi.org/10.11646/zootaxa.3802.3.3>

<http://zoobank.org/urn:lsid:zoobank.org:pub:6EB5463E-BCEC-4A93-A0DE-0EB8AD9612B7>

A new species of the sandperch genus *Parapercis* from the western Indian Ocean (Perciformes: Pinguipedidae)

HSUAN-CHING HO^{1,2,*}, PHILLIP C. HEEMSTRA³ & HISASHI IMAMURA⁴

¹National Museum of Marine Biology & Aquarium, Pingtung, Taiwan

²Institute of Marine Biodiversity & Evolutionary Biology, National Dong Hwa University, Pingtung, Taiwan

³South Africa Institute of Aquatic Biology, Grahamstown, South Africa

⁴Laboratory of Marine Biology and Biodiversity, Faculty of Fisheries Sciences, Hokkaido University, Hakodate, Hokkaido, Japan

*Corresponding author. E-mail: ogcoho@gmail.com

Abstract

Parapercis albiventer sp. nov., a new species of sandperch is described based on 12 specimens collected from the western Indian Ocean. It can be distinguished from congeners by having a bright white ventral surface, without color markings on lower fourth of body; dorsal surface of head and body densely covered by small brown spots; a row of 10 faint reddish blotches on a paler background, along body axis; row of 10 deep reddish blotches, the lower part of each blotch with a solid black bar ventrally, below mid-lateral body axis; and combination of following characters: no palatine teeth; snout long; eye small; interorbital space broad; dorsal-fin rays V, 21; anal-fin rays I, 17; pectoral-fin rays 16–17; pored lateral-line scales 55–59; predorsal scales 9 or 10; scales on transverse row 6/17–21; 3 pairs of canine teeth at front of lower jaw; and vertebrae 10 + 20 = 30.

Key words: Pinguipedidae, *Parapercis albiventer*, new species, South Africa, Madagascar, Mozambique

Introduction

In recent decades, many new “cryptic” species sharing similar morphology or coloration in different species-complexes of the sandperch genus *Parapercis* Bleeker, 1863 have been described from throughout the Indo-west Pacific region (Randall & Francis, 1993; Randall, 2008; Johnson, 2006; Imamura & Yoshino, 2007; Randall *et al.*, 2008; Liao *et al.*, 2011; Ho & Shao, 2010; Ho & Johnson, 2013; Ho *et al.*, 2012; Sparks & Baldwin, 2012; Allen & Erdmann, 2012; Johnson & White, 2012). The current number of valid species in *Parapercis* is 77; of these, 31 species were described in the last 10 years (Eschmeyer & Fong, 2013; Ho, pers. obs.). The trend in describing new species shows no sign of decreasing.

Bleeker (1849) described *Parapercis xanthozona* based on 10 specimens collected from Indonesia. Subsequently, this species was recorded from throughout the Indo-west Pacific region (Heemstra, 1986; Randall, 2001; Imamura & Matsuura, 2003). However, Heemstra (1986) pointed out the uncertainty of the identification of the western Indian Ocean population and later went further to recognize it as an underscribed species. Imamura & Matsuura (2003) stated that “... we determined that Heemstra’s specimens, reported as *P. xanthozona*, represent an underscribed species; the senior author and P. C. Heemstra (RUSI) intend to describe this as a new species separately.” Randall (2001: 3510) also commented on this treatment of *P. xanthozona*, noting that there are “... two records from East Africa (Zanzibar and Natal). The East African form is a little different in colour and warrants further investigation.”

Two specimens collected from Madagascar were found by the first author when visiting the fish collection of the Muséum national d’Histoire naturelle (MNHN). These two specimens, with similar fin formulae, scale counts and appearance, were formerly recognized as *P. xanthozona*. However, because of its different coloration and slightly fewer pored lateral-line scales, the first author made direct comparisons with western Pacific *P. xanthozona* and found it to be a different species.

In correspondence between the first author and Elaine Heemstra (SAIAB) about some other South African *Parapercis*, the conclusion was reached that the same new species had been independently recognized; herein we describe this new species together.

The new species described below, with a series of black blotches (bars or spots in preservation) on lower half of body and a bright white patch on caudal fin, is similar to *Parapercis stricticeps* (De Vis, 1884), *Parapercis bimacula* Allen & Erdmann, 2012 (senior synonym of *Parapercis pariomaculata* Johnson & White, 2012) and *Parapercis kamoharai* Schultz, 1966. Other species with similar coloration are *Parapercis millepunctata* (Günther, 1860), *Parapercis clathrata* Ogilby, 1910, *Parapercis tetracantha* (Lacepède, 1801), *P. xanthozona*, *Parapercis punctulata* (Cuvier in Cuvier & Valenciennes, 1829) and *Parapercis robinsoni* (Fowler, 1929).

Method and material

Methods for taking measurements and counts followed Randall *et al.* (2008). However, caudal fin lengths were measured in two places, one with and one without caudal-fin elongation. Proportional data were taken for selected type series. Type specimens were deposited in the South African Institute for Aquatic Biodiversity (SAIAB), Natural History Museum, London (BMNH) and Muséum National d'Histoire Naturelle (MNHN). Specimens for comparison are deposited in the Biodiversity Research Center, Academia Sinica (ASIZP), Hokkaido University Museum, Hakodate (HUMZ), National Museum of Nature and Science, Tsukuba (NSMT-P), and MNHN. Other data used for comparison were those taken by us, from Randall & Stroud (1985), and provided by J. W. Johnson (unpub. data). Vertebrae were counted from radiographs, with the urostyle counted as the last vertebra.

Parapercis albiventer sp. nov.

New English name: Whitebelly sandperch

Figures 1A–E, 2A–C, 4A–B. Tables 1–2

Parapercis xanthozona (non Bleeker): Playfair & Günther, 1867:69, pl. VIII, fig. 3 (Zanzibar). Heemstra, 1986:741, pl. 113, 234.8 (South Africa, with uncertainty).

Holotype. SAIAB 15019 (female, 143.2 mm SL), 26°53'S, 32°52'E, off Kosi Bay, KwaZulu-Natal, South Africa, 18.3 m, hook and line, coll. P. C. Heemstra, 1 Nov. 1980.

Paratypes. 11 specimens, 63.0–168.2 mm SL (* indicates specimen with proportional data taken). BMNH 1867.3.9.511* (1 female, 125.1), Tanzania, western Indian Ocean, no other data. MNHN 1992-892* (1 female 124.2, 1 male 142.3), Vonhira, Madagascar, western Indian Ocean, 15 Mar. 1967. SAIAB 9430* (1 male, 148.0), 27°31'S, 32°41'E, Sodwana Bay, KwaZulu-Natal, South Africa, coll. P. C. Heemstra *et al.*, 2 Apr. 1979. SAIAB 46245 (1, 70.2), 30°18'S, 30°49'E, Aliwal Shoal southern ledges, KwaZulu-Natal, South Africa, ichthyocide, P. C. Heemstra & C. Buxton, 18 Jun. 1994. SAIAB 50377 (1, 63.0), 26°46'S, 32°53'E, Ponta Malongane, Mozambique, 24–26 m, ichthyocide, coll. P. C. Heemstra, 3 Nov. 1995. SAIAB 60347* (1 female, 140.1), 26°24'S, 32°55'E, inner pinnacle, Ponta Milibangalala, Mozambique, 19 m, ichthyocide, coll. P.C. & E. Heemstra & A. Bentley, 2 May 1999. SAIAB 97481* (1 female, 154.7), 25°1.7'S, 46°59.7'E, Douane Beach, Fort Dauphin, Anosy, Madagascar, gill net, coll. P. C. Heemstra *et al.*, 5 May 2010. SAIAB 98609* (1 male, 158.9), 25°1.7'S, 46°59.7'E, Douane Beach, Fort Dauphin, Anosy, Madagascar, gill net, coll. P. C. Heemstra *et al.*, 6 May 2010. SAIAB 188850 (1, 150), 26°40.2'S, 32°54.65'E, Techobanine, S. Mozambique, Africa, 20 m, spear, coll. A. D. Connell, 3 Jan. 2011. SAIAB 191147* (1 male, 168.2), 30°16.8'S, 30°49.2'E, Aliwal Shoal, South Africa, 31 m, ichthyocide, coll. P. C. Heemstra, 26 Sep. 2002.

Diagnosis. A species of *Parapercis* with a bright white ventral surface, without color markings on lower fourth of body; a row of 10 reddish blotches present at vertical through lower half of pectoral-fin base, the lower part of each blotch with a solid black bar ventrally. It can also be distinguished from its congeners by the following characters: dorsal-fin rays V, 21; anal fin rays I, 17; 3 pairs of enlarged canines at front of lower jaw; pored lateral-line scales 55–59 (mainly 58); pectoral-fin rays 17–18 (mainly 17); gill rakers 16–19 in total; and a different coloration: 3 pairs of dark broad bands on upper lip; curved black band on front of underside of chin; medium-sized orange-red irregular spots on entire dorsal surface of head; small irregular spots densely covering nape and dorsal surface of body; row of faint red blotches, on paler background, along body axis; caudal fin with two black longitudinally elongate bars on anterior half, black spots on upper and lower thirds, central third of posterior

margin of fin solid black, and a bright white patch on posterior half of middle caudal-fin rays, surrounded by irregular black marks.

Description. The following data are provided for the holotype, followed by all measured/counted specimens in parentheses when different, except for other indications.

Dorsal-fin rays V, 21 (1 paratype with missing 3rd or 4th spine; 1 with missing 5th spine); anal-fin rays I, 17; all dorsal- and anal-fin rays branched, last to base; pectoral-fin rays 17 (16 or 17, mainly 17), upper ray unbranched, others including lowermost branched; pelvic-fin rays I, 5; branched caudal-fin rays 15; lateral-line scales 59 (55–59, mainly 58), not including 3 (3–5) smaller pored scales on caudal-fin base; scales above lateral line to origin of dorsal fin 6, to base of anterior soft rays of dorsal fin 6.5 (5.5 or 6.5); scales below lateral line in oblique row to origin of anal fin 19 (17–21, mainly 19); circumpeduncular scales 29 (29 or 30); predorsal scales 9 (9 or 10), extending just anterior to a vertical from preopercle margin; gill rakers on 1st arch $6+12=18$ (5–7+10–12=16–19); branchiostegal rays 6; vertebrae $10 + 20=30$ (5 specimens, including the holotype, examined).

Body elongate, relatively depressed anteriorly, becoming rounded and cylindrical medially, compressed posteriorly. Body depth at head 13.6% (12.7–15.7%) SL; body width at head 17.2% (17.1–18.8%) SL; head depressed, particularly anterior portion, elongate; head length 30.8 (29.3–30.8%) SL; snout pointed, its length 10.8% (9.0–10.8%) SL; orbital diameter 6.1% (5.0–6.7%) SL; eyes directed more laterally than dorsally, fleshy interorbital space narrow, 3.0% (2.3–3.1%) SL; caudal-peduncle depth 8.9% (8.0–8.9%) SL; caudal-peduncle length 8.4% (7.2–9.0%) SL.

Mouth horizontal to slightly oblique, lower jaw protruding, with curved canine teeth at front of lower jaw slightly projecting, barely visible when mouth is closed; upper jaw extending to vertical at middle of eye (slightly beyond vertical at anterior margin of eye in small specimen), upper-jaw length 12.1% (11.0–12.5%) SL; upper jaw with 26/27 (25–28) outer curved, subequal canines on each side, first 2 slightly larger; broad inner band of villiform teeth anteriorly, narrowing gradually to form two rows at rear of jaw; front of lower jaw on each side with 3 enlarged curved canines in distinctly separate outer row; teeth nearest symphysis smallest, the others gradually increasing in size laterally, last in the series largest; broad inner band of villiform teeth extending posteriorly from symphysis to side of jaw just posterior to largest tooth in outer row; next 9/10 (9–11) teeth in single row, gradually curved and abruptly increasing in size, followed by single row of 12 (10–12) smaller slightly curved conical teeth. Vomer with 3 irregular crescentic rows of subequal teeth, those on 1st row slightly larger. No teeth on palatines. Tongue spatulate with broadly rounded tip.

Gill membranes united with broad free fold, not attached to isthmus. Gill rakers short, longest about 2–3 times in length of longest gill filament on 1st gill arch. Anterior nostril small, inconspicuous, anterior to mid-eye, slightly less than half distance from anterior margin of eye to snout tip, with membranous posterior flap, the latter folded around base forming partial tube, flap usually lying flat against snout in preserved specimens. Posterior nostril slightly more than half distance from anterior margin of eye to anterior nostril, dorsoposterior to, and about same width as anterior nostril, its opening simple, oval; internarial distance subequal to diameter of posterior nostril.

Opercle with distinctly exposed, robust, pointed spine; angle of subopercle expanded and armed with a cluster of 4 (4 or 5) small poorly defined spinules, remainder of subopercle entire, margins naked and broadly rounded; posterior margin of preopercle free from the gill cover, weakly serrated, with many poorly defined, widely-spaced knobs.

Lateral line continuous, ascending smoothly from opercle to below second or third soft dorsal-fin ray, then approximately following contour of back; scales on body ctenoid; on nape cycloid anteriorly and weakly ctenoid posteriorly; on cheeks cycloid, except for a few ctenoid scales near posterior margin of preopercle; ctenoid scales on space between pectoral-fin base and gape of gill chamber; cycloid on breast; cycloid anteriorly on midline of belly, weakly ctenoid posteriorly; scales on cheek extending forward approximately to vertical at anterior margin of orbit; no scales on dorsal, anal or pelvic fins; 4 (3 or 4) rows of small feebly ctenoid scales on base of pectoral-fin rays, except for the very last scales which are cycloid; elongate ctenoid scales densely arranged on proximal three-fourths of caudal fin.

Origin of dorsal fin just posterior to vertical from tip of opercular flap, predorsal length 32.5% (30.5–33.4%) SL; first four dorsal-fin spines progressively longer, first short, 1.7% (1.5–2.7%) SL; 3rd (3rd or 4th, usually 4th) spine longest, 5.0% (4.8–6.3%) SL; 5th dorsal-fin spine slightly shorter, 3.2% (3.1–4.4%) SL; fifth spine connected by membrane to opposite tip of the spine on 1st soft dorsal-fin ray; 3rd to 15th dorsal-fin soft rays subequal, the longest ray 9.9% (9.2–12.2%) SL; origin of anal fin below base of 5th soft dorsal-fin ray, preanal length 50.0% (48.6–51.3%) SL; anal-fin spine slender, closely attached to 1st soft ray, 3.7% (3.6–4.4%) SL; penultimate anal-fin ray longest, 10.5% (9.7–11.5%) SL; caudal fin truncated to slightly rounded, its length 17.2% (16.5–20.0%) SL; short elongation on upper lobe in most specimens examined, absent in other specimens; pectoral fins rounded, 9th

(9th or 10th) ray usually longest, 18.5 (17.3–18.7%) SL, subequal to or slightly longer than pelvic fins; origin of pelvic fins in advance of upper base of pectoral fins and approximately on vertical from upper corner of operculum, prepelvic length 26.7% (24.1–27.7%) SL; pelvic-fin spine closely attached to first soft ray, its termination fleshy and difficult to accurately determine; 4th soft pelvic-fin ray longest, not reaching anus (just anterior to vent in larger specimens, to anal-fin origin in smaller specimens), 20.2 (17.8–23.0%) SL.

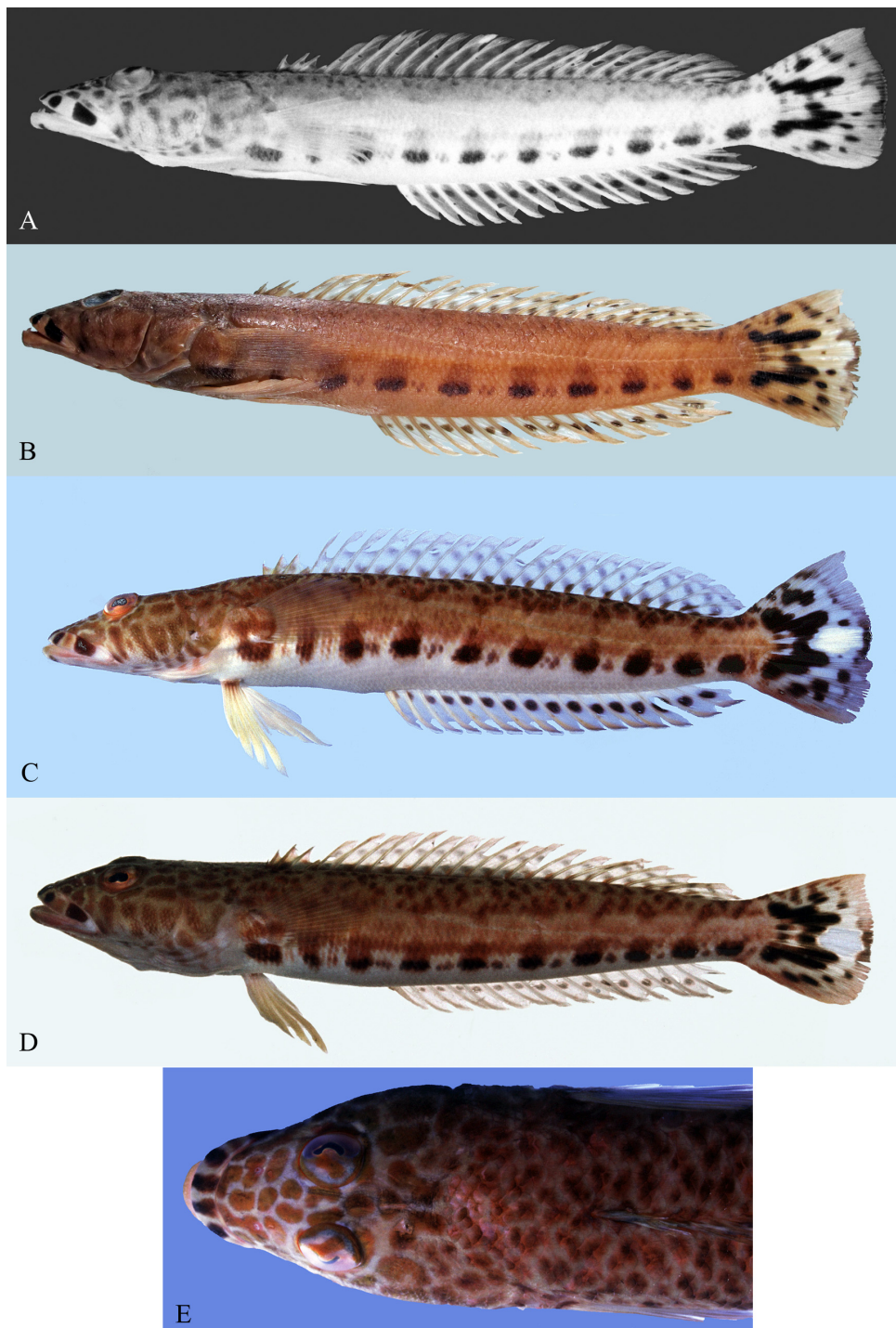


FIGURE 1. *Parapercis albiventer* sp. nov. A–B. SAIAB 15019, holotype, 143.2 mm SL, fresh (A) and preserved (B). C. SAIAB 191147, paratype, 168.2 mm SL, fresh. D. SAIAB 9340, paratype, 148.0 mm SL, fresh. E. Dorsal view of anterior portion, SAIAB 191147, paratype, 168.2 mm SL, fresh. A, C–E. photo by P. C. Heemstra. B. photo by H.-C. Ho.



FIGURE 2. Underwater photographs of *Parapercis albiventer* sp. nov., specimens not obtained. A. Ponta do Ouro, S. Mozambique, 20 m depth, photo by V. Fraser. B. Sodwana Bay, northern KwaZulu-Natal, ca. 30 m, photo by J. Breytenbach. C. Sodwana Bay, northern KwaZulu-Natal, photo by D. King.



FIGURE 3. A. *Parapercis stricticeps*, QM I.31316, 159.1 mm SL, Queensland, Australia, preserved, photo by H.-C. Ho. B. *Parapercis stricticeps*, ca. 20 cm TL, SCUBA diving, Fly Point, Port Stephens, NSW, Australia, photo by D. Harasti. C. *Parapercis xanthozona*, TFRIP 23353, 157.0 mm SL, Taitung, Taiwan, fresh, photo by W.-C. Chiang.

Pores of cephalic sensory system with row of four large pores above maxilla, one above vertical at anterior nostril, other between verticals at lower half of eye; four pores near nostrils, two above, one between and one below; irregular row of three pores on either side anteriorly in interorbital space; irregular series of small pores medially on posterior half of interorbital space; numerous small pores with subcutaneous canals posteriorly on occiput, pores divided into several irregular double series, from anterior end of lateral line on body, continuing to ventral margin of eye, opercle and subopercle; cheek with 8 (8 or 9) irregular double pore series; irregular double series of small pores (up to 30 in number) along margin of preopercle; series of four large pores on mandible; single large pore at front of chin.

Color in life (Figs. 2A–C). Body ground color reddish, with ventral surface bright white; medium orange-red blotches, about pupil size, on dorsal surface of head, eye, cheek and gill cover; smaller irregular reddish spots densely covering dorsal surfaces of nape and body; interspaces of these patches and spots pale red or blue; 3 short deep-red bands on each side of upper lip; pupil black. A series of 10 faint reddish blotches encircled by paler color along a vertical of pectoral fin base; 10 deep-red blotches, subequal to eye, with short solid dark bar on underside of blotches, interspace of blotches bright white with small pale red spot. Small black patch on spinous dorsal fin, between bases of 3rd and 4th spines; 2 rows of deep red spots on soft dorsal fin; pectoral fin reddish, nearly transparent; pelvic fin bright white; anal fin not visible from these photographs; caudal fin with scattered irregular black spots in upper and lower thirds of the fin; 2 longitudinally-elongate black blotches at middle of anterior half of fin; an irregular bright white blotch at middle of posterior half of fin; middle posterior margin of fin black.

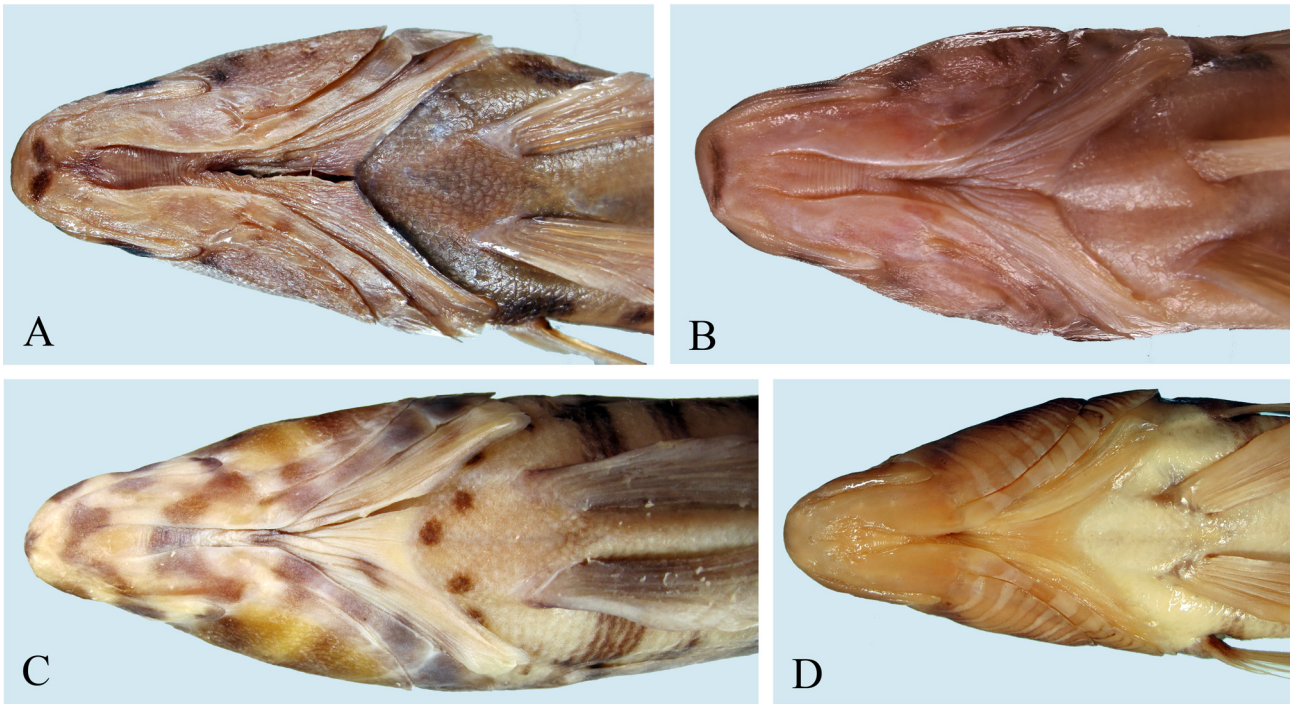


FIGURE 4. Underside of heads showing the different color patterns. A–B. *Parapercis albiventer* sp. nov. A. holotype, SAIAB 15019, female, 143.2 mm SL. B. Paratype, SAIAB 191147, male, 168.2 mm SL. C. *Parapercis stricticeps*, QM 31316, male, 159.1 mm SL, Queensland, Australia. D. *Parapercis xanthozona*, NSMT-P uncat., male, 158.0 mm SL, Palawan Island, the Philippines. Photo by H.-C. Ho.

Color in freshly caught specimens (Figs. 1A, C–E). Upper three-fourths of body reddish and lower fourth of body bright white. Medium red patches, about pupil size, on dorsal surface of head, eye, cheek and gill cover; smaller irregular red spots densely covering nape and dorsal surface of head; three short black bands on upper lip; pupil black. A broad faint red stripe about same height as pectoral fin base along body axis; a row of 10 deep-red blotches, each with a black bar on lower margin, evenly distributed, first below pectoral fin; interspaces white with reddish spots. A small black spot between bases of 3rd and 4th dorsal-fin spine; two rows of small spots on soft dorsal-fin; row of slightly larger black spots on membrane of anal fin; caudal fin with scattered irregular black spots in upper and lower thirds of fin; two longitudinally-elongate black blotches at middle of anterior half of fin, sometimes connected posteriorly; irregular bright white blotch at middle of posterior half of fin; upper and lower thirds of posterior caudal-fin margins reddish; middle third of posterior caudal-fin margin black.

Color in preservative (Figs. 1B, 4A–B). Body uniformly yellowish brown; some small brown patches on dorsal surface of head, eye, cheek and gill cover; small faint dots, each about one scale in width, loosely covering dorsal surface of nape and body; three short black bands on each side of upper lip; underside of chin with a curved bar (divided into two spots in holotype and some paratypes). A row of 10 short dark brown bars evenly distributed from vertical at pectoral-fin base, first bar below pectoral fin base. A paler brown spot between short bars; two rows of brown spots on dorsal fin, those on upper row associated with fin membranes, those on lower row associated with fin rays; row of black spots on anal fin associated with fin membranes near the fin base (absent or fewer in number and restricted to posterior portion of the fin in smaller paratypes); caudal fin with scattered irregular black spots in upper and lower thirds of fin; two longitudinally-elongate black blotches at middle of anterior half of fin, sometimes connected posteriorly; no bright white blotch on rear middle half of fin; middle third of posterior caudal-fin margin black.

Etymology. The specific name, *albiventer*, is from the Latin for white ventral surface, in reference to the bright white immaculate color on ventral fourth of the body.

Size. Largest specimen examined is 168.2 mm SL.

Distribution. The type series was collected from Madagascar, southern Mozambique and South Africa. Literature records for the species (misidentified as *P. xanthozona*) include Zanzibar (Playfair & Günther, 1867) and South Africa (Heemstra, 1986). Specimens were collected at depths 18.3–31.0 m, mainly at depths less than 30 m.

Sexual dimorphism. Most specimens were dissected to determine sex, including four mature males and five

mature females, all with well-developed gonads. The range for mature males is slightly larger (142.3–168.2 mm SL) than that of females (124.2–154.7 mm SL). Other specimens are either immature or indeterminate. No distinct differences were observed from external morphology, except that males have two or three faint oblique bands on the cheek whereas the female has fainter and somewhat shorter bands than those of the males.

Comparisons. As mentioned above, *P. albiventer* sp. nov. shares a row of blotches (black bars or spots in preservative) on the lower portion of the body and other similar features of its color pattern with a number of congeners. Of these, the new species is most similar to *P. stricticeps* (Figs. 3A–B, 4C) from eastern Australia in having a similar body coloration and distribution of spots on the median fins. It differs from *P. stricticeps* in having 9 or 10 predorsal scales and 55–58 pored lateral-line scales (vs. 10–12 and 57–59, respectively); medium-sized patches on the head, cheek and gill covering (vs. fewer and scattered small black spots on dorsal surface of the head and oblique bars on cheeks and/or gill covering); irregular reddish spots on the nape and dorsal surface densely and evenly distributed (vs. brown spots forming 9 or 10 regular dotted blotches on dorsal surface); no spots on underside of the chin, except for a curved bar at front, and mandible (vs. underside of head including mandible with broad dark bars); a pale chest (vs. usually 3–5 dark spots on chest); and blotches on the lateral body ending as a black bar (vs. blotches extending to ventral surface).

The key for species provided by Cantwell (1964) and Randall (2001) did not include *P. stricticeps*, which was identified as *P. xanthozona* (Fig. 4B), a species known from the eastern Indian and western Pacific oceans. Our new species differs from *P. xanthozona* by having blotches on the lower lateral body short, each ending with a black bar ventrally, not extending into lower quarter of the body (vs. no black bar associated with lateral body blotches and blotches long, extending to the ventral surface); black bars on upper lip (vs. absent or very faint when present); row of black spots on basal portion of the anal fin (vs. on middle portion of the fin); medium-sized patches on the head (vs. absent from the head and 1 or 2 oblique stripes on cheek); large irregular black marks on the caudal fin, middle third of the posterior caudal fin margin black (vs. spots on caudal fin, middle third of the posterior caudal fin with dusky margin, but never solid black); spots on the dorsal fin small, not crossing the fin membranes (vs. mid-row of spots extending across fin membranes); pale strip on the body axis about same width as the pectoral-fin base (vs. slightly above the body axis and much narrower); no orange bar on the pectoral-fin base (vs. orange bar present); bright white patch on posterior half of the caudal fin surrounded by black marks or spots (vs. white patch on central portion of the caudal fin, not surrounded by black marks or spots).

The five dorsal-fin spines distinguish the new species from *P. bimacula*, *P. clathrata* and *P. millepunctata*, which have modally 4 dorsal-fin spines. The three pairs of canines on front of the lower jaw separate the new species from *P. kamoharai* and *P. multiplicata*, which have modally four pairs of canines. The relatively few pored lateral-line scales separate the new species from *P. robinsoni* (77–84 scales; data from Randall & Stroud, 1985). The new species is sympatric with *P. punctulata* (Fig. 5A) in the western Indian Ocean and allopatric with *P. tetracantha* (Fig. 5B) from the eastern Indian and western Pacific oceans. They have a row of black blotches on lower half of body when preserved, but can be easily distinguished from the new species by lacking large black and white marks on the caudal fin.

Parapercis albiventer also differs from a recently described species, *Parapercis maramara* Sparks & Baldwin, 2012, from Madagascar, in having a relatively short pelvic fin (reaching vent in larger specimens and origin of anal fin in smaller specimens vs. reaching 2nd ray of anal fin); a black bar, sometimes breaking into 2 black spots, on the chin (vs. no black bar on chin); a broad, faint red stripe on body axis (vs. a row of pale patches usually with a black central spot on body axis).

Comparative material. *Parapercis stricticeps*: QM I.1708 (153.3), holotype of *Percis stricticeps*, dry specimen, Southport, Queensland, Australia. QM 23072 (3, 114.2–140.2), 21°18'S, 151°19.8'E, off Swain Reefs, 58–61 m, 14 Sep. 1986. QM 31316 (1, 159.1), 26°39'S, 153°11'E, Gneering Shoals, 10 km E of Mooloolaba, 19 m, 14 Oct. 1998. *Parapercis xanthozona*: RMNH 5946 (140.4), holotype of *Percis xanthozona*, Jakarta, Java, Indonesia. ASIZP 72225 (1, 165), Jin-shan, Taiwan, 31 Oct. 2009. HUMZ 122201 (1, 150.6), no data. MNHN 1980-648, 1980-649 (3, 47.4–78.0), New Caledonia, no other data. MNHN 1905-216 (1, 136.7), Do Son, Vietnam, 1905. MNHN 1980-648 (1, 90.7), 14°0'4"N, 120°17'2"E, the Philippines, 31 May 1985. NSMT-P34884 (1, 93.3), 28°11.2'N, 129°16'E, Sakinoma beach, Amami-oshima I., Ryukyu Is., 10 m, hook and line, 14 Jun. 1991. NSMT-P61613 (1, 39.1), 27°N, 125°14.2'E, Bitsung Lembah Island, Sulawesi Island, Indonesia, 15 m, 22 Jan. 2000. NSMT-P64161 (1, 54.3), Kotania Bay, Seram I., Indonesia, 20 m, 4 Dec. 1998. NSMT-P68461 (1, 127.4), 12°11'N, 109°19'E, Nha Trang, Vietnam, 5 m, 8 Dec. 2003. NSMT-P75538 (1, 132.4), 28°11.3'N, 129°17.4'E, Setouchicho

Atetsu Bay, Amami-oshima I., Ryukyu Is., 5 m, hand net, 17 Nov. 2006. NSMT-P75550 (1, 123.0), 28°11.3'N, 129°17.4'E, Setouchicho Atetsu Bay, Amami-oshima I., Ryukyu Is., 3 m, hand net, 17 Nov. 2006. NSMT-P75787 (5, 116.7–148.0), Shinokawa Bay, Amami-oshima I., Ryukyu Is., 16 m, hook & line, 20 Nov. 2006. NSMT-P78949 (1, 102.7), Sakinome beach, Amami-oshima I., Ryukyu Is., 14 m, spear, 14 Sep. 1989. NSMT-P106335 (1, 71.2), Telkkodek, Lombok, Indonesia, 10 m, 25 Jul. 1996.

TABLE 1. Morphometric and meristic data of type series of *P. albiventer* **sp. nov.** and two closely similar species.

	<i>P. albiventer</i> sp. nov.			<i>P. xanthozona</i>		<i>P. stricticeps</i>	
	Holotype	Type series		Holotype	Non-types	Holotype	Non-types
Standard length (mm)	143.2	124.2–168.2 (n=9)		140.4	102.7–136.7 (n=5)	153.3	114.2–159.1 (n=4)
Morphometrics (% SL)		Mean (Range)	SD		Mean (Range)		Mean (Range)
Head length	30.8	29.8 (29.3–30.8)	0.5	30.0	29.4 (28.1–31.3)	29.5	31.2 (30.1–32.6)
Body depth	13.6	14.1 (12.7–15.7)	1.2	-	16.5 (15.3–19.3)	-	15.1 (13.6–15.7)
Body width	17.2	17.8 (17.1–18.8)	0.6	17.3	17.8 (16.6–19.5)	19.3	18.7 (18.2–19.4)
Snout length	10.8	10.0 (9.0–10.8)	0.5	11.0	10.9 (9.7–11.6)	9.8	11.2 (10.1–12.2)
Orbital diameter	6.1	5.9 (5.0–6.7)	0.5	6.5	6.2 (6.0–6.5)	5.9	6.4 (5.9–6.9)
Interorbital width	3.0	2.8 (2.3–3.1)	0.3	-	2.9 (2.4–3.3)	-	2.7 (2.6–2.8)
Upper-jaw length	12.1	11.7 (11.0–12.5)	0.5	12.2	11.0 (10.6–11.7)	11.4	12.1 (11.6–12.9)
Predorsal length	32.5	32.3 (30.5–33.4)	0.9	32.7	31.6 (31.1–32.3)	30.8	32.3 (30.8–34.4)
Prepelvic length	26.7	26.2 (24.1–27.7)	1.2	-	26.0 (24.4–28.3)	-	30.1 (28.3–31.9)
Preanal length	50.0	49.9 (48.6–51.3)	0.8	47.7	48.1 (46.2–49.4)	51.1	50.4 (48.9–52.1)
Dorsal-fin base	60.7	60.7 (59.7–62.0)	0.7	62.7	62.1 (60.3–63.7)	60.2	61.0 (58.3–62.4)
1st dorsal-fin spine	1.7	2.2 (1.5–2.7)	0.4	3.8	2.9 (1.7–4.2)	-	2.5 (1.9–2.7)
2nd dorsal-fin spine	3.3	3.6 (3.0–4.5)	0.5	-	4.1 (2.8–5.5)	-	4.1 (3.4–4.3)
3rd dorsal-fin spine	5.0	5.1 (4.6–5.6)	0.3	7.1	6.3 (5.7–7.0)	5.0	5.8 (5.4–6.2)
4th dorsal-fin spine	4.8	5.6 (4.8–6.3)	0.4	6.2	6.8 (6.2–7.8)	-	6.2 (5.6–6.7)
5th dorsal-fin spine	3.2	3.6 (3.1–4.4)	0.5	-	3.7 (3.4–4.6)	-	3.5 (3.1–4.0)
Longest dorsal-fin ray	9.9	10.6 (9.2–12.2)	1.1	-	11.4 (9.2–13.4)	-	10.1 (8.9–12.0)
Anal-fin base	42.9	42.5 (40.7–43.6)	0.8	-	44.3 (43.9–44.7)	42.1	42.5 (41.3–43.7)
Anal-fin spine	3.7	4.0 (3.6–4.4)	0.3	4.3	4.6 (3.9–5.0)	-	4.0 (3.9–4.5)
Longest anal-fin ray	10.5	10.7 (9.7–11.5)	0.5	-	10.8 (9.7–12.8)	-	10.6 (10.3–10.9)
Pectoral-fin length	18.5	18.1 (17.3–18.7)	0.5	17.1	18.4 (18.0–18.8)	-	18.4 (16.9–20.1)
Pelvic-fin length	20.2	20.1 (17.8–23.0)	1.5	19.4	21.3 (20.1–22.7)	-	21.7 (20.5–22.3)
Pelvic-fin spine	5.9	6.5 (5.3–8.6)	1.1	7.3	6.8 (5.8–7.0)	-	6.9 (6.3–7.9)
Caudal-fin length	17.2	17.9 (16.5–20.0)	1.2	18.9	17.9 (17.2–18.5)	-	17.6 (16.1–18.7)
Caudal-peduncle length	8.4	8.4 (7.2–9.0)	0.6	9.6	9.0 (7.7–10.4)	8.5	8.6 (7.7–9.7)
Caudal-peduncle depth	8.9	8.6 (8.0–8.9)	0.4	8.8	8.9 (8.5–9.3)	8.9	8.6 (8.3–8.7)
Meristics		(n=12)			(n=12)		(n=4)
Dorsal-fin rays	V, 21	V, 21		V, 21	V, 21	V, 21	V, 21
Anal-fin rays	I, 17	I, 17		I, 17	I, 17	17 (spine missing)	I, 17
Pectoral-fin rays	17	16–17		17	17	16	16–18
Pored lateral-line scales	59	55–59		59	57–60	59	57–58
Pre-dorsal scales	9	9–10			10–12	13 or 14	12–13
Transverse scale rows	6.5/19	5.5–6.5/17–21		6.5/-	6.5/17	-	6.5/18–19
Circumpeduncular scales	29	29–30			30	-	30
rows							
Pseudobranchial filaments	24	20–28			18–22	-	15–23
Gill rakers	6+12	5-7+10-12=15-19		8+11	6-7+11-12=17-19	-	7-8+10-12=17-20
Vertebrae	10+20	10+20		10+20	10+20	-	10+20



FIGURE 5. A. *Parapercis punctulata*, 109 mm SL, Seychelles, photo by P. C. Heemstra. B. *Parapercis tetracantha*, QM 38538, 150 mm SL, Nan-fang-ao, Taiwan, photo by H.-C. Ho.

Acknowledgements

This study was supported and funded by the National Research Foundation, South Africa, the Hokkaido University Museum, Sapporo, and the National Science Council, Taiwan. The AtimoVatae expedition to South Madagascar (Principal Investigator, Philippe Bouchet) was a joint initiative of Muséum National d'Histoire Naturelle and Pro Natura International in partnership with Institut d'Halieutique et des Sciences Marines, University of Toliara and the Madagascar Bureau of Wildlife Conservation Society, and support from the Total, Prince Albert II and Niarchos Foundations. We thank J. W. Johnson (QM) for providing useful information and curatorial assistance; M. Lisher, B. Konqobe, E. Heemstra (SAIAB); Z. Gabsi, C. Ferrara (MNHN) for curatorial assistance; E. Heemstra (SAIAB) and T. Razafinambinina (University of Toliara) for helping collect specimens; D. Harasti (NSW Department of Primary Industries, Australia) and W.-C. Chiang (Taiwan Fishery Institute) for providing images; J. Kawauchi (HUMZ) for taking radiographs.

References

- Allen, G.R. & Erdmann, M.V. (2012) *Reef fishes of the East Indies. Vol. III*. Tropical Reef Research, Perth Australia, 857–1260 pp., Appendix 1.
- Bleeker, P. (1849) Bijdrage tot de kennis der Percoïden van den Malayo-Molukschen Archipel, met beschrijving van 22 nieuwsoorten. *Verhandelingen van het Bataviaasch Genootschap van Kunsten en Wetenschappen*, 22, 1–64.
- Cantwell, G.E. (1964) A revision of the genus *Parapercis*, family Mugiloididae. *Pacific Science*, 18, 239–280.
- Cuvier, G. & Valenciennes, A. (1829) Histoire naturelle des poissons. Tome troisième. Suite du Livre troisième. Des percoïdes à dorsale unique à sept rayons branchiaux et à dents en velours ou en cardes. *Histoire naturelle des poissons*, 3, 1–500.
- Eschmeyer, W.N. & Fong, J.D. (2013) Species by family/subfamily. Electronic version. Available from: <http://research.calacademy.org/redirect?url=http://researcharchive.calacademy.org/research/Ichthyology/catalog/SpeciesByFamily.asp> (accessed 1 November 2013)
- Günther, A. (1860) Catalogue of the acanthopterygian fishes in the collection of the British Museum. Squamipinnes,

- Cirrhitidae, Triglidae, Trachinidae, Sciaenidae, Polynemidae, Sphyraenidae, Trichiuridae, Scombridae, Carangidae, Xiphiidae. British Museum, London. *Catalogue of the fishes in the British Museum*, 2, 1–548.
- Heemstra, P.C. (1986) Family Pinguipedidae. In: Smith, M.M. & Heemstra, P.C. (Eds.), *Smiths' Sea Fishes*. Macmillan South Africa, Johannesburg, 1047 pp.
- Ho, H.-C. (2013) Redescription of *Parapercis punctata* (Cuvier, 1829) and status of *Neosillago* Castelnau, 1875 and its type species *Neosillago marmorata* Castelnau, 1875 (Perciformes: Pinguipedidae). *Zootaxa*, 3736 (3), 291–299. <http://dx.doi.org/10.11646/zootaxa.3736.3.7>
- Ho, H.-C. & Shao, K.-T. (2010) *Parapercis randalli*, a new sandperch (Pisces: Pinguipedidae) from southern Taiwan. *Zootaxa*, 2690, 59–67.
- Ho, H.-C. & Johnson, J.W. (2013) Redescription of *Parapercis macropthalma* (Pietschmann, 1911) and description of a new species of *Parapercis* (Pisces: Pinguipedidae) from Taiwan. *Zootaxa*, 3620 (2), 273–282. <http://dx.doi.org/10.11646/zootaxa.3620.2.5>
- Ho, H.-C., Chang, C.-H. & Shao, K.-T. (2012) Two new sandperches (Perciformes: Pinguipedidae: *Parapercis*) from South China Sea, based on morphology and DNA barcoding. *The Raffles Bulletin of Zoology*, 60 (1), 163–172.
- Imamura, H. & Matsuura, K. (2003) Record of a sandperch, *Parapercis xanthozona* (Actinopterygii: Pinguipedidae), from Japan, with comments on its synonymy. *Species Diversity*, 8, 27–33.
- Imamura, H. & Yoshino, T. (2007) Three new species of the genus *Parapercis* from the western Pacific, with redescription of *Parapercis hexophthalma* (Perciformes: Pinguipedidae). *Bulletin of the National Museum of Natural Science, Series A, Supplement 1*, 81–100.
- Johnson, J.W. (2006) Two new species of *Parapercis* (Perciformes: Pinguipedidae) from north-eastern Australia, and recovery of *Parapercis colemani* Randall & Francis, 1993. *Memoirs of the Museum of Victoria*, 63, 47–56.
- Johnson, J.W. & White, W.T. (2012) *Parapercis pariomaculata* (Perciformes: Pinguipedidae), a new species of sandperch from Lombok and Bali, Indonesia, and remarks on the validity of *P. quadrispinosa* (Weber 1913). *Zootaxa*, 3319, 57–68.
- Lacepède, B.G.E. (1801) *Histoire naturelle des poissons. Volume 3*. Plassan, Paris, 558 pp.
- Liao, Y.-C., Cheng, T.-Y. & Shao, K.-T. (2011) *Parapercis lutevittata*, a new cryptic species of *Parapercis* (Teleostei: Pinguipedidae), from the western Pacific based on morphological evidence and DNA barcoding. *Zootaxa*, 2867, 32–42.
- Ogilby, J.D. (1910) On new or insufficiently described fishes. *Proceedings of the Royal Society of Queensland*, 23, 1–55.
- Playfair, R.L. & Günther, A. (1867) *The fishes of Zanzibar, with a list of the fishes of the whole east coast of Africa*. Voorst, London, 153 pp.
- Randall, J.E. (1984) Two new Indo-Pacific mugiloidid fishes of the genus *Parapercis*. *Freshwater and Marine Aquarium*, 7 (10), 47–54.
- Randall, J.E. & Francis, M.P. (1993) *Parapercis colemani*, a new pinguipedid fish from Norfolk Island, south-western Pacific Ocean. *New Zealand Journal of Marine and Freshwater Research*, 27 (2), 209–214. <http://dx.doi.org/10.1080/00288330.1993.9516559>
- Randall, J.E. (2001) Family Pinguipedidae (= Parapercidae, Mugiloididae). In: Carpenter & Niem (Ed.), *Species identification guide for fishery purposes. The living marine resources of the western central Pacific. Vol. 6. Bony fishes part 4 (Labridae to Latimeriidae), estuarine crocodiles, sea turtles, sea snakes and marine mammals*. FAO, Rome, 3501–3510 pp.
- Randall, J.E. (2003) Review of the sandperches of the *Parapercis cylindrica* complex (Perciformes: Pinguipedidae), with description of two new species from the western Pacific. *Bishop Museum Occasional Papers*, 72, 1–19.
- Randall, J.E. (2005) *Reef and Shore Fishes of the South Pacific*. University of Hawai'i Press, Honolulu, 707 pp.
- Randall, J.E. (2008) Six new sandperches of the genus *Parapercis* from the western Pacific, with description of a neotype for *P. maculata* (Bloch & Schneider). *The Raffles Bulletin of Zoology, Supplement 19*, 159–178.
- Randall, J.E. & Stroud, G.J. (1985) On the validity of the mugiloidid fish *Parapercis robinsoni* Fowler. *Japanese Journal of Ichthyology*, 32 (1), 93–99.
- Randall, J.E., Senou, H. & Yoshino, T. (2008) Three new pinguipedid fishes of the genus *Parapercis* from Japan. *Bulletin of the National Museum of Natural Science, Series A, Supplement 2*, 69–84.
- Randall, J.E. & Yamakawa, T. (2006) *Parapercis phenax* from Japan and *P. banoni* from the southeast Atlantic, new species of pinguipedid fishes previously identified as *P. roseoviridis*. *Zoological Studies*, 45, 1–10.
- Sparks, J.S. & Baldwin, Z.H. (2012) A new species of *Parapercis* (Teleostei: Pinguipedidae) from Madagascar. *Zootaxa*, 3204, 31–39.