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Simipercis trispinosa, a new genus and species of sandperch (Perciformes: Pinguipedidae) from eastern Australia

Jeffrey W. Johnson[1] and John E. Randall[2]

[1]Manager Ichthyology, Queensland Museum, PO Box 3300, South Brisbane, Q 4101, Australia (jeff.johnson@qm.qld.gov.au) (author for correspondence)
[2]Senior Ichthyologist, Bishop Museum, 1525 Bernice St., Honolulu, Hawai'i, 96817-2704, USA (jackr@hawaii.rr.com)

Abstract

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Simipercis trispinosa is described as a new genus and species of pinguipedid fish from 93 specimens collected mostly by demersal trawl from the continental shelf of eastern Australia between Swain Reefs, Queensland and Broken Bay, New South Wales in depths from 51 to 170 m. The new genus is most closely related to *Parapercis* Bleeker, 1863, but is unique among pinguipedid fishes in having a combination of vomer and palatines edentate, dorsal spines 3, no distinct exposed, pointed opercular spine, preopercle and subopercle entire, ten abdominal and 20–21 caudal vertebrae, low naked fleshy nuchal crest, interorbital and suborbital with large ctenoid scales extending forward to near anterior margin of eye, and head and body moderately compressed.

Keywords

Pinguipedidae, *Simipercis*, Parapercis, new genus, new species, Queensland, New South Wales, Australia

Introduction

Rosa and Rosa, 1998 provided a diagnosis and definition of the Pinguipedidae, describing three primary osteological synapomorphies of the family: hyomandibular with oblique crest (Gosline, 1968), intercalar with sharp posteriorly directed process, and sphenotic with elongate, anteriorly directed process. Imamura and Matsuura, 2003 redefined the family using 14 derived characteristics, only one of which was used by Rosa and Rosa (hyomandibular with oblique crest). They also confirmed that *Cheimarrichthys* von Haast, 1874 should be excluded from the Pinguipedidae and placed in its own family, Cheirmarrichthyidae.

The Pinguipedidae currently contains five genera: the monotypic *Kochichthys* Kamohara, 1961 from Japan and Taiwan, *Pinguipes* Cuvier, 1829 with one species from each of the south-eastern Pacific and south-western Atlantic, the monotypic *Prolatilus* Gill, 1865 from the south-eastern Pacific, *Pseudopercis* Miranda-Ribeiro, 1903 with two species from the south-eastern Atlantic, and *Parapercis* Bleeker, 1863 with about 54 recognised species, including 51 from the Indo-west Pacific and single representatives in the south-eastern Pacific, south-eastern Atlantic and north-eastern Atlantic (Rosa and Rosa, 1998; Randall and McCosker, 2002; Imamura and Matsuura, 2003; Randall, 2003; Randall and Yamakawa, 2006; this study).

The first author recently examined all known pinguipedid specimens throughout Australian ichthyological collections to validate identifications for a project on demersal continental shelf and slope fishes. During these studies two nominal species of *Parapercis*, *P. naevosa* Serventy, 1937 and *P. stricticeps* De Vis, 1884, regarded by Cantwell, 1964 as junior synonyms of *P. allporti* (Günther, 1876) and *P. xanthozona* (Bleeker, 1849) respectively, were discovered to be valid species. In addition, a number of undescribed species collected by demersal trawl were also identified. Most of these currently await description, but the most distinctive of the latter is described here.

Methods and materials

Institutional acronyms for types and comparative material are those of Leviton et al, 1985. Lengths of specimens are given as standard length (SL), being the distance from the front of the upper lip to the base of the caudal fin (posterior end of the hypural plate). The abbreviation HL is used for head length. Lateral-line scale counts are to the base of the caudal fin, and do not include several additional pored scales on the fin. Gill-raker counts include all rudiments. Vertebral counts and descriptions of osteological features were made from radiographs and skeletal preparations. Methods for counts and measurements otherwise follow Randall, 2003. Where different, values for paratypes follow those of the holotype in parentheses. Specimens were

collected by trawl, except where indicated otherwise. Meristic and morphometric details for the new species are presented in Tables 1–2. Material examined for detailed comparison of opercular osteology is listed. However an additional 30 unlisted species of *Parapercis* were examined externally for character states of the opercular bones.

Comparative material examined

Parapercis binivirgata QM I.37220, 146 mm, SE of Cape Moreton, 27º03'S, 153º31'E, 86 m, 14 Mar 2001 (skeleton).

Parapercis nebulosa QM I.36874, 113 mm, Hervey Bay, 25º03.5'S, 152º46.6'E, 16.6 m, 1 Jul 2002; QM I.36875, 152 mm, same data (skeletons).

Parapercis sp.3 (undescribed) QM I.36876, 118 mm, east of South Stradbroke I., 27º48.8'S, 153º49.7'E, 161–165 m, 24 Jul 2002 (skeleton).

Simipercis gen. nov.

Type species. Simipercis trispinosa sp. nov.

Diagnosis. The type species of *Simipercis* differs from all other genera of the family Pinguipedidae in having 3 dorsal spines, a low naked fleshy nuchal crest (fig. 1d), and dorsal angle of opercular bone broad, not forming a distinct exposed, pointed spine (figs 2a–d), and a combination of the following features: vomer and palatines edentate, subopercle and preopercle entire, 10 abdominal and 20–21 caudal vertebrae, scales including those on head and pelvic region large and ctenoid, interorbital with a single row of large scales, extending to, or just beyond anterior margin of eye, suborbital scales reaching a vertical between anterior margin of pupil and anterior margin of eye, and head and body moderately compressed (body width 1.3–1.55 in depth in adults).

Remarks The new genus is most closely related to *Parapercis* Bleeker, 1863, with similar vertebral counts and dental formulae, but is unique among pinguipedid fishes in having three dorsal spines (*Kochichthys* 2, *Parapercis* 4–6, *Pinguipes* 6–7, *Prolatilus* 4, *Pseudopercis* 4–7), a low naked fleshy nuchal crest (no fleshy crest known in other genera), and dorsoposterior angle of opercular bone not forming an exposed, distinctly pointed spine (figs 2a–d). The dorsoposterior angle of the opercular bone is relatively broad and narrowly truncate posteriorly, with a minute shallow notch. The posteroventral edge of the notch forms a feeble, bluntly triangular point which is hidden by the skin in undamaged specimens. A horizontal ridge on the inner surface of the opercular bone is visible externally under light, and is situated well below the dorsal margin of the opercle. The ridge terminates slightly before the posterior tip of opercular bone. In other genera there is at least one exposed, robust, distinctly pointed opercular spine, and in *Parapercis*, the horizontal ridge on the inner face of the opercular bone is situated very close to (rather than well below) its dorsal margin, and extends to the tip, reinforcing the opercular spine (figs 3a–f).

Simipercis also differs from other pinguipedid genera by the combination of: vomer and palatines edentate (only *Prolatilus* lacks vomerine teeth, only *Prolatilus* and some *Parapercis* lack palatine teeth); margin of subopercle entire (usually at least some small spines or spinules in other genera); 10 abdominal and 20–21 caudal vertebrae (*Parapercis* 9–10+18–22, *Kochichthys* 10+19, *Pinguipes* 15–16+20–21, *Prolatilus* 15–16+20–21, *Pseudopercis* 16–18+20–22); large interorbital scales extending to, or just beyond, anterior margin of eye (only *Kochichthys*, *Prolatilus* and *Parapercis haackei* have interorbital scales); cheek and suborbital with large ctenoid scales, extending to a vertical between anterior margin of pupil and anterior margin of eye (variously squamate or naked, usually with small cycloid scales on cheek, suborbital with small scales extending to below middle of eye or more posteriorly in other genera); and head and body moderately compressed (generally cylindrical or subcylindrical anteriorly in other genera). A detailed examination of osteological and myological features was not carried out on *Simipercis;* however it agrees well with the familial diagnosis and description of Rosa and Rosa, 1998 and with additional features of the family defined by Imamura and Matsuura, 2003 that were examined (eg. unique crest on the hyomandibular present, posterior margin of opercular bone moderately concave, six branchiostegal rays, lowermost ray of pectoral fin branched, 15 branched caudal-fin rays).

Etymology. From the Latin *similis*, meaning similar or like, in reference to the pinguipedid genus *Percis* Bloch and Schneider, 1801 (the latter being preoccupied by the agonid genus *Percis* Scopoli, 1777).

Simipercis trispinosa sp. nov.

Threespine Grubfish

Figures 1a–e, 2a–d, 4; Tables 1–2.

Material examined. Holotype. QM I. 32697, 114 mm, east of Noosa, Qld, 26º24'S, 153º39'E, 104 m, Queensland Fisheries Service, 22 Jun 2001.

Paratypes: (N = 92) AMS I.31473-002, 130 mm, off Iluka, NSW, 29º24'S, 153º35'E, 67–77 m, K. Graham on FRV *Kapala*, 6 May 1990; AMS I.32121-004, 120 mm, off Newcastle, NSW, 32º53'S, 152º01'E, 73-79 m, K. Graham on FRV *Kapala*, 7 Jun 1990; AMS I.32209-002, 2: 66.5–116 mm, off Newcastle, NSW, 32º54'S, 151º57'E, 64–70 m, K. Graham on FRV *Kapala*, 23 May 1990; AMS I.32217-001, 5: 105.5–135 mm, off Newcastle, NSW, 32º53'S, 152º02'E, 73–75 m, K. Graham on FRV *Kapala*, 29 Aug 1991; AMS I.33510-004, 97 mm, E of Clarence R., NSW, 29º26'S, 153º34'E, 64–68 m, K. Graham on FRV *Kapala*, 2 Apr 1992; AMS I.37355-011, 6: 39–109 mm, E of Swain Reefs, Qld, 22º23.49'S, 153º04.48'E, 170 m, trap, J. Lowry and K. Dempsey on FV *Seadar Bay*, 8 Sep 1995; AMS I.37572-001, 105 mm, south-east of Evans Head, NSW, 29º13'S, 153º31'E, 51–53 m, K. Graham on FRV *Kapala*, 15 Jun 1995; AMS I.37587-008, 100 mm, E of Swain Reefs, Qld, 22º23.49'S, 153º04.48'E, 138 m, J. Lowry and K. Dempsey on FV *Seadar Bay*, 8 Sep 1995; AMS I.37600-030, 2: 70–118 mm, E of Swain Reefs, Qld, 22º28.34'S, 152º59.45'E, 139 m, trap, J. Lowry and K. Dempsey on FV *Seadar Bay*, 8 Sep 1995; AMS I.38271-001, 2: 58–75 mm, off Newcastle, NSW, 32º54'S, 151º58'E, 67–72 m, K. Graham on FRV *Kapala*, 6 Apr 1995; AMS I.40462-001, 2: 87.5–121 mm, south-E of Sandon Bluffs, NSW, 29º40'S, 153º28'E, 55–59 m, K. Graham on FV *Trader Horn*, 6 Sep 1999; AMS I.43651-002, 76 mm, E of Manly, NSW, 33º36.5'S, 151º29.3'E to 33º40.5'S, 151º26.8'E, 69–80 m, K. Graham on FV Kirrawana, 10 Aug 2005; BMNH 2005.6.2.1, 114 mm, E of Coolum, Qld, 26º30.6'S, 153º35.2'E, 102.3 m, Queensland Fisheries Service, 21 Jun 2001; BPBM 37231, 4: 118–125 mm, off Newcastle, NSW, 32º53.5'E, 151º59.5'E, 64–75 m, K. Graham on FRV *Kapala*, 6 Mar 1991; CAS 222272, 116 mm, off Newcastle, NSW, 32º53.5'E, 151º59.5'E, 67.7–71.3 m, K. Graham, 6 Mar 1991; CSIRO H.6247-01, 112 mm, off southern end of Swain Reefs, Qld, 22º26.1'S, 152º41.1'E,

Table 1. Selected meristic and morphological values for type specimens of *Simipercis trispinosa* (measurements as percentage of standard length).

	Holotype QM I.32697	Paratypes (n = 92) (range)
Standard length (mm)	114	39.5 – 135
Dorsal-fin rays	III, 24	III, 24–25
Anal-fin rays	I, 18	I, 17–19
Pectoral-fin rays	20	19–21
Gill rakers	4 + 11 = 15	3–6 + 9–13 = 12–18
Lateral-line scales	50	46–54
Upper jaw teeth (outer row)	27 + 27	24–29 + 24–29
Lower jaw teeth (outer row)	4 + 4	4–5 + 4–5
Vertebrae (abdominal + caudal)	10 + 21	10 + 20 (2)–21 (10)
Body depth	20.7	19.0 – 24.0
Body width	15.3	14.4 – 17.2
Head length	25.9	24.9 – 27.8
Snout length	5.0	4.0 – 6.3
Orbit diameter	9.2	7.4 – 10.2
Interorbital width	2.7	2.2 – 2.9
Preorbital depth	3.8	2.8 – 4.0
Upper jaw length	10.4	9.8 – 11.1
Predorsal length	25.0	24.3 – 26.2
Preanal length	43.0	41.3 – 46.4
Prepelvic length	24.6	22.8 – 25.4
Caudal-peduncle depth	9.1	8.5 – 9.7
Caudal-peduncle length	10.0	8.2 – 11.1
Dorsal-fin base	64.6	64.3 – 70.0
First dorsal-fin spine length	4.2	3.3 – 4.9
Second dorsal-fin spine length	5.4	5.0 – 6.2
Third dorsal-fin spine length	6.9	6.1 – 8.3
Longest dorsal-fin ray	21.3	17.5 – 23.6
Anal-fin base	48.7	46.0 – 49.8
Anal-fin spine length	7.3	6.0 – 8.8
Longest anal-fin ray	14.4	11.9 – 15.1
Caudal-fin length	21.2	19.2 – 25.4
Pectoral-fin length	23.2	20.8 – 23.9
Pelvic-fin length	22.9	18.4 – 26.2

Table 2. Frequency of lateral-line scales and gill rakers in type specimens of *Simipercis trispinosa*.

Lateral-line scales								
46	47	48	49	50	51	52	53	54
2	6	13	13	13	22	12	11	1

Gill rakers															
Upper				Lower					Total						
3	4	5	6	9	10	11	12	13	12	13	14	15	16	17	18
14	50	28	1	8	42	42	-	1	2	12	30	32	15	1	1

112 m, RV *Gwendoline May*, 23 Apr 2004; NSMT P.70863, 105.5 mm, E of Coolum, Qld, 26º30.6'S, 153º35.2'E, 102.3 m, Queensland Fisheries Service, 21 Jun 2001; QM I.22042, 4: 82–116 mm, E of Swain Reefs, Qld, 22º06'S, 153º02'E, 150 m, Queensland Fisheries Service, 28 Aug 1983; QM I.33181, 96 mm, E of Coolum, Qld, 26º32'S, 153º39'E, 123 m, Queensland Fisheries Service, 8 Aug 2001; QM I.33182, 98.5 mm, E of Noosa, Qld, 26º28'S, 153º39'E, 112.3 m, Queensland Fisheries Service, 8 May 2001; QM I.33183, 25: 59.5–123 mm, E of Coolum, Qld, 26º30.6'S, 153º35.2'E, 102.3 m, Queensland Fisheries Service, 21 Jun 2001; QM I.33333, 3: 80–96.5 mm, E of Point Cartwright, Qld, 26º39'S, 153º35'E, 112 m, Queensland Fisheries Service, 14 Sep 2001; QM I.33994, 4: 64–82 mm, E of Noosa, Qld, 26º20'S, 153º46'E, 110 m, Queensland Fisheries Service, 19 Jul 2002; QM I.33995, 16: 65–118 mm, E of Noosa, Qld, 26º25'S, 153º40'E, 119 m, Queensland Fisheries Service, 19 Jul 2002; QM I.34142, 2: 87.5–115 mm, E of Noosa, Qld, 26º24'S, 153º41'E, 98 m, Queensland Fisheries Service, 17 May 2001; QM I.36879, 2: 113–118 mm, E of Noosa, 26º22.2'S, 153º42.4'E, 115–119 m, Queensland Fisheries Service, 19 Jul 2002; USNM 383404 128 mm, off Newcastle, NSW, 32º53.5'E, 151º59.5'E, 67.7–71.3 m, K. Graham, 6 Mar. 1991.

Other material: (spirit specimens) AMS E.2963, 78 mm, 21 km north-east of North Reef, Qld, 23º07'S, 152º05'E, 128 m, FIS *Endeavour*, 1909; AMS I.32199-003, 56 mm, off Angourie, NSW, 29º28'S, 153º33'E, 64-66 m, K. Graham on FRV *Kapala*, 20 Nov 1990; AMS I.33577-001, 107 mm, off Clarence R., NSW, 29º29'S, 153º33'E, 66-70 m, K. Graham on FRV *Kapala*, 19 Mar 1992; AMS I.37978-003, 59 mm, off Sandon Bluffs, NSW, 29º44'S, 153º26'E, 55–61 m, K. Graham on FV *Trader Horn*, 7 Jul 1999; AMS I.39897-003, 112 mm, off Sandon Bluffs, NSW, 29º44'S, 153º26'E, 55–62 m, K. Graham on FV *Trader Horn*, 8 Jul 1999; QM I.36878, 6: 63–118 mm, E of Peregian Beach, 26º25.9'S, 153º45.2'E, 132–134 m, Queensland Fisheries Service, 18 Jul 2002; QM I.37224, 12: 74–121 mm, E of Coolum, Qld, 26º30.6'S, 153º35.2'E, 102 m, Queensland Fisheries Service, 21 Jun 2001. (skeletal specimens) QM I.36870, 79 mm, QM I.36871, 124 mm, QM I.36872, 113 mm, QM I.36873, 100 mm, all E of Coolum, Qld, 26º32.9'S, 153º36.3'E, 119–120 m, Queensland Fisheries Service, 20 Jul 2002; QM I.37223, 109 mm, E of Coolum, Qld, 26º30.6'S, 153º35.2'E, 102 m, Queensland Fisheries Service, 21 Jun 2001.

Diagnosis. See generic diagnosis.

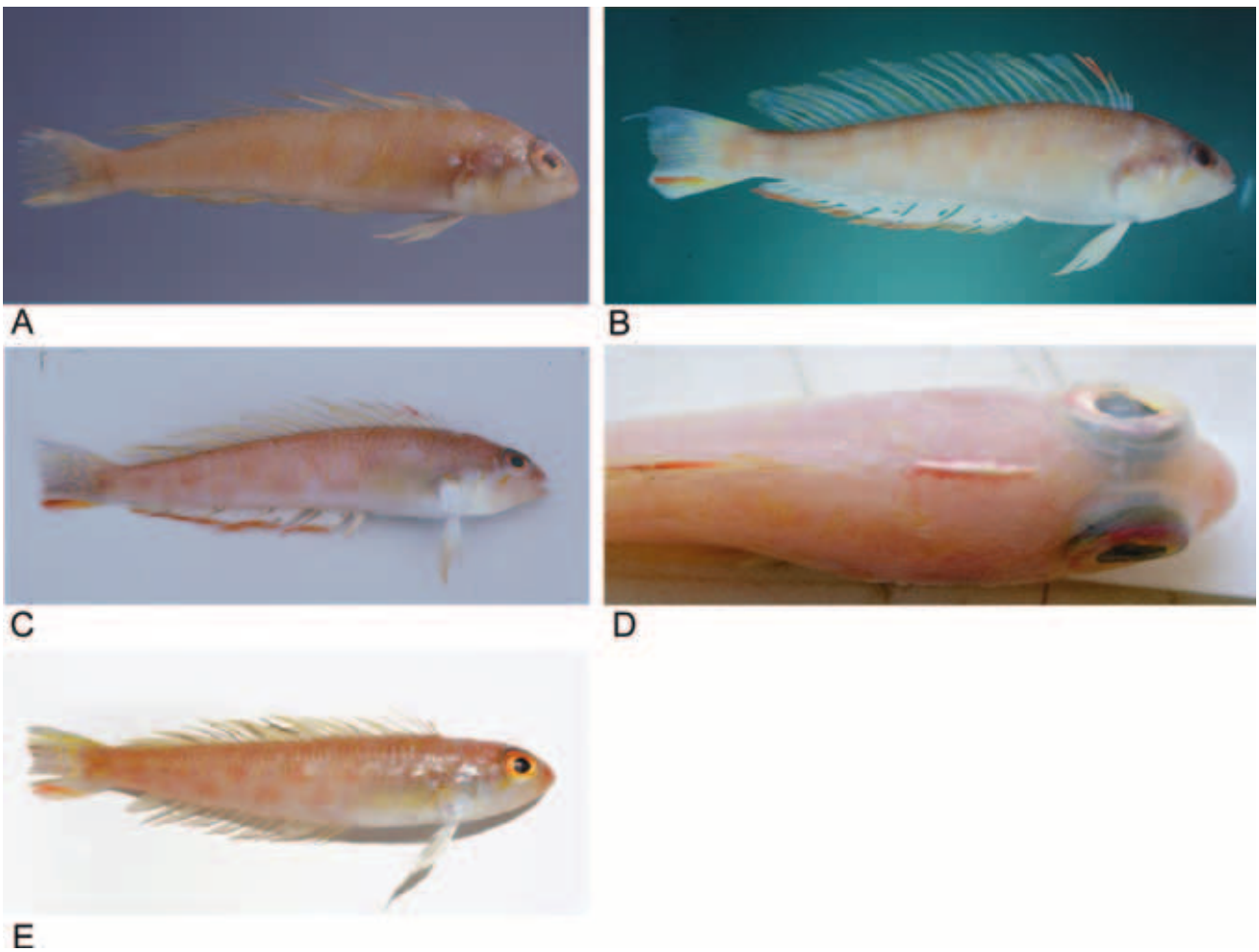

Figure 1. Type specimens of *Simipercis trispinosa*. (A) Holotype, QM I.32697, 114 mm SL, male (B) Paratype, BPBM 37231, 125 mm SL, male (C) Paratype, AMS I.32217-001, 115 mm SL, male (photo: K. Graham) (D) Paratype, CSIRO H.6247-01, 112 mm SL, male, dorsal view of nape, showing fleshy nuchal crest (photo: D. Gledhill) (E) Paratype, AMS I.43651-002, 76 mm SL, female (photo: S. Humphries).

Description. Dorsal-fin rays III, 24 (3 with III, 25 rays); anal-fin rays I, 18 (3 with I, 17 and 1 with I, 19); all dorsal- and anal-fin rays branched, last to base; pectoral-fin rays 20 (19–21, 30 with 19, 5 with 21), upper ray unbranched, others including lowermost branched; pelvic-fin rays I, 5; branched caudal-fin rays 15; lateral-line scales 50 (46–54), plus 3–4 smaller scales on caudal-fin base; scales above lateral line to origin of dorsal fin 3, to base of anterior soft rays of dorsal fin 2½; scales below lateral line in an oblique row to origin of anal fin 10 (10–11); circumpeduncular scales 19 (19–20); predorsal scales about 9 (8–10) to posterior margin of eye, separated along dorsal midline by a low fleshy nuchal crest and not in well-defined rows of equally-sized scales, continuing in a single row of a further 8 (8–9) large scales from posterior margin of eye through interorbital space to anterior margin of eye, or just forward of this point; origin of nuchal crest about 3 scales behind posterior margin of eye, termination about 2½ scales anterior to dorsal-fin origin; horizontal row of scales from preorbital across cheek to edge of preopercle 14; gill rakers on 1st arch 4+11, total 15 (3–6+9–13=12–18); branchiostegal rays 6; vertebrae 10+21 (20–21).

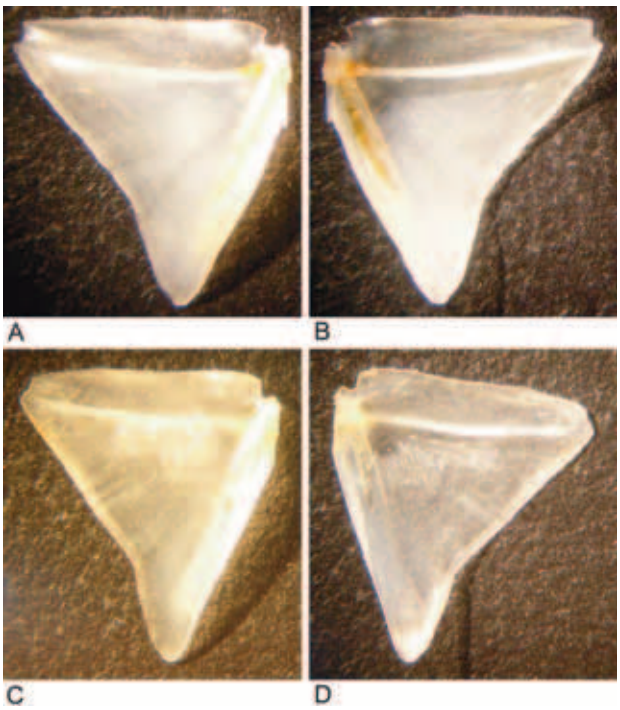

Figure 2. Opercula of *Simipercis trispinosa*, showing poorly developed points at dorsoposterior angle, and low position of inner horizontally-aligned opercular ridge. (A) QM I.36872, 113 mm SL, outer surface (B) QM I.36872, 113 mm SL, inner surface (C) QM I.36871, 124 mm SL, outer surface (D) QM I.36871, 124 mm SL, inner surface.

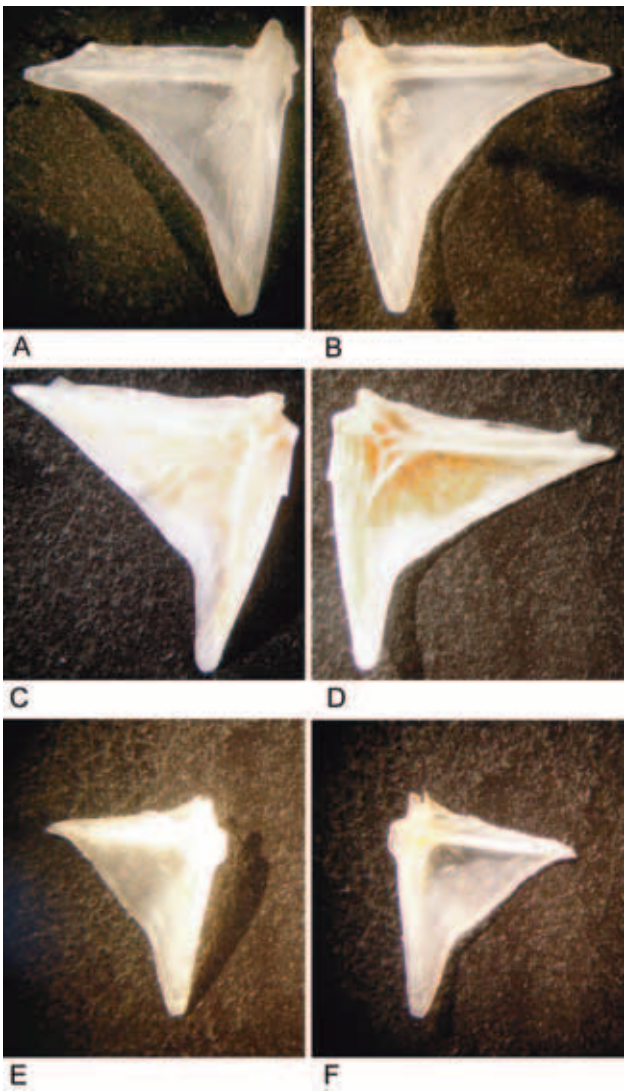

Figure 3. Opercula of selected species of *Parapercis*, showing strong, well-developed spine at dorsal angle and high position of inner horizontally-aligned opercular ridge. (A) *P. binivirgata*, QM I.37221, 146 mm SL, outer surface (B) *P. binivirgata*, QM I.37221, 146 mm SL, inner surface (C) *P. nebulosa*, QM I.36875, 152 mm SL, outer surface (D) *P. nebulosa*, QM I.36875, 152 mm SL, outer surface (E) *P.* "sp. 3", QM I. 36876, 118 mm SL, outer surface (F) *P.* "sp. 3", QM I. 36876, 118 mm SL, inner surface.

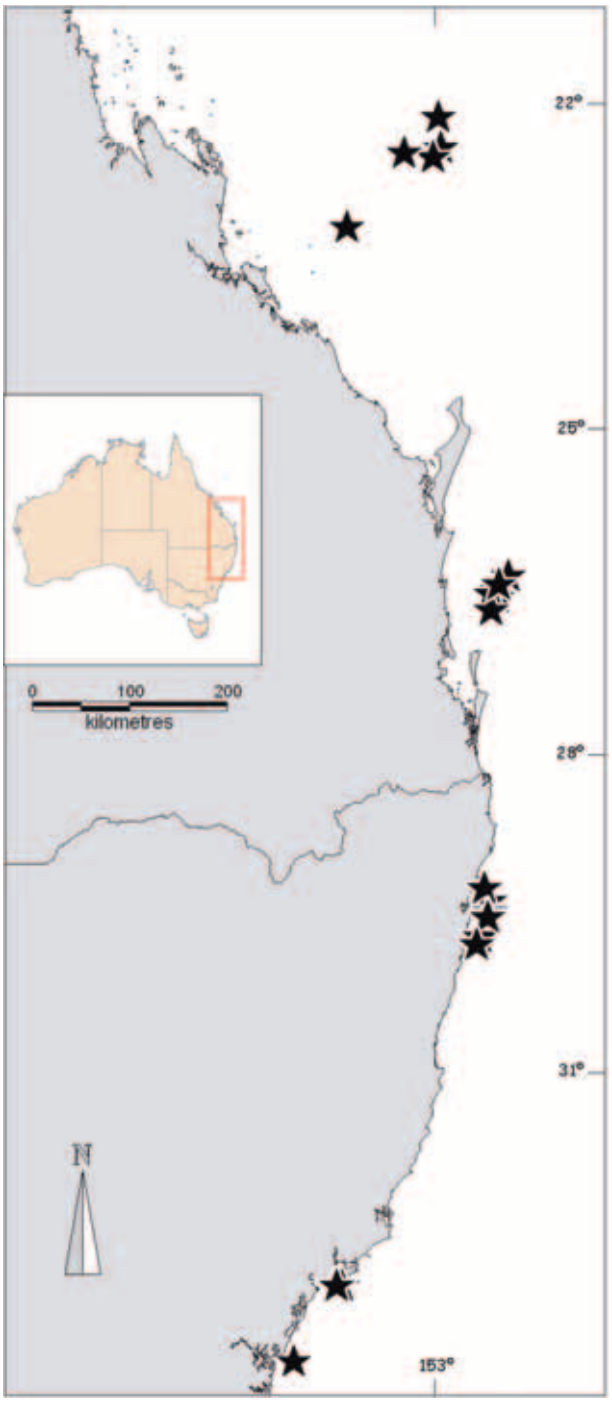

Figure 4. Distribution of *Simipercis trispinosa* based on specimens examined.

Body depth 4.85 (4.15–5.25) in SL; body moderately compressed, greatest width 1.35 (1.15–1.55) in body depth, juveniles subcylindrical, but specimens becoming increasingly compressed with age (1.3–1.55 in specimens greater than 90 mm SL); head length 3.85 (3.6–4.0) in SL, proportionately longest in adults; snout blunt, its length 5.2 (3.9–6.4) in HL; orbit diameter 2.8 (2.6–3.5) in HL; eyes directed more laterally than dorsally, bony interorbital space narrow, 9.5 (8.6–12.0) in HL; caudal-peduncle depth 2.85 (2.65–3.15) in HL; caudal-peduncle length 2.6 (2.35–3.2) in HL.

Mouth slightly oblique, terminal, with curved canine teeth at front of lower jaw slightly projecting and visible when mouth is closed; upper jaw extending to a vertical between anterior margin and middle of pupil, upper jaw length 2.5 (2.35–2.6) in HL; upper jaw with 27 (24–29) outer curved canines, closely and evenly spaced, 2nd or 3rd from symphysis largest, but not distinctly larger than those following, gradually reducing in size posteriorly, broad inner band of villiform teeth anteriorly, narrowing gradually to form single row at rear of jaw; front of lower jaw on each side with 4 (4–5, usually 5) enlarged curved canines in distinctly separate outer row, tooth nearest symphysis smallest, the others gradually increasing in size laterally, 4th usually largest (occasionally 5th), broad inner band of villiform teeth extending posteriorly from symphysis to side of jaw 12–18 rows back, next 5–7 teeth enlarged and in single row (of these, 4–5 posterior-most teeth largest and strongly recurved), then followed by single row of 12–17 smaller slightly curved conical teeth. Total number of teeth in each jaw generally slightly more in adults than in juveniles. Vomer and palatines edentate. Tongue spatulate with broadly rounded tip, its surface covered with tiny papillae.

Gill membranes united with broad free fold, not attached to isthmus. Gill rakers short, the longest about one-third length of longest gill filament on 1st gill arch. Anterior nostril small, inconspicuous, situated in front of centre of eye about one-third distance to tip of snout, with membranous posterior flap, the latter folded around near base to form partial tube, flap usually lying flat against snout in preserved specimens. Posterior nostril close to anterior margin of eye, dorsoposterior to, and about 3 times width of anterior nostril, its opening simple, anterior edge thin and slightly expanded, making aperture slightly oval-shaped; internarial distance about twice width of posterior nostril.

Opercle with no exposed pointed spine; dorsoposterior angle of opercular bone narrowly truncate with minute shallow notch, posteroventral corner of notch broadly and bluntly triangular, but hidden by skin and scales or barely exposed; subopercle and preopercle entire, the margins broadly rounded and slightly overlapped by large ctenoid scales.

Lateral line continuous, ascending fairly abruptly from opercle to below origin of soft dorsal fin, then approximately following contour of back; all scales ctenoid, except for those on pelvic fins and distally on pectoral fins, those on middle of sides with about 50 cteni; scales on cheek extending forward to a vertical between anterior margin of eye and anterior margin of pupil; no scales on dorsal and anal fins; small elongate cycloid scales on basal 3rd of pelvic fins; small scales on basal 4th of pectoral fins, ctenoid proximally and cycloid

distally; proportionately larger ctenoid scales densely arranged on basal two-thirds of caudal fin.

Origin of dorsal fin at a vertical just anterior to tip of opercular flap, the predorsal length 4.0 (3.8–4.1) in SL; 1st dorsal-fin spine shortest, 6.15 (5.1–7.6) in HL; 3rd dorsal-fin spine longest, 3.75 (3.1–4.25) in HL; membrane from 3rd spine to 1st soft ray moderately notched, attached at about four-fifths height of 3rd dorsal-fin spine; longest dorsal-fin soft ray the 19th (18th–20th), 1.2 (1.2–1.45) in HL; origin of anal fin below base of 7th to 8th soft dorsal-fin ray, preanal length 2.35 (2.15–2.4) in SL; anal-fin spine slender, closely attached to 1st soft ray, 3.55 (3.05–3.7) in HL; longest soft anal-fin ray the 15th (15th or 16th), 1.8 (1.7–2.1) in HL; caudal fin truncate to slightly rounded, but in males 3rd branched ray from upper margin filamentous, and about 10th–13th rays slightly produced to form a small lobe, length of caudal fin without filament 4.7 (3.95–5.2) in SL; pectoral fins rounded, 12th ray usually longest, 4.3 (4.2–4.8) in SL, longer than pelvic fins in adults, shorter than pelvic fins in juveniles; origin of pelvic fins in advance of upper base of pectoral fins and slightly anterior to a vertical from dorsal-fin origin, prepelvic length 4.05 (3.95–4.4) in SL; pelvic-fin spine closely attached to 1st soft ray, its termination very fleshy and difficult to accurately determine; 4th soft pelvic-fin ray longest, reaching almost to base of 2nd soft anal-fin ray (origin of anal fin to base of 3rd soft ray), 4.35 (3.8–5.45) in SL.

Colour in alcohol. Head, body and fins mostly uniformly pale yellowish brown. Margins of scales on upper part of body faintly greyish. Narrow naked area of nuchal crest silvery-white (gradually fading in preservative), interspersed variably with dusky melanophores.

Colour fresh. Male holotype pale rose-pink, with numerous vague narrow oblique posteroventrally-directed yellow bands, shading to pearly-white on lower part of opercle, pectoral fin base, breast and belly. Oblique pale yellow bar from lower edge of eye across cheek. Dorsal margin of eye yellow, remainder of iris silvery-white, variably washed with pale red above and posteriorly. Nuchal crest on predorsal midline silvery-white, with numerous scattered dusky melanophores (nuchal crest pale golden-pearl, surrounded basally with diffuse red in paratype CSIRO H. 6247-01, fig. 1d). 1st to 3rd (1st and 2nd in some paratypes) dorsal-fin rays crimson in males, dorsal-fin spines, remaining rays and dorsal-fin membrane pale yellow to semitransparent. Anal-fin membrane chalky-white on basal three-fourths, crimson distally in males. Caudal fin translucent greyish with 4–5 irregular wavy diagonal lemon-yellow bars, lower margin bright-yellow with a crimson flash submarginally on outer half of fin. Some paratypes with yellow and red colouration interspersed along lower margin of fin, and with a lesser 2nd red flash immediately above, near distal edge of fin. Pectoral fins translucent. Proximal half of pelvic fins white, yellowish distally (some larger paratypes with outer half of fin faintly pale red-pink). Peritoneum silvery-black.

Distribution. Demersal trawl grounds between Swain Reefs, Qld (22º06'S, 153º02'E) and Manly, NSW (33º40'S, 151º26'E), at depths of 51–170 m (fig. 4).

Etymology. From the Latin *tres* meaning three, and *spina* meaning thorn or spine, in reference to the 3 dorsal-fin spines, a character state not found in any other species of Pinguipedidae.

Remarks. Although it has a distributional range of at least 11 degrees latitude, *Simipercis trispinosa* has been trawled from only several relatively small areas of the east Australian coast (fig. 4). There appears to be a strong correlation between increased depth of capture and decreasing latitude across the range of the species. Specimens from near the northern range extremity, in the southern Great Barrier Reef region, occur in considerably greater depths (112–170 m) than those at the southern end, in New South Wales (51–80 m). Those centrally located, off the Sunshine Coast in southern Queensland were recorded from intermediate depths (98–123 m). Most trawl catches of *S. trispinosa* have included several males in excess of 110 mm SL with prominent fin markings and well-developed caudal-fin filaments (maximum recorded size 135 mm SL), among a larger group of smaller females, ranging from about 60–100 mm SL. The largest female examined with ripe gonads measured 100 mm SL. Nuchal crests were noted in specimens of all sizes and are not related to age, gender or sexual maturity.

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