

Two new species of *Parapercis* (Perciformes: Pinguipedidae) from north-eastern Australia, and rediscovery of *Parapercis colemani* Randall & Francis, 1993

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Abstract

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Two new species of pinguipedid fishes, *Parapercis flavolabiata* and *P. sexlorata*, are described. The former is known from 20 specimens collected by epibenthic sled and demersal trawl from within the Great Barrier Reef, Australia, between Anzac Reefs and Lady Musgrave Island, in depths from 45 to 79 m. It is most similar to *Parapercis multiplicata* Randall, 1984 and *P. colemani* Randall & Francis, 1993 in appearance, but is unique among the genus in having a combination of dorsal rays V, 21, anal rays I, 17–18, lateral-line scales 51–55, palatines edentate, angle of subopercle produced and with small spinules, 9–10 abdominal and 20 caudal vertebrae, and colouration including six broad red saddles across the back, a purplish-red line from the anterior edge of each orbit around the snout, and a series of yellow-edged red spots on the postorbital part of the head and nape. *Parapercis sexlorata* is described from seven specimens trawled off central eastern Australia between Cape Moreton, Queensland and North Solitary Island, New South Wales in 86 to 137 m. It is easily distinguished from its closest congeners with palatine teeth and dark transverse bars, *P. macrophthalmus* Pietschmann, 1911 and *P. muronis* Tanaka, 1918, by having four rather than five dorsal-fin spines and six rather than five transverse bars. *Parapercis colemani* Randall & Francis, 1993 was previously known only from the holotype, collected in 1.5 m depth in the lagoon of Norfolk Island. Additional specimens collected on the NORFANZ survey in the Tasman Sea indicate that the species usually inhabits much deeper habitats and occurs over a wider geographic area. New localities and meristic data are reported for the additional material.

Keywords

Pinguipedidae, *Parapercis*, new species, Queensland, Great Barrier Reef, Australia

Introduction

Parapercis Bleeker, 1863 currently includes 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 (Cantwell, 1964; Randall and McCosker, 2002; Randall, 2003; Randall and Yamakawa, 2006; this study). While shallow reef-dwelling species are relatively well known, those found on soft-bottom habitats in depths in excess of 50 m have been more poorly sampled and elucidated. A study of pinguipedid fishes in Australian ichthyological collections has revealed a number of undescribed species taken during demersal trawl surveys. Two of these species are described herein.

Parapercis colemani Randall & Francis, 1993 was described from a single female collected in a shallow sandy bay at Norfolk I. The authors indicated that they were unable to locate further specimens in the region despite expending considerable effort, and surmised that the species may have been a waif from a breeding population elsewhere, possibly in relatively deep water. In 2003 a consortium of Australian, New Zealand and

French scientific organisations collaborated to investigate the biodiversity of benthic communities on the Norfolk Ridge and Lord Howe Rise of the Tasman Sea on the NORFANZ cruise. Specimens of an unidentified species of *Parapercis* collected at two widely separated localities during this cruise are here identified as *P. colemani*, confirming these assumptions. New localities, meristic data, and other details at variance with the original description are reported for the material.

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 were made from radiographs. Where assessed, sex was determined by examination of gonads through a small incision in the abdomen.

Measurements were taken with dial calipers, to the nearest 0.5 mm for SL and the nearest 0.1 mm for all other measurements, with the aid of a stereo microscope where necessary. Methods for counts and measurements otherwise follow Randall, 2003. Where different, values for paratypes follow those of the holotype in parentheses. Specimens of *P. flavolabiata* were collected by epibenthic sled and *P. sexlorata* by trawl, except where indicated otherwise. Meristic and morphometric details for the new species are presented in Tables 1–2.

Comparative material examined

Parapercis macrophthalmia ZMB 16160, holotype, 107.5 mm, Takao, Taiwan, Dr. Haberer.

Parapercis muronis BSKU 36390, 126 mm, Tosa Bay, Japan, 6 Feb 1982; BSKU 37293, 122 mm, Tosa Bay, Japan, 27 Apr 1982.

Parapercis flavolabiata sp. nov.

Yellowlip Grubfish

Figures 1–2, 5; Tables 1–2.

Material examined. Holotype. QM I. 37762, male, 84 mm, east of Mystery Cay, Qld, 21°22.5'S, 152°07.5'E, 55 m, C. Bartlett on FRV *Lady Basten*, 19 Nov 2005.

Paratypes: (N = 16) AMS I.43796-001, 3: 39–85 mm, NW of Reef 21-253, Qld, 21°20.1'S, 152°15.9'E, 60 m, C. Bartlett on FRV *Lady Basten*, 20 Nov 2005; CSIRO H.6303-01, 79 mm, SE of Anzac Reefs, Qld, 18°47.1'S, 147°57.3'E, trawl 79.2 m, D. Gledhill on FRV *Gwendoline May*, 13 Dec 2003; QM I. 36139, 3: 55–83 mm, west of Riptide Cay, Qld, 21°14.1'S 151°45'E, 45 m, C. Bartlett on FRV *Lady Basten*, 25 May 2005; QM I. 36598, 43 mm, NE of Eulalie Reef, Qld, 19°06.3'S, 148°06.9'E, 55 m, C. Bartlett on FRV *Lady Basten*, 9 Sept 2004; QM I. 36632, 91 mm, west of Stucco Reef, Qld, 19°33.3'S, 149°31'E, 77 m, C. Bartlett on FRV *Lady Basten*, 11 Sept 2004; QM I.37763, 2: 49 mm, east of North Reef, Qld, 23°11.1'S, 152°00.9'E, 65 m, C. Bartlett on FRV *Lady Basten*, 9 Nov 2005; QM I.37764, 3: 35–53 mm, north of Joist Reef, Qld, 19°26.1'S, 149°40.5'E, 74 m, C. Bartlett on FRV *Lady Basten*, 26 Nov 2005; QM I.37765, 48 mm, NE of Hyde Reef, Qld, 19°42.3'S, 150°10.5'E, 70 m, C. Bartlett on FRV *Lady Basten*, 26 Nov 2005; QM I.37766, 67 mm, SE of Lady Musgrave I., Qld, 23°54.9'S, 152°30.9'E, 52 m, C. Bartlett on FRV *Lady Basten*, 5 Nov 2005.

Other material: BPBM 40411, 59 mm, north of Hyde Reef, Qld, 19°39.9'S, 150°04.5'E, 77 m, C. Bartlett on FRV *Lady Basten*, 26/11/2005; CSIRO H.6329-01, 83 mm, WSW of Mystery Cay, Qld, 21°24.9'S, 151°52.5'E, trawl 67 m, D. Gledhill on FRV *Gwendoline May*, 27/11/2005; QM I.37767, 82 mm, NE of Lavers Cay, Qld, 21°11.1'S, 152°07.5'E, trawl 61 m, D. Gledhill on FRV *Gwendoline May*, 3 Dec 2005.

Diagnosis. Dorsal-fin rays V, 21; anal-fin rays I, 17–18 (usually I, 17); pectoral-fin rays 16–18 (usually 17); lateral-line scales 51–55; gill rakers 3–5+10–11; predorsal scales 8–9; scales on cheek cycloid, in about 11 horizontal rows; usually 8 canine teeth in outer row at front of lower jaw; vomer with a crescentic row of 6–10 robust conical teeth; palatines edentate; angle of subopercle produced, with about 7 small spinules; 9–10 abdominal and 20 caudal vertebrae; colouration including 6 broad red saddles across the back, a purplish red to violet line from the anterior edge of each orbit around the snout, a series of yellow-edged red spots on the postorbital part of the head and nape, and a row of dark-red spots along soft dorsal fin.

Description. Dorsal-fin rays V, 21; anal-fin rays I, 17 (I, 17–18, only 2 with I, 18); all dorsal- and anal-fin rays branched, last to base; pectoral-fin rays 17 (16–18, 2 with 16, 1 with 18), upper ray unbranched, others including lowermost branched; pelvic-fin rays I, 5; branched caudal-fin rays 14 (14–15); lateral-line scales 53 (51–55), plus 2–3 smaller scales on caudal-fin base; scales above lateral line to origin of dorsal fin 5 (5–6), to base of anterior soft rays of dorsal fin 3½; scales below lateral line in an oblique row to origin of anal fin 11 (11–12); circumpeduncular scales 24; predorsal scales 9 (8–9), extending just anterior to a vertical from preopercular margin; horizontal row of scales from preorbital across cheek to edge of preopercle 19; gill rakers on 1st arch 3+11, total 14 (3–5+10–11=13–16); branchiostegal rays 6; vertebrae 9+20 (one paratype with 9+20, 2 with 10+20).

Body depth 6.15 (5.7–6.3) in SL; body subcylindrical, greatest width 0.95 (0.90–0.95) in body depth; head length 3.35 (3.1–3.4) in SL; snout pointed, its length 3.6 (3.55–4.0) in HL; orbit diameter 3.45 (3.35–3.7) in HL; eyes directed more laterally than dorsally, bony interorbital space narrow, 8.05 (8.0–11.2) in HL; caudal-peduncle depth 3.3 (3.15–3.6) in HL; caudal-peduncle length 2.95 (2.85–3.5) in HL.

Mouth slightly oblique, lower jaw protruding slightly, with curved canine teeth at front of each jaw slightly projecting and visible when mouth is closed; upper jaw extending to a vertical at anterior margin of pupil, upper jaw length 2.5 (2.3–2.65) in HL; upper jaw with 22 (20–23) outer curved canines, first 8 or 9 clearly the largest, of these 8th or 9th the largest, those following gradually reducing in size posteriorly, broad inner band of villiform teeth anteriorly, narrowing gradually to form only 2 rows at rear of jaw; front of lower jaw on each side with 4 (3–4) enlarged curved canines in distinctly separate outer row (6 paratypes with total of 8, 3 with 7, and 7 with 6), tooth 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 6 (5–9) teeth in single row, enlarged and gradually increasing in size posteriorly, then followed by single row of 14 (13–15) smaller slightly curved conical teeth. Vomer with crescentic row of 9 (6–10) robust conical teeth, medial teeth largest, usually several smaller additional teeth posteriorly; palatines edentate. Tongue spatulate with broadly rounded tip.

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 first gill arch. Anterior nostril small, inconspicuous, situated in front of centre of eye, slightly more than half 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 slightly more than half distance from snout to anterior margin of eye, dorsoposterior to, and about twice width of anterior nostril, its opening simple, aperture slightly oval-shaped; internarial distance about 1.5 times width of posterior nostril.

Opercle with distinctly exposed, robust, pointed spine, angle of subopercle expanded and armed with about 7 small spinules; preopercle and remainder of subopercle entire, the margins naked and broadly rounded.



Figure 1. Holotype of *Parapercis flavolabiata*, QM I.37762, 84 mm SL, male.

Lateral line continuous, ascending smoothly from opercle to below 2nd or 3rd soft dorsal-fin ray, then approximately following contour of back; scales ctenoid, except for those on nape, cheeks, breast, midline of belly, and some anteriorly on opercle and posteriorly on base of pectoral fins, those on middle of sides with about 36 cteni; scales on cheek extending forward approximately to a line between middle of eye and posterior tip of maxilla; no scales on dorsal, anal or pelvic fins; 2 or 3 rows of small cycloid scales on base of pectoral-fin rays; elongate ctenoid scales densely arranged on proximal two-thirds of caudal fin.

Origin of dorsal fin at or just posterior to a vertical from tip of opercular flap, the predorsal length 3.25 (3.1–3.35) in SL; 1st dorsal-fin spine shortest, 11.35 (9.05–12.85) in HL; 2nd and 3rd dorsal-fin spines progressively longer; 4th dorsal-fin spine longest, 3.8 (3.3–4.25) in HL; 5th dorsal-fin spine intermediate in height between 2nd and 3rd spines; membrane from 5th spine to 1st soft ray moderately notched, attached at about two-thirds height of 5th dorsal-fin spine; longest dorsal-fin soft ray the 19th (19th–20th), 1.95 (1.95–2.25) in HL; origin of anal fin below base of 5th to 6th soft dorsal-fin ray, preanal length 2.1 (1.95–2.1) in SL; anal-fin spine slender, closely attached to 1st soft ray, 5.7 (4.95–7.45) in HL; longest soft anal-fin ray the 15th (15th or 16th), 2.35 (2.15–2.5) in HL; caudal fin emarginate, in males 2nd and 3rd branched ray from upper margin produced to form a short filament, and about 10th–13th rays slightly produced to form a small rounded lobe, length of caudal fin without filament 4.75 (3.85–4.7) in SL; pectoral fins rounded, 10th ray usually longest, 4.7 (4.55–5.05) in SL, shorter than pelvic fins; origin of pelvic fins in advance of upper base of pectoral fins and approximately on a vertical from upper corner of operculum, prepelvic length 3.8 (3.5–3.85) in SL; pelvic-fin spine closely attached to 1st soft ray, its termination fleshy and difficult to accurately determine; 4th soft pelvic-fin ray longest, reaching to base of 2nd soft anal-fin ray (origin of anal fin to base of 3rd soft ray), 4.1 (3.7–4.25) in SL.

Colour in alcohol. Head, body and fins mostly uniformly pale yellowish-brown. Some faint dark saddles dorsally above lateral line persisting in larger specimens.

Colour fresh. Male holotype pale pinkish-white above on body, with 6 broad inverted triangular red saddles, extending almost to ventral midline on each side. Secondary narrow vertical red bars between the 3rd and 4th, 4th and 5th and 5th and 6th saddles, and on the caudal peduncle extending ventrally from lateral line to a similar level. A small red blotch also in the same series, just below pectoral fin base. Pigmentation of bars and saddles darker blood-red at their lower apex. Lower sides, belly and breast shading to pearly white. Head mostly flesh-pink. Opercle below opercular spine and adjacent upper four-fifths of pectoral-fin base pale yellow. A short diffuse oblique red and yellow bar (red anteriorly, yellow posteriorly) from tip of maxilla to about half distance to middle of eye. A distinct purplish-red to violet line broadly but faintly margined in pale orange-yellow from middle of anterior edge of orbit, curving around snout to meet orbit on opposite side. Chin and anterior half of upper and lower lips diffusely flushed with red. Posterior half of upper lip bright yellow. Purple-pink reflective band across anterior part of interorbital, followed posteriorly by a small pale-yellow blotch adjacent to inner edge of each eye. Transverse row of 3 yellow-edged red spots across occipital region, lowermost on each side behind upper third of eye, the upper central spot on dorsal midline. Four additional yellow-edged red spots in a crescentic row on nape immediately behind head, upper 2 directly behind inner margin of orbit, lowermost on anterodorsal edge of post-temporal. Area from upper corner of operculum to posterodorsal part of head diffusely washed in yellow. Posteroventral margin of orbit with faint purple-pink reflective line underlying the orbital membrane. Dorsal and ventral margins of iris yellow, followed by a broad purplish-red area extending to upper and lower edges of pupil respectively, remainder of iris behind and in front of the pupil yellow. Distal third of spinous dorsal fin membrane pale translucent yellow.

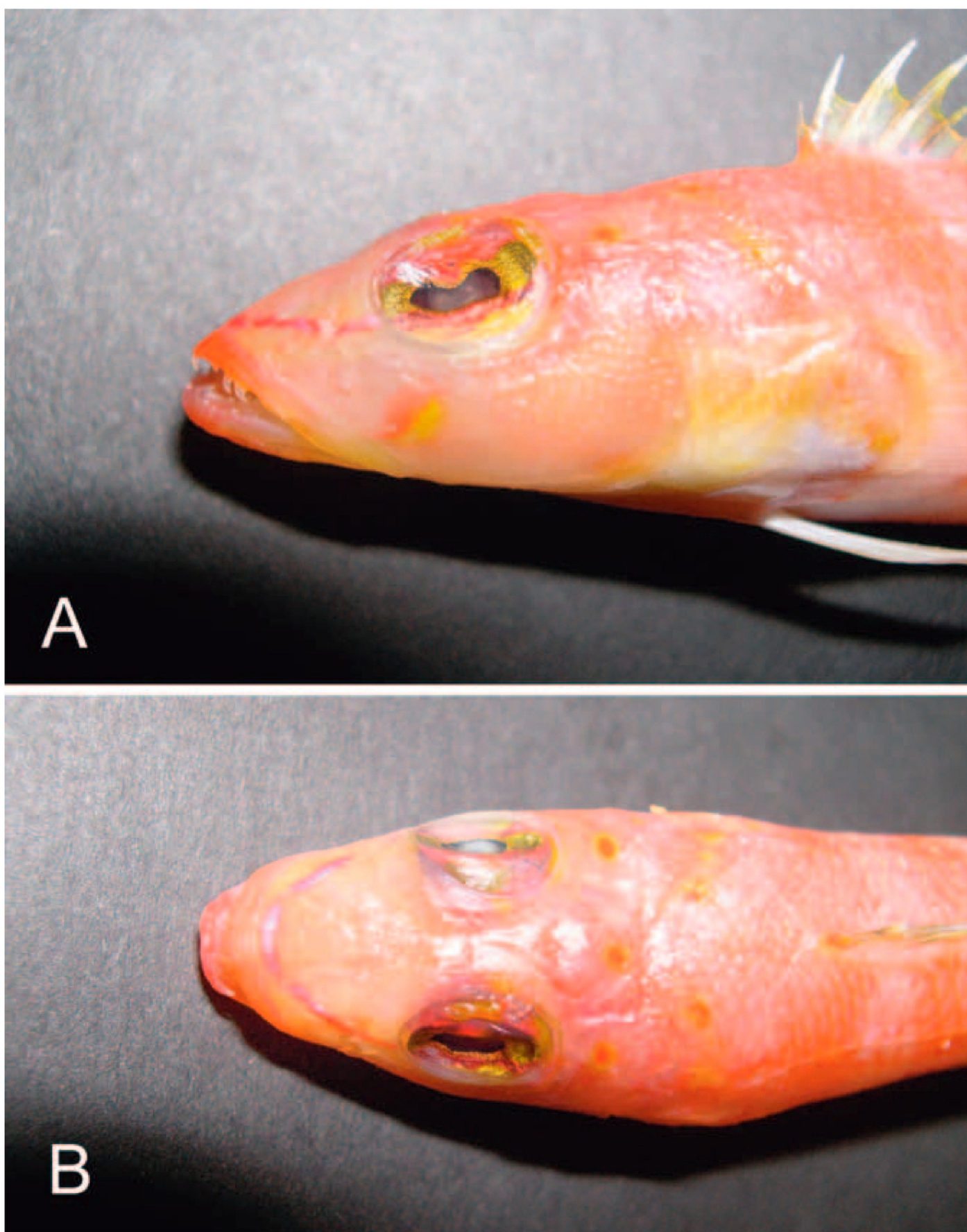


Figure 2. Holotype of *Parapercis flavolabiata*, QM I.37762, 84 mm SL, male. (A) Lateral view of head (B) Dorsal view of head.

Table 1. Selected meristic and morphological values for type specimens of *Parapercis flavolabiata* and *P. sexlorata* (measurements as percentage of standard length).

	<i>P. flavolabiata</i>		<i>P. sexlorata</i>	
	Holotype QM I.37762	Paratypes (n = 16)	Holotype QM I.33274	Paratypes (n = 6)
Standard length (mm)	84.0	35.0–91.0	120.0	73.5 – 95.0
Dorsal-fin rays	V, 21	V, 21	IV, 23	IV, 23
Anal-fin rays	I, 17	I, 17 – I, 18	19	19
Pectoral-fin rays	17	16–18	19	19
Gill rakers	3 + 11	3–5 + 10–11	6 + 9	4–6 + 8–10
Lateral-line scales	53	51–55	56	53–57
Lower jaw teeth (outer row)	4 + 4	3–4 + 3–4	3 + 3	3 + 3
Vertebrae (abdominal + caudal)	9 + 20	9–10 + 20	10 + 22	9 + 23 (2)
Body depth	16.3	15.9–17.5	19.3	15.6–18.1
Body width	17.4	17.4–18.5	18.3	18.0–19.8
Head length	29.8	29.2–32.5	26.8	25.6–27.9
Snout length	8.2	7.8–8.5	5.7	5.8–6.3
Orbit diameter	8.6	8.4–9.6	7.9	8.4–9.5
Interorbital width	3.7	2.7–3.8	2.3	1.6–2.2
Preorbital depth	4.3	3.7–4.7	3.9	3.1–3.8
Upper jaw length	12.0	11.9–13.6	12.1	11.2–12.8
Predorsal length	30.8	29.7–32.2	30.8	29.0–31.2
Preanal length	47.9	47.6–51.6	45.2	46.0–48.7
Prepelvic length	26.3	26.1–28.4	24.7	24.1–26.0
Caudal-peduncle depth	9.0	9.0–9.5	10.0	9.3–10.1
Caudal-peduncle length	10.1	9.1–10.2	7.8	7.6–8.9
Dorsal-fin base	62.0	59.1–62.5	67.3	61.5–65.3
First dorsal-fin spine length	2.6	2.4–3.3	4.1	2.6–4.4
Second dorsal-fin spine length	5.4	3.9–4.9	5.2	3.7–5.7
Third dorsal-fin spine length	7.1	6.4–7.7	5.7	5.1–6.0
Fourth dorsal-fin spine length	7.9	7.6–9.2	5.9	5.7–7.1
Fifth dorsal-fin spine length	5.7	5.2–7.5	-	-
Longest dorsal-fin ray	15.4	14.0–15.7	15.0	13.5–15.3
Anal-fin base	42.3	40.7–43.0	45.6	43.9–46.8
Anal-fin spine length	5.2	4.3–5.8	3.8	4.6–5.4
Longest anal-fin ray	12.7	12.5–13.6	12.9	13.1–13.4
Caudal-fin length	21.1	21.4–25.9	17.2	19.1–21.5
Pectoral-fin length	21.3	19.8–21.9	20.6	20.1–22.3
Pelvic-fin length	24.5	23.4–26.9	20.4	22.0–23.7

Table 2. Frequency of lateral-line scales and gill rakers in type specimens of *Parapercis flavolabiata* and *P. sexlorata* and in type and non-type material of *P. colemani* (* denotes holotype).

Lateral-line scales													
	51	52	53	54	55	56	57	58					
<i>P. flavolabiata</i>	1	5	5*	5	1	-	-	-					
<i>P. colemani</i>	-	-	-	-	1	2	1	1*					
<i>P. sexlorata</i>	-	-	1	1	2	2*	1	-					
Gill rakers													
	Upper				Lower				Total				
	3	4	5	6	8	9	10	11	12	13	14	15	16
<i>P. flavolabiata</i>	3*	12	2	-	-	-	9	8*	-	2	8*	5	2
<i>P. colemani</i>	3*	1	1	-	-	1	2	2*	-	2	2*	1	-
<i>P. sexlorata</i>	-	1	-	6*	1	4*	2	-	1	-	-	4*	2

Basal two-thirds of membrane between 1st and 2nd dorsal spines blood-red, that between other spines mainly transparent, but with numerous tiny white dots. Soft dorsal fin with numerous tiny white dots, translucent yellow on basal and distal 3rd, but with central 3rd transparent. Distinctive small dark-red spot in transparent area just above midheight of fin following each ray. Anal fin with basal half translucent whitish and distal half pale translucent yellow. Caudal fin with a broad oblique blood-red band covering about one-third of fin anterodorsally, but extending to full length of fin ventrally, followed by a central white area, and a broad pale-yellow margin distally. Narrow bright-yellow edge to anterodorsal half of caudal fin. Centre of fin with about 4 small darker red smudge-like spots interspersed with dusky melanophores. Pectoral fins transparent. Pelvic fins white, with a faint yellowish blush proximally. Tongue pinkish-white. Peritoneum white.

Distribution. Demersal trawl grounds between Anzac Reefs, 18°47.1'S, 147°57.3'E and Lady Musgrave I., 23°54.9'S, 152°30.9'E, Great Barrier Reef, Qld, in depths from 45 to 79.2 m. (fig. 4).

Etymology. From the latin *flavo* for yellow and *labiata* for lipped, in reference to the distinctive yellow posterior half of the upper lip.

Remarks. *Parapercis flavolabiata* is most similar in colouration to *P. multiplicata* Randall, 1984, sharing with that species a series of reddish saddles across the back and a row of dark-red spots along the soft dorsal fin, however it may easily be distinguished by the presence of only six saddles (rather than eight), dark marking in spinous dorsal fin confined to first membrane (rather than anterior three), presence of a bright-yellow upper lip, purplish-red line across the snout, and series of yellow-edged red spots on the postorbital region of the head (all absent), fewer pectoral fin rays (16–18, usually 17 versus 14–16, usually 15), lower lateral-line scale count (51–55 versus 56–58) and fewer predorsal scales (8–9 versus 10–12). *Parapercis colemani* Randall & Francis, 1993 has similar colouration and meristics to *P. flavolabiata*, but has five reddish saddles that only cover the upper third of the body and a series of ten separate vertical yellow bars below (versus six red saddles continuous to lower sides and interspersed posteriorly with independent shorter red bars), lacks the distinctive head markings of *P. flavolabiata*, and has a higher lateral-line scale count (55–58 versus 51–55). *Parapercis punctulata* Cuvier, 1829 and *P. signata* Randall, 1984 are also somewhat similar in colouration, but have dark markings and spots on anal fin (absent in *P. flavolabiata*), differ markedly in the colouration of the head and spinous dorsal fin (membranes of the latter with black blotch covering entire base), and have more lateral-line scales (55–57 versus 51–55).

This species was taken during a wide-ranging study of benthic inter-reef fishes and invertebrates across the entire Australian Great Barrier Reef region. Most prior surveys of this region have been more restricted geographically and have concentrated on areas fished commercially for penaeid prawns and scallops, *Amusium* spp, using variously adapted commercial otter trawl gear and scallop dredges. This survey utilised small but fairly conventional trawl gear, but employed a specialised

epibenthic sled with a diameter of 1.5 m and stretched mesh size of 25 mm. Almost 1200 tows of 200 m were undertaken with this apparatus. It was responsible for the capture of numerous poorly known benthic fish species and accounted for all but three of the specimens collected of *Parapercis flavolabiata*.

Parapercis sexlorata sp. nov.

Sixstrap Grubfish

Figures 3–5; Tables 1–2.

Material examined. Holotype. QM I. 33274, 120 mm, east of Cape Moreton, Qld, 27°03.58'S, 153°31.57'E, 86 m, Qld Fisheries Service, 14 Mar 2001.

Paratypes: (N = 6) AMS I.22873-004, 91 mm, SE of Cape Byron, NSW, 28°43'S, 153°49'E to 28°39'S, 153°50'E, 128–137 m, K. Graham on FRV *Kapala*, 1 Nov 1978; AMS I.31484-006, 86 mm, off Brunswick Heads, NSW, 28°27'S, 153°50'E, 119–137 m, K. Graham on FRV *Kapala*, 16 Feb 1991; AMS I.37977-002, 2: 73.5–93 mm, off Sandon Bluffs, NSW, 29°40'S, 153°40.6'E, 107–109 m, K. Graham on FRV *Trader Horn*, 8 Jul 1999; AMS I.40445-004, 95 mm, off Sandon Bluffs, NSW, 29°39'S, 153°41'E to 29°42'S, 153°40'E, 108–117 m, K. Graham on FRV *Trader Horn*, 5 Jul 1999; QM I. 37579, 84.5 mm, ENE of North Solitary I., NSW, 29°54'S, 153°36'E, 102 m, K. Graham on FRV *Kapala*, 2 Aug 1978.

Diagnosis. Dorsal-fin rays IV, 23; anal-fin rays I, 19; pectoral-fin rays 19; lateral-line scales 53–57; gill rakers 4–6+8–10; predorsal scales 10–11; scales on cheek ctenoid, in about 9 horizontal rows below middle of eye; 6 canine teeth in outer row at front of lower jaw; vomer with a crescentic outer row of 6–7 robust conical teeth and several smaller teeth behind; palatines with a single row of about 7 robust conical teeth; angle of subopercle produced, with several feeble spinules; 9–10 abdominal and 22–23 caudal vertebrae; head and body pink, with 6 narrow oblique posteroventrally-directed black bars across the back, 1st extending to lateral line, 2nd to middle of sides, others to lower 3rd of body; a small black spot in upper corner of caudal-fin base; scales above lateral line in area between bars and spot with dusky margins; spinous dorsal fin membrane dusky; upper lip yellowish.

Description. Dorsal-fin rays IV, 23; anal-fin rays I, 19; all dorsal- and anal-fin rays branched, last to base; pectoral-fin rays 19, upper ray unbranched, others including lowermost branched; pelvic-fin rays I, 5; branched caudal-fin rays 15; lateral-line scales 56 (53–57), plus 2–3 smaller scales on caudal-fin base; scales above lateral line to origin of dorsal fin $4\frac{1}{2}$ ($4\frac{1}{2}$ – $5\frac{1}{2}$), to base of anterior soft rays of dorsal fin $3\frac{1}{2}$ ($3\frac{1}{2}$ – $4\frac{1}{2}$); scales below lateral line in an oblique row to origin of anal fin 14 (13–14); circumpeduncular scales 24; predorsal scales 11 (10–11), extending forward just posterior to a vertical from preopercular margin; horizontal row of scales from preorbital across cheek to edge of preopercle about 19; gill rakers on 1st arch 6+9, total 15 (4–6+8–10=12–16); branchiostegal rays 6; vertebrae 10+22 (2 paratypes with 9+23).

Body depth 5.15 (5.5–6.4) in SL, more robust in larger specimens; body subcylindrical, greatest width 1.05 (0.80–1.0) in body depth, depth equal to or greater than width only in larger specimens; head length 3.75 (3.6–3.9) in SL; snout bluntly rounded, its length 4.7 (4.1–4.65) in HL; orbit diameter



Figure 3. Holotype of *Parapercis sexlorata*, QM I.33274, 120 mm SL, male.



Figure 4. Paratype of *Parapercis sexlorata*, QM I.37579, 84.5 mm SL (Photo: K. Graham).

3.4 (2.75–3.1) in HL; eyes directed as much dorsally as laterally, bony interorbital space narrow, 11.9 (11.65–15.7) in HL; caudal-peduncle depth 2.7 (2.6–3.0) in HL; caudal-peduncle length 3.4 (3.0–3.65) in HL.

Mouth slightly oblique, jaws terminal, curved canine teeth at front of each jaw slightly projecting, but concealed by lips when mouth is closed; upper jaw extending to a vertical at posterior margin of pupil, upper jaw length 2.2 (2.05–2.5) in HL; upper jaw with 19–21 outer curved canines, first 10 (8–10) larger than those following, of these either 1st or 9th usually

the largest, 11th and subsequent teeth gradually reducing in size posteriorly, broad inner band of villiform teeth anteriorly, narrowing gradually but still forming several rows at rear of jaw; front of lower jaw on each side with 3 enlarged curved canines in distinctly separate outer row, tooth nearest symphysis smallest, 3rd in the series largest; broad inner band of villiform teeth extending posteriorly from symphysis to side of jaw 4–5 rows posterior to largest tooth in outer row, next 2 teeth abruptly larger, then followed by single row of 15–16 smaller slightly curved conical teeth. Vomer with



Figure 5. Distribution of *Parapercis flavolabiata* and *P. sexlorata* based on specimens examined.

crescentic outer row of about 7 robust conical teeth, medial teeth largest, several smaller adjacent teeth posteriorly; palatines with row of about 7 robust conical teeth and several closely spaced additional teeth near midsection of row. Tongue spatulate with broadly rounded tip, covered with numerous minute papillae.

Gill membranes united with broad free fold, not attached to isthmus. Gill rakers short, the longest about one-sixth length of longest gill filament on 1st gill arch. Anterior nostril moderately large, situated in front of centre of eye, about half distance to tip of snout, with membranous posterior flap, the latter folded around near base to form partial tube. Posterior nostril about half distance from anterior nostril to anterior margin of eye, dorso-posterior to, and slightly wider than anterior nostril, its opening simple and slightly raised, aperture slightly oval-shaped; internarial distance about twice width of posterior nostril.

Opercle with distinctly exposed, robust, pointed spine, angle of subopercle expanded, with several feeble spinules; preopercle and remainder of subopercle entire, the margins naked and broadly rounded.

Lateral line continuous, ascending from opercle to below 2nd or 3rd dorsal spine, then approximately following contour of back; scales ctenoid, except for some on shoulder region and pectoral-fin rays and those on nape, breast and midline of belly, scales on middle of sides with about 40–50 cteni; scales on cheek extending forward approximately to a line between middle of eye and midlength of maxilla; no scales on dorsal, anal or pelvic fins; small elongate scales on pectoral-fin rays, some rows covering proximal half of fin; elongate ctenoid scales densely arranged on proximal three-fourths of caudal fin.

Origin of dorsal fin distinctly posterior to a vertical from tip of opercular flap, the predorsal length 3.25 (3.2–3.45) in SL; 1st dorsal-fin spine shortest, 6.55 (6.0–10.5) in HL; subsequent spines progressively longer; 4th (3rd or 4th) dorsal-fin spine the strongest, 4th always the longest, 4.5 (3.75–4.55) in HL; membrane from 4th spine to 1st soft ray moderately notched, attached at about two-thirds height of 4th dorsal-fin spine; longest dorsal-fin soft ray the 17th (17th–20th), 1.8 (1.75–1.9) in HL; origin of anal fin below base of 4th or 5th soft dorsal-fin ray, preanal length 2.2 (2.05–2.2) in SL; anal-fin spine slender, closely attached to 1st soft ray, 7.15 (4.95–5.65) in HL; longest soft anal-fin ray the 16th (16th or 17th), 2.05 (1.9–2.05) in HL; caudal fin rounded, length of caudal fin 5.85 (4.65–5.25) in SL; pectoral fins rounded to very bluntly pointed, 10th ray usually longest, 4.85 (4.5–5.0) in SL, slightly longer than pelvic fins (shorter than pelvic fins in all smaller paratypes); origin of pelvic fins slightly in advance of upper base of pectoral fins and on a vertical just anterior to tip of operculum, prepelvic length 4.05 (3.85–4.15) in SL; pelvic-fin spine closely attached to 1st soft ray, its termination fleshy and difficult to accurately determine; 4th soft pelvic-fin ray longest, reaching midway between vent and anal fin origin (from midway between vent and anal-fin origin to base of 1st anal-fin soft ray), 4.9 (4.2–4.55) in SL.

Colour in alcohol. Holotype, QM I.33274 (fig. 3) pale yellowish brown, with 6 narrow mostly oblique posteroventrally-directed black bars across the back and upper sides, 1st extending from immediately anterior to origin of spinous dorsal fin to lateral line, 2nd from 2nd soft dorsal-fin ray to middle of sides, others from 7th, 12th, 17th, and 22nd soft dorsal-fin rays to lower 3rd of body. Small black spot in upper corner of caudal-fin base. Scales above lateral line in area between each transverse bar and between last bar and caudal spot with dusky margins, producing a reticulate pattern. A narrow pale border around each transverse bar. Lower sides, belly, breast and snout to preopercle pale yellowish-brown. Upper part of opercle and upper postorbital region to rear of interorbital dark-brown, punctuated above margin of preopercle with a central pale area. A narrow curved brown line extending ventrally behind eye from postorbital area to just below lower margin of eye. Midline of nape with a broad band of scales with dusky margins, extending posteriorly from origin of scaled area to 1st transverse black bar anterior to dorsal-fin origin. Spinous dorsal-fin membrane diffusely dusky. Transverse black bars of upper body produced slightly on to base of adjacent soft dorsal-fin rays and membrane, soft dorsal fin otherwise uniformly pale. Middle section of inner pelvic-fin rays dusky to black. Anal fin uniformly pale. Caudal fin with 7 contrasting narrow dark wavy vertical lines.



Figure 6. *Parapercis colemani*, NMV A.25112-003, 84 mm SL (Photo: NORFANZ Founding parties).

Colour fresh. Based on colour photograph of paratype, QM I.37579 (fig. 4), pale-pink on head and body, with 6 transverse black bars and a black spot on upper corner of caudal-fin base. Each bar produced ventrally in dusky-yellow. Belly and breast shading ventrally to pinkish-white. Scales above lateral line in area between each transverse bar and between last bar and caudal spot with distinct dusky margins, producing a reticulate pattern. A narrow pink border, devoid of dusky-edged scales, around each transverse bar. Much of pectoral-fin base, postorbital and opercle diffusely dusky, infused with yellow. Upper lip dark orange-yellow, lower lip white. Spinous dorsal fin dusky grey. Soft dorsal-fin rays orange anteriorly, some wavy oblique orange lines visible posteriorly, membrane mostly translucent. Inner pelvic-fin rays dusky at midsection, whitish at base, yellowish distally. Anal fin faintly orange. Caudal fin mauve with about 7 narrow wavy vertical orange-yellow lines.

Distribution. Scattered on demersal trawl grounds between Cape Moreton, Qld, 27°03.58'S, 153°31.57'E and ENE of North Solitary I., NSW, 29°54'S, 153°36'E, in depths from 86 to 137 m (fig. 5).

Etymology. From the latin *sex* for 6 and *lorata* for strap, in reference to the 6 distinctive narrow black strap-like bars across the back of this species.

Remarks. Among currently recognised species, *Parapercis sexlorata* is most similar to *P. macrophthalma* Pietschmann, 1911 and *P. muronis* Tanaka, 1918, sharing with those taxa palatine teeth and a series of black bars across the back and upper sides. However it may easily be distinguished by the dorsal-fin ray count of IV, 23 versus V, 23–24, six versus eight canine teeth in outer row of lower jaw, and six versus five transverse bars. This species appears to be quite rare, with only seven specimens captured in a region that has been surveyed quite intensively by demersal trawl on various occasions since the late 1970s.

New records of *Parapercis colemani* Randall & Francis, 1993

Parapercis colemani Randall & Francis, 1993 was described from a single female collected in 1.5 m depth in a sandy inshore lagoon at Norfolk I. There have been no published records or additional material reported since the original description. Three specimens of an unidentified species of *Parapercis* were collected in 2003 during the NORFANZ cruise, one from the Lord Howe Rise and two from the Northern Norfolk Ridge, Tasman Sea region, in depths of 89–113 m. These are identified here as conspecific with *P. colemani*. The new records indicate that the species usually inhabits much deeper habitats over a considerably wider geographic area than was previously inferred from the type locality. It is difficult to draw conclusions on the abundance of the species from NORFANZ results, as few trawls were undertaken in the depth range that specimens were caught (over 90% of trawls and sleds were in depths greater than 200 m).

The new material has identical dorsal-, anal- and pectoral-fin ray counts, and similar dental formulae to the holotype. Several other counts and features at slight variance to the original description are reported below. The lateral-line scale and gill raker counts are slightly expanded (Table 2). Pelvic fins of the holotype are described as “not reaching anus” and their length 1.7 in HL. However in the new material they reach to between the base of the first to third soft rays of the anal fin, and are 1.2–1.3 in HL. The holotype is damaged, with the right pelvic fin cut off at the base and missing, and the left one missing the distal portion of the third to fifth rays. From proportional measurements given for the type and a current measurement of the damaged left fin, the pelvic fin appears to have been measured to the tip of the longest intact (second) ray, rather than to the tip of the longer fourth ray. It is therefore difficult to accurately compare the pelvic fin length and reach of the type versus new non-type material. However, in the new material the second pelvic-fin ray reaches between two scales prior to the anus and the midpoint of the anus, whereas in the

type it reaches to about four scales prior to the anus, indicating that the type had slightly shorter pelvic fins overall. The female holotype has the second to fourth caudal-fin rays only slightly prolonged, the fin length to tip of upper lobe 1.4 in HL. Although the new specimens are all larger than the type, those with intact fins have these rays distinctly prolonged, the fin length 1.1–1.2 in HL.

Colouration of the type, based on the original description and figures, and direct comparison of the preserved specimen, is almost identical with the new material (fig. 6), with the following exception. The type has a longitudinal row of eight small vague dark spots on the upper side (dusky orange-red in fresh specimen). Although these still persist in the preserved type specimen, they are lacking in the other material. In all other details, including the formation of the five dark saddles above, ten yellow bars below, faint midlateral white stripe, reddish blotch below eye, series of small transverse dark markings across the top of the head and postorbital, and fin colouration, they are entirely consistent.

Material examined. *Parapercis colemani* AMS I.33434-001, holotype, female, 82 mm, Norfolk I., Emily Bay, eastern side, 29°04'S, 167°57'E, spear, 1.5 m, J.E. Randall, 17 Feb 1991; CSIRO H.6028-02, female, 107 mm, Tasman Sea, Lord Howe Rise, SE of Lord Howe I., 31°49'S, 159°20'E, benthic sled, 89 m, P. Last, A. Graham and D. Gledhill on RV *Tangaroa*, 22 May 2003; NMNZ P.11712, 87 mm, Norfolk I., R. Bell, 4 Aug 1913; NMV A.25112-003, males?, 2: 83–84 mm, Tasman Sea, North Norfolk Ridge, 28°54.43'S, 167°40.54'E, beam trawl, 111–113 m, D. Bray on RV *Tangaroa*, 15 May 2003.

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