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Grallenia larsonae, a new species of sandgoby (Pisces: Gobiidae) from northern Australia

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Abstract

The new species of gobiid fish, *Grallenia larsonae*, n. sp. is described based on 104 specimens, 8.1–18.0 mm SL, from northern Australia (Northern Territory and Western Australia). It appears to be closely related to *Grallenia arenicola* from southern Japan. Both species share a suite of diagnostic features that include the presence of cephalic sensory canals and associated pores, and usually 7 segmented dorsal-fin and anal-fin rays. However, they differ markedly with regard to the pattern of scales covering the body. The new species has relatively few scales anterior to the level of the second dorsal fin origin, and those are usually restricted to a single row, compared with numerous scales that continue forward to the pectoral-fin base in *G. arenicola*. Comparisons are provided with other members of the genus and an updated key to the species of *Grallenia* is included.

Key words: taxonomy, systematics, ichthyology, coral-reef fishes, Indo-Pacific Ocean, Larson's Tiny Sandgoby.

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Introduction

Sand-dwelling gobiid fishes of the genus *Grallenia* Shibukawa & Iwata, 2007 are among the most inconspicuous of coral reef fishes due to their tiny size (<23 mm SL) and excellent camouflage. The genus is unique among gobiids in possessing a combination of 15 segmented caudal-fin rays, a greatly reduced papillae row *e*, and a



pair of characteristic diagonal dark markings at the base of the caudal fin (Shibukawa & Iwata 2007). The most useful features for separating the various species include the number of dorsal-fin and anal-fin rays, the pattern of body scalation, the dorsal-fin shape, and the presence or absence of cephalic sensory pores and/or a filamentous extension of the first dorsal-fin spine.

The genus is currently known only from Japan, Philippines, Malaysia (Sabah), Indonesia, Papua New Guinea, Solomon Islands, Australia, and Fiji (Fig. 1). It contains 8 previously described species, comprising *G. arenicola* Shibukawa & Iwata, 2007 (Kashiwa-jima, Japan); *G. baliensis* Allen & Erdmann, 2012 (Bali, Indonesia); *G. compta* Allen & Erdmann, 2017 (Milne Bay Province, Papua New Guinea); *G. dimorpha* Allen & Erdmann, 2017 (New Britain Island, Madang, and Port Moresby, all in Papua New Guinea); *G. lauensis* Allen & Erdmann, 2017 (Fiji and eastern Australia); *G. lipi* Shibukawa & Iwata, 2007 (Malaysia to Ambon and North Sulawesi, Indonesia), *G. rubrilineata* Allen & Erdmann, 2017 (Philippines); and *G. solomonensis* Allen & Erdmann, 2017 (Solomon Islands).

The present paper describes a new species of *Grallenia* from northwestern Australia, including the Monte Bello Islands and Beagle Reef off Western Australia and nearshore reefs and islands of the Cobourg Peninsula (e.g. Port Essington and Oxley Island) and northeast Arnhem Land (e.g. Murchinbar and Bremer islands), mostly collected in the 1980s and 1990s by expeditions from the Museum and Art Gallery of the Northern Territory and the Western Australian Museum. The specimens from the Northern Territory were previously identified as *G. arenicola* (Larson et al. 2013), but the current study reveals a diagnostic difference in the pattern of body scales compared to specimens from the Japanese type locality.

Materials and Methods

Type specimens are deposited at the Australian Museum, Sydney (AMS), Museum and Art Gallery of the Northern Territory, Darwin (NTM), National Museum of Natural History, Smithsonian Institution, Washington, D.C. (USNM) and the Western Australian Museum, Perth (WAM).

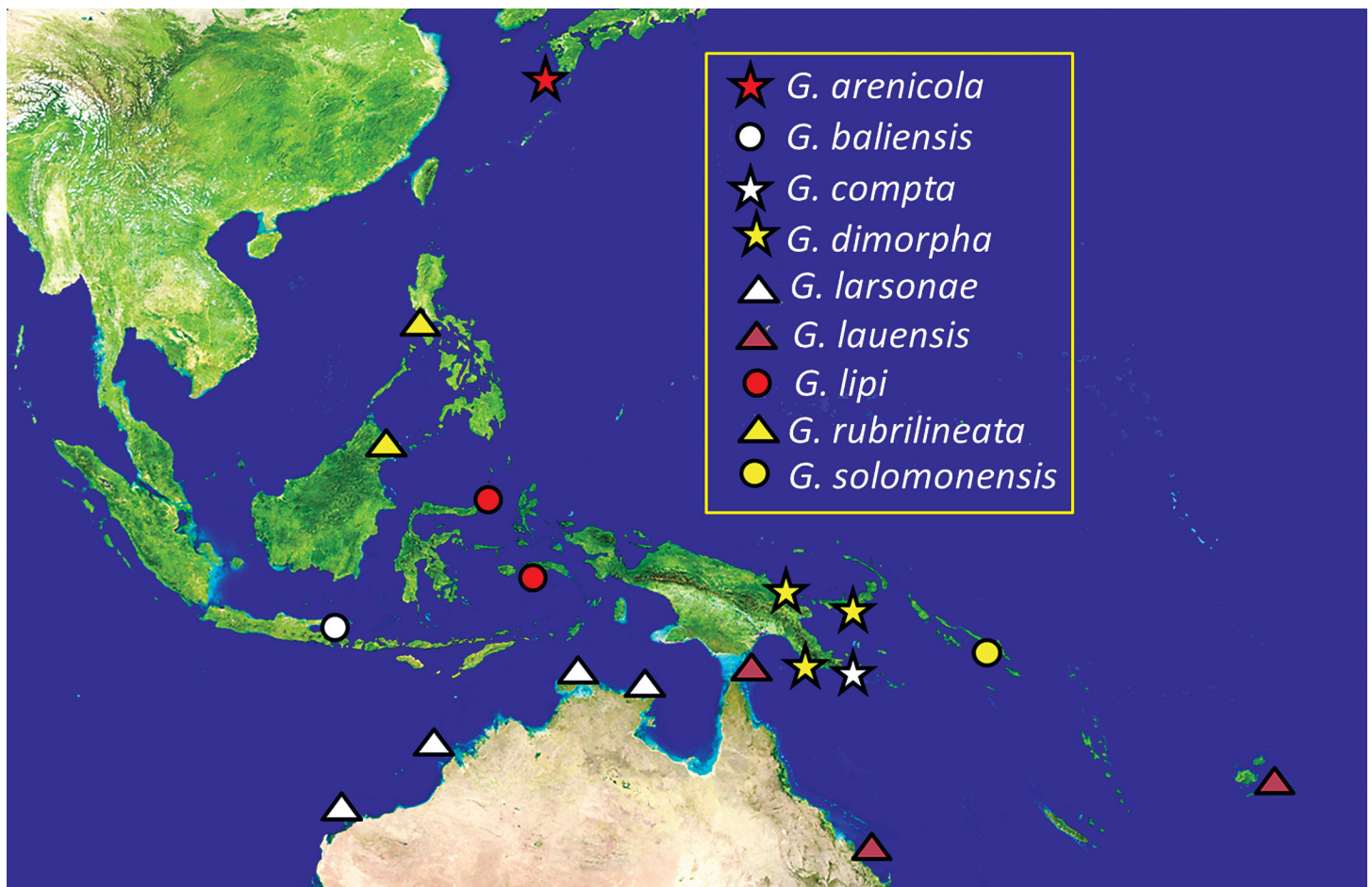


Figure 1. Map of the western Pacific Ocean with distributions of *Grallenia* species.

The range of counts and proportional measurements for paratypes is indicated in parentheses when different from the holotype. Standard length (SL) is measured from the median anterior point of the upper lip to the base of the caudal fin (posterior end of the hypural plate); body depth is measured at both the origin of the pelvic fins and the origin of the anal fin, and body width at the origin of the pectoral fins; head length (HL) is from the upper lip to the posterior end of the opercular membrane, and head depth and width at the level of the posterior margin of the preopercle; orbit diameter is the greatest fleshy diameter; snout length is measured from the median anterior point of the upper lip to the nearest fleshy edge of the orbit; upper-jaw length from the same anterior point to the posterior end of the maxilla; caudal-peduncle depth is the least depth, and caudal-peduncle length the horizontal distance between verticals at the rear base of the anal fin and the caudal-fin base; caudal-fin and pectoral-fin lengths are the length of the longest ray; pelvic-fin length is measured from the base of the pelvic-fin spine to the tip of the longest segmented pelvic-fin ray. The longitudinal scale count includes the mid-lateral row of scales beginning immediately behind the pectoral-fin base and continuing to the caudal-fin base. The body scales are composed of two parts in several species: an anterior section immediately behind the pectoral-fin base consisting of a single row of 2–5 scales, and a highly variable posterior section that usually commences behind the level of the second dorsal-fin origin, or is sometimes restricted to the caudal peduncle; transverse scales are counted at the level of the last anal-fin ray base; gill rakers include rudiments and are counted on the first gill arch, as upper limb+lower arch gill rakers.

Terminology and abbreviations for cephalic sensory-canal pores follow those presented by Shibukawa & Iwata (2007). Cyanine Blue 5R (Acid Blue 113) stain was used to make pores and papillae more obvious (Akihito *et al.* 1993, Saruwatari *et al.* 1997).

***Grallenia larsonae*, n. sp.**

Larson's Tiny Sandgoby

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Figures 2–4; Tables 1 & 2.

Holotype. WAM P.30690-004, male, 15.6 mm SL, Australia, Western Australia, Monte Bello Islands, west side of Trimouille Island, -20.4053°, 115.5658°, 8–15 m, rotenone, G.R. Allen & P.F. Berry, 23 August 1993.



Figure 2. *Grallenia larsonae*, preserved holotype, WAM P.30690-004, male, 15.6 mm SL, Monte Bello Islands, Western Australia (G.R. Allen).

Paratypes. (All Australia, Northern Territory, except WAM specimens from Western Australia) AMS I.47410-001, (10), 8.5–14.8 mm SL, Cobourg Peninsula, Trepang Bay, reef off Wanaraj Point, -11.1170°, 131.9670°, H.K. Larson, 15 October 1981; NTM S.10011-017, (10), 8.1–17.4 mm SL, same data; NTM S.10012-014, (8), 13.4–15.1 mm SL, Cobourg Peninsula, Trepang Bay, off northern side of Midjari Point, -11.1670°, 131.967°, H.K. Larson, 16 October 1981; NTM S.10015-033, (6), 9.3–15.7 mm SL, Cobourg Peninsula, east side of Coral Bay, -11.1830°, 132.067°, H.K. Larson, 17 October 1981; NTM S.10016-034, (10), 13.5–15.5 mm SL, Cobourg Peninsula, east side of Coral Bay, 11.1830°, 132.067°, H.K. Larson & P.G. Horner, 18 October 1981; NTM S.10022-006, (2), 14.3–16.9 mm SL, Cobourg Peninsula, off northern end of Sandy Island No. 2, -11.1172°, 132.2829°, H.K. Larson, 20 October 1981; NTM S.10432-021, (3), 15.0–18.0 mm SL, Port Essington, reef off Table Head, -11.2171°, 132.1669°, H.K. Larson & party, 3 May 1982; NTM S.10450-009, (5), 11.7–15.6 mm SL, Port Essington, reef off Table Head, -11.25°, 132.183°, H.K. Larson, 4 May 1982; NTM S.10591-013, 15.5 mm SL, east side of New Year Island, -10.9171°, 133.0329°, H.K. Larson & R.S. Williams, 14 October 1982; NTM S.10605-023, (5), 14.5–17.9 mm SL, reef off north-western corner of North Oxley Island, -11.0°, 132.817°, H.K. Larson & R.S. Williams, 20 October 1982; NTM S.13226-034, 16.3 mm SL, English Company Islands, east side Wigram Island, -11.783°, 136.5881°, H.K. Larson & J.R. Hanley, 12 November 1990; NTM S.13234-024, (25), 10.5–16.5 mm SL, Marchinbar Island, Sphinx Head Bay, -11.2343°, 136.6828°, H.K. Larson & J.R. Hanley, 15 November 1990; NTM S.13243-032, 14.4 mm SL, reef slope on south-eastern side of Truant Island, -11.6832°, 136.767°, H.K. Larson & J.R. Hanley, 19 November 1990; NTM S.15793-040, (4), 14.5–16.8 mm SL, Gove Peninsula, west side of Bremer Island, -12.0951°, 136.7949°, H.K. Larson & H. Nguyen, 18 December 2003; USNM 432548, (10), 13.7–16.9 mm SL, Marchinbar Island, Sphinx Head Bay, -11.2343°, 136.6828°, H.K. Larson & J.R. Hanley, 15 November 1990; WAM P.30316-017, 15.6 mm SL, Beagle Reef next to sand cay, -15.3506°, 123.5326°, 0.1–1 m, rotenone, G.R. Allen & party, 24 August 1991; WAM P. 30690-007, 17.6 mm SL, collected with holotype.

Diagnosis. A species of *Grallenia* with dorsal-fin elements VI+I,6–7 (usually 7); anal-fin elements I,6–8 (usually 7); first dorsal-fin spine not produced into filament in either sex; pelvic frenum present; cephalic sensory canals and associated pores present; longitudinal scales 22–30, main mass of body scales extending forward from caudal-fin base to about level of second dorsal-fin origin, then scales continuing forward in a single mid-lateral row (rarely 2 rows) to just behind pectoral-fin base; body depth at pelvic-fin origin 13.2–17.5% SL; color in alcohol tan with 8 widely spaced, small, brown spots in mid-lateral row on side of body; faint dark bar of stellate melanophores across anterior cheek; scattered pepper-like melanophores on anterior part of upper opercle.

Description. Dorsal-fin elements VI+I,7 (single paratype with 6); anal-fin elements I,7 (4 paratypes with 6, one with 8); all segmented dorsal-fin and anal-fin rays branched (last to base) except first (and second in a few specimens); pectoral-fin rays 16 (15–17), all rays branched except uppermost and lowermost 1 or 2; pelvic-fin elements I,5, first 4 segmented rays with 2 (occasionally 3) branch points, the fifth rays with a single branch point and completely joined medially with membrane; pelvic frenum present, but weakly developed; caudal fin with 11 branched rays, 15 segmented rays, 8 (7–9) upper unsegmented rays, and 7 (6–8) lower unsegmented rays; total longitudinal scales 23 (22–30); gill rakers poorly developed (rudimentary), 0+6 (0–1+5–7) on outer surface of first arch; pseudobranchial filaments usually 4; vertebrae 27 (2 specimens).

Body elongate and slender, depth at pelvic-fin origin 7.0 (5.7–7.5) in SL; depth at anal-fin origin 9.2 (7.7–10.2) in SL; body compressed, width at pectoral-fin origin 2.2 (2.0–2.6) in HL; head length 3.9 (3.4–3.9) in SL; head compressed, width 0.9 (0.8–1.0) in HL; snout short, much less than eye diameter, length 4.9 (4.3–6.6) in HL; eye diameter 3.4 (3.0–3.8) in HL; interorbital very narrow, eyes nearly in contact with each other; caudal-peduncle depth 3.2 (2.9–3.9) in HL; caudal-peduncle length 1.1 (1.0–1.2) in HL.

Origin of first dorsal fin about eye diameter behind head, snout to first dorsal-fin origin 2.9 (2.6–3.0) in SL; dorsal-fin spines slender and flexible, third and fourth subequal and longest, 1.9 (1.7–2.2) in HL; snout to second dorsal-fin origin 1.8 (1.7–1.9) in SL; spine of second dorsal fin 2.5 (2.2–3.0) in HL; longest (third or fourth) segmented dorsal-fin ray 1.7 (1.5–2.2) in HL; origin of anal fin slightly behind origin of second dorsal fin, snout to anal-fin origin 1.8 (1.7–1.9) in SL; anal-fin spine 4.7 (4.1–5.6) in HL; second to fifth segmented anal-fin rays subequal, 2.4 (2.2–3.2) in HL; caudal fin shorter than head with truncate to slightly emarginate posterior margin, length 4.4 (4.2–4.9) in SL; pectoral fins pointed, middle rays longest, reaching to level of rear edge of first dorsal

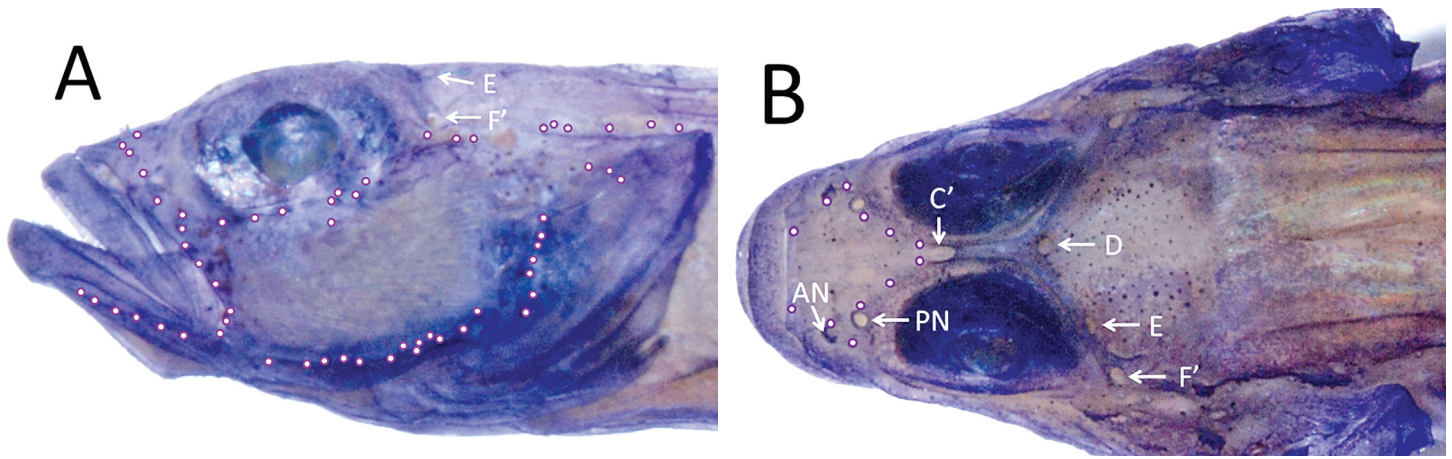


Figure 3. *Grallenia larsonae*, preserved holotype, WAM P.30690-004, male, 15.6 mm SL, Monte Bello Islands, Western Australia, stained to show pattern of head papillae (white dots) and sensory canal pores (C', D, E & F'): A) lateral view; B) dorsal view; anterior and posterior nares=AN and PN (G.R. Allen).

fin, 1.0 (0.9–1.2) in HL; snout to pelvic-fin origin 3.3 (2.9–3.5) in SL; pelvic fins reaching to about anal-fin origin or slightly anterior, 1.0 (1.0–1.3) in HL.

Mouth oblique, forming angle of about 35–40° to horizontal axis of body; lower jaw protruding; mouth relatively large, the maxilla reaching beyond vertical at front of pupil, upper-jaw length 2.8 (2.6–3.0) in HL; teeth of jaws unicuspid, villiform, in 2 or 3 rows; a row of 8–10 slender teeth in outer row on each side of upper jaw; lower jaw with three rows of teeth anteriorly, narrowing to a single row posteriorly; a pair of moderately enlarged recurved teeth on anterolateral part of middle row; no teeth on vomer or palatine; edge of lips smooth; anterior margin of tongue concave; gill opening extending forward to level of middle of opercle.

Anterior naris opening tubular, distal tip not reaching to upper jaw when adpressed; posterior naris opening with a low rim, situated about midway between anterior naris and eye; cephalic sensory canals and associated pores present; pattern of head papillae and sensory pores as shown in Fig. 3; pores reduced, with anterior oculoscapular canal containing pore C' (unpaired), D (unpaired), E, and F'.

Head and most of body anterior to level of second dorsal-fin origin without scales; body scales ctenoid, usually consisting of full cover on caudal peduncle, gradually narrowing to 1 or 2 rows below second dorsal-fin origin, continuing forward either uninterrupted in a single row (occasionally 2 rows) or separated by a slight gap before continuing to just behind pectoral-fin base (Fig. 4); transverse scales 5 (5–6); circumpeduncular scales 8 (8–10).

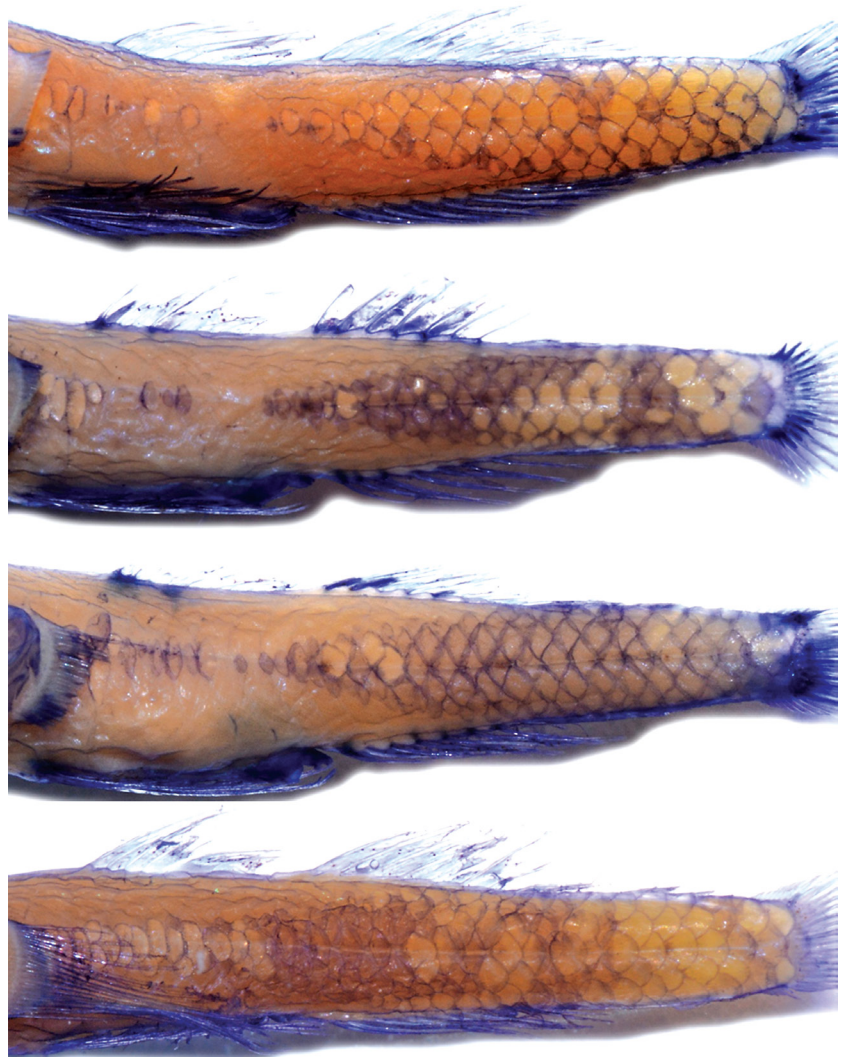


Figure 4. *Grallenia larsonae*, preserved paratypes, all NTM S.13234-024, except lowermost NTM S.13226-034; note that lowermost fish has two rather than one scale row anteriorly, Cyanine Blue (G.R. Allen).

TABLE 1

Proportional measurements of selected type specimens of *Grallenia larsonae*, n. sp.
as percentages of the standard length

	holotype		paratypes							
	WAM P. 30690	NTM S. 10432	WAM P. 30690	NTM S. 10432	NTM S. 13226	NTM S. 10011	NTM S. 10432	NTM S. 10022	NTM S. 10450	NTM S. 10450
Sex	male	female	female	female	female	female	male	male	male	male
Standard length	15.6	18.0	17.6	17.1	16.8	15.0	15.0	14.3	14.1	12.6
Head length	25.3	27.1	28.5	27.1	29.8	28.5	26.0	25.9	26.9	27.9
Head width	14.1	15.1	14.7	15.9	15.3	15.3	16.5	14.4	14.5	13.5
Head depth	12.1	12.5	13.8	14.1	13.0	14.0	13.5	13.2	13.2	13.5
Body depth at pelvic origin	14.3	15.0	15.3	15.7	14.7	15.4	13.4	13.2	14.0	13.7
Body depth at anal origin	10.9	10.8	12.0	12.5	12.3	11.8	12.5	10.5	11.7	9.8
Body width	11.5	12.4	11.3	12.4	13.2	12.0	12.8	10.1	11.3	10.3
Caudal-peduncle depth	7.9	7.0	7.4	8.2	7.6	8.2	8.9	7.1	9.0	7.9
Caudal-peduncle length	22.4	25.5	27.2	26.9	24.4	30.0	26.9	27.1	27.7	28.7
Snout length	5.1	5.8	5.6	4.6	4.5	5.9	4.9	4.8	6.2	5.9
Eye diameter	7.4	8.0	8.6	7.6	7.8	8.5	8.2	8.0	8.2	7.6
Upper-jaw length	9.2	9.7	10.0	8.9	10.8	9.5	9.1	9.9	10.1	9.5
Snout to 1st dorsal origin	34.3	34.6	33.2	34.6	34.8	38.0	33.9	35.7	35.8	35.7
Snout to 2nd dorsal origin	54.6	56.0	56.4	54.6	56.1	58.5	51.7	57.4	55.3	55.1
Snout to anal-fin origin	55.9	57.2	56.8	56.5	57.5	55.9	52.6	55.2	53.9	58.2
Snout to pelvic-fin origin	30.8	32.0	32.0	32.5	33.6	31.2	28.8	30.5	31.8	30.7
First dorsal-fin-spine length	13.6	15.7	14.7	14.0	15.2	15.1	14.8	13.3	14.2	13.1
First spine of 2nd dorsal	10.3	11.8	11.5	12.2	11.3	11.4	12.0	11.4	10.5	10.5
Longest dorsal-fin ray	14.7	15.0	16.5	13.2	13.3	16.1	15.7	16.3	14.2	15.2
Anal-spine length	5.4	6.2	6.2	6.5	6.0	6.1	6.4	5.9	5.7	5.5
Longest anal-fin ray	10.8	12.2	11.1	12.3	11.9	10.7	11.3	9.1	9.9	8.7
Pectoral-fin length	26.5	23.6	24.8	24.2	25.2	27.2	28.5	27.1	26.0	23.3
Pelvic-fin length	25.0	26.0	26.8	24.3	22.5	23.9	25.7	26.0	24.5	24.4
Caudal-fin length	22.9	20.7	23.4	20.3	21.1	21.3	22.3	23.1	21.2	24.0

Color when fresh. (from 1981 field notes by H. K. Larson for site HL 81-11, Trepang Bay, Northern Territory, matching paratypes NTM S.10011-017 and AMS I.47410-001) Body pale sand-colored, mottled with darker blotches; a series of 7 yellow spots along lateral body; fine red spots along dorsal midline of body; fins bright yellow.

Color in preservative. (Fig. 2) Generally tan with 8 widely spaced, small, brown spots in mid-lateral row on side of body; faint dark bar of stellate melanophores across anterior cheek; scattered pepper-like melanophores on anterior part of upper opercle; holotype with numerous microscopic white spots on body and otherwise translucent median fins, on dorsal fins arranged in two bands; pelvic-fin membranes dusky brownish; caudal fin with faint brown diagonal marking at base of uppermost and lowermost rays.

Sexual dimorphism. Male urogenital papilla pointed, that of female broad and flattened with circular outline, and posterior margin fringed with several enlarged tubercles. Females appear to attain a larger size than males, growing to about 18 mm SL, compared to about 15.6 mm SL for males.

Etymology. The new species is named in honor of Helen K. Larson, for her extensive contribution to goby taxonomy and systematics, and who collected and carefully preserved most of the type specimens.

Distribution and habitat. The new species is known from northern Australia, specifically from the Monte Bello Islands of Western Australia to coastal and insular locations of the Northern Territory, eastward to Bremer

TABLE 2

Frequency distribution of dorsal-fin, anal-fin, pectoral-fin-ray counts and longitudinal scale counts for *Grallenia* species

[*G. arenicola* and *G. lipi* data from Shibukawa & Iwata (2007) and other previously described species from Allen & Erdmann (2017)]

Species	Dorsal-fin rays						Anal-fin rays					
	6	7	8	9	10	11	6	7	8	9	10	11
<i>G. arenicola</i>		11	2					11	1			
<i>G. baliensis</i>					20				1	19		
<i>G. compta</i>			5	6					6	5		
<i>G. dimorpha</i>			1	3	22	1				2	24	1
<i>G. larsonae</i>	1	54					4	50	1			
<i>G. lauensis</i>	2	12	1				1	14				
<i>G. lipi</i>				3	6					9		
<i>G. rubrilineata</i>				9	51	2				12	48	2
<i>G. solomonensis</i>		3						3				

Species	Pectoral-fin rays				Longitudinal scales				
	14	15	16	17	<10	10–15	16–19	20–25	>26
<i>G. arenicola</i>		5	19	2				1	25
<i>G. baliensis</i>	1	18	1		21				
<i>G. compta</i>		2	9					11	
<i>G. dimorpha</i>		2	25					8	18
<i>G. larsonae</i>		15	35	4				8	32
<i>G. lauensis</i>		11	2		13	2			
<i>G. lipi</i>	1	1	13	3		8	7	3	
<i>G. rubrilineata</i>	1	20	39				5	53	3
<i>G. solomonensis</i>			3		1	2			

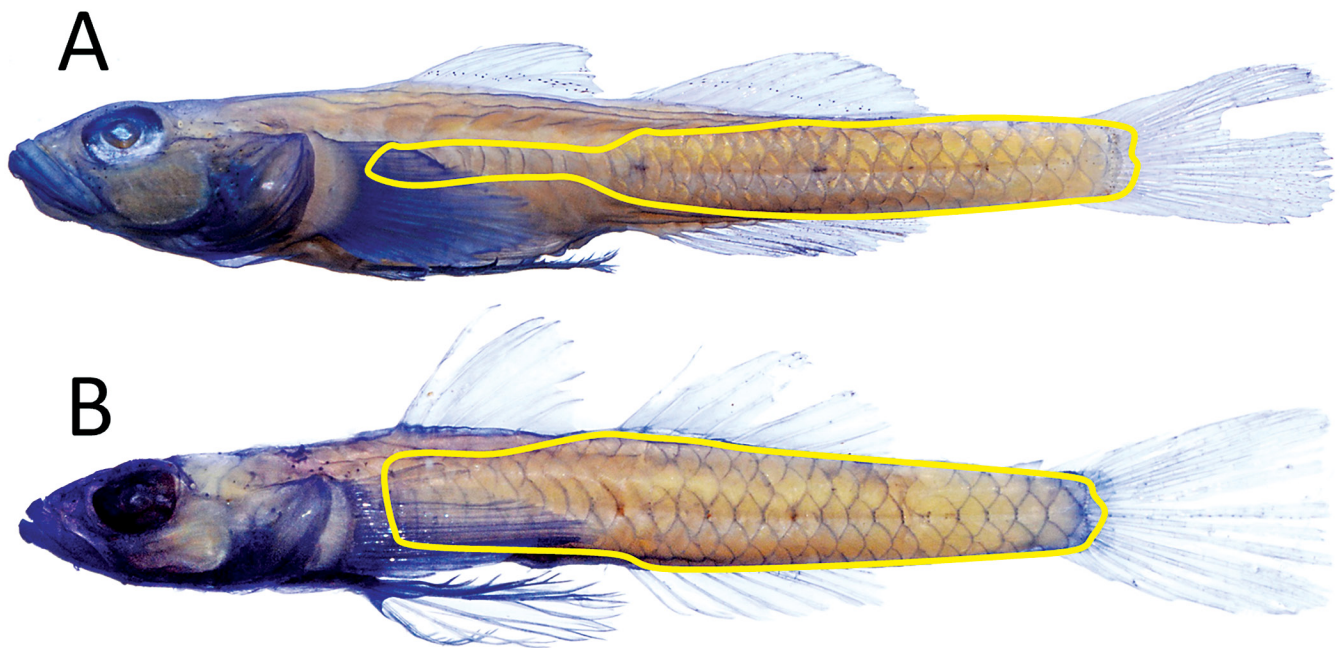


Figure 5. *Grallenia* scale patterns (outlined with yellow): A). *G. arenicola*, paratype, AMS I.43860-001, 14.5 mm SL; B) *G. larsonae*, paratype, NTM S.10022-006, 16.9 mm SL (G.R. Allen).

Island off the Gove Peninsula (northwestern corner of the Gulf of Carpentaria). These are all relatively clear-water, reef environments with clean sand: the new species was not recorded during museum surveys of estuarine or macrotidal reef areas in the vicinity, such as Darwin Harbour. The type specimens were collected with rotenone at depths ranging from 1–15 m on sand and rubble bottoms, in habitats ranging from sand flats, isolated coral knolls, reef slopes, and reef edge/fringing reef with scattered corals.

Comparisons. The new species is most similar to *G. arenicola* from southern Japan (Kashiwa-jima Island), and was previously confused with that species (see Allen & Erdmann 2017). These two species are unique among the genus in possessing the combination of cephalic sensory-canal pores, usually 7 segmented dorsal-fin and anal-fin rays, and the scale cover extending forward on the body to at least the level of the second dorsal-fin origin. However, the two species markedly differ with regards to the scale pattern on the anterior portion of the body (Fig. 5). The scale cover in *G. larsonae* generally forms a wedge-shaped pattern, with the apex of the wedge usually positioned mid-laterally, below the space between the two dorsal fins; scales then continue forward, usually in a single row, but occasionally in two rows, to just behind the pectoral-fin base. These anterior scales are sometimes separated from the main scaled area by a gap of variable width. Most of the body anterior to second-dorsal-fin origin is scaleless, in contrast to the pattern of *G. arenicola*, which is more or less completely scaled to just behind the pectoral-fin base (Shibukawa & Iwata 2007). Congeners *G. baliensis*, *G. lauensis*, and *G. solomonensis* have scales mainly restricted to the caudal peduncle (Fig. 6). The scale pattern of *G. larsonae* is similar to that of *G. compta*, *G. dimorpha*, and *G. rubrilineata*, but those all lack cephalic sensory-canal pores.



Figure 6. *Grallenia lauensis* scale pattern, Lau Archipelago, Fiji (G.R. Allen).

Key to the species of *Grallenia*

- 1a. Cephalic sensory-canal pores present; dorsal- and anal-fin elements I,6–I,8 (usually I,7)2
- 1b. Cephalic sensory-canal pores absent; dorsal- and anal-fin elements I,8–I,115
- 2a. Body scales extending forward to just behind pectoral-fin base (as in Fig. 5) 3
- 2b. Body scales mostly restricted to caudal peduncle (as in Fig. 6) 4
- 3a. Body anterior to level of 2nd dorsal-fin origin mostly scaled (Fig 5B) (S. Japan)***G. arenicola***
- 3b. Body anterior to level of 2nd dorsal-fin origin mostly unscaled (Fig 5A) (N. Australia) ..***G. larsonae*, n. sp.**
- 4a. Anterior body behind pectoral-fin base with longitudinal row of 3–5 scales; pectoral-fin rays mostly branched (Solomon Islands)***G. solomonensis***
- 4b. Anterior body behind pectoral-fin base without scales; pectoral-fin rays mostly unbranched (Lau Islands of Fiji, Great Barrier Reef, and northwestern Coral Sea)***G. lauensis***
- 5a. Body scales mostly restricted to caudal peduncle; male with filamentous first dorsal-fin spine6
- 5b. Body scales extending well forward of caudal peduncle; no filamentous first dorsal-fin spine7
- 6a. Longitudinal scales on posterior body 5–8; pectoral-fin rays 15 (rarely 14 or 16) (Bali, Indonesia)
.....***G. baliensis***
- 6b. Longitudinal scales on posterior body 10–14; pectoral-fin rays usually 16 (rarely 14 or 15, occasionally 17) (Malaysia to Ambon & North Sulawesi, Indonesia)***G. lipi***
- 7a. Mid-lateral longitudinal scale row continuous from just behind pectoral-fin base to caudal-fin base (Fig. 5A); male with black anal-fin margin; female with filamentous first dorsal-fin spine (S. New Britain and Papua New Guinea)***G. dimorpha***
- 7b. Mid-lateral longitudinal scale row with 1–5 scales behind pectoral-fin base, followed by a gap before remaining posterior body scales; male with or without black anal-fin margin; male and female without filamentous first dorsal-fin spine8
- 8a. Body anterior to level of middle of second dorsal fin mainly scaleless; dorsal- and anal-fin segmented rays 8–9; male without black anal-fin margin (Milne Bay Province, Papua New Guinea)***G. compta***
- 8b. Body anterior to level of middle of second dorsal fin well-scaled; dorsal- and anal-fin segmented rays usually 10 (9–11); male with black anal-fin margin (Luzon, Philippines)***G. rubrilineata***

Other material examined. *Grallenia arenicola*: AMS I.143860-001 (paratypes), (4), 13.9–15.7 mm SL, Kashiwajima Island, Japan. *Grallenia baliensis*: WAM P.33567-001 (paratypes), (6), 12.8–15.4 mm SL, Bali, Indonesia. *Grallenia compta*: WAM P.34656-001 (holotype), 15.4 mm SL, Milne Bay Province, Papua New Guinea; WAM P.34656-002 (paratypes), (6), 15.2–17.3 mm SL, Milne Bay Province, Papua New Guinea; *Grallenia dimorpha*: WAM P.34659-001 (holotype), 13.3 mm SL, West New Britain Province, Papua New Guinea; WAM P.34659-002 (paratypes), (20), 9.8–16.7 mm SL, West New Britain Province, Papua New Guinea. *Grallenia lauensis*: WAM P.34760-001 (holotype), 11.4 mm SL, Lau Archipelago, Fiji; WAM P.34756-001 (paratype), 11.1 mm SL, Lau Archipelago, Fiji. *Grallenia lipi*: AMS I.43870-001 (paratypes), (2), 16.7–16.9 mm SL, Ambon Island, Indonesia. *Grallenia rubrilineata*: WAM P.34264-001 (holotype), 15.2 mm SL, Ligpo Island, Luzon, Philippines; WAM P.34264-003, (55), 8.9–15.8 mm SL, Ligpo Island, Luzon, Philippines. *Grallenia solomonensis*: WAM P.34617-001 (holotype), Guadalcanal, Solomon Islands; WAM P.34617-002 (paratypes), (2), 12.4–12.5 mm SL, Guadalcanal, Solomon Islands.

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