Ichthyological Research (2019) 66:114–128
https://doi.org/10.1007/s10228-018-0665-0

FULL PAPER

Two new species of the waspfish genus *Ablabys* (Scorpaeniformes: Tetrarogidae) from the western Pacific Ocean

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Received: 1 August 2018 / Revised: 13 September 2018 / Accepted: 17 September 2018 / Published online: 17 October 2018
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Abstract

Two new waspfish (Tetrarogidae) species, *Ablabys pauciporus* sp. nov. and *A. gymnothorax* sp. nov., are described on the basis of three specimens from the Great Barrier Reef, Australia and four specimens from Japan, Taiwan and Vietnam, respectively. Although *A. pauciporus* and *Ablabys taenianotus* (Cuvier 1829) both share counts of 4 or 5 anal-fin soft rays with a short fin base and 11 or 12 pectoral-fin rays, the former has distinctly lower counts of body scales, including number of lateral-line pores (12 or 13 vs. 20–25 in the latter), strongly notched interspinous dorsal-fin membranes (vs. weakly notched or unnotched), and some differing morphometrics (including head depth, orbit diameter and pelvic-fin length) and coloration. *Ablabys gymnothorax* is most similar to *Ablabys macracanthus* (Bleeker 1852) in having more than 7 anal-fin soft rays with a long fin base, but differs from the latter in having a naked thorax (vs. scaled), the last dorsal-fin soft ray with a continuous basal membrane to the dorsal edge of the caudal peduncle and the basal upper margin of the caudal fin (vs. not continuous with caudal fin), higher counts of dorsal- and anal-fin rays, body scales and gill rakers, and in some morphometrics. *Tetraroge vestitus* De Vis 1884, previously considered as a junior synonym of *A. taenianotus*, is regarded here as a junior synonym of *Centropogon marmoratus* Günther 1862.

Keywords *Ablabys pauciporus* · *Ablabys gymnothorax* · Synonym · Taxonomy · Description

Introduction

The waspfish genus *Ablabys* Kaup 1873 (type species: *Apistus taenianotus* Cuvier 1829) are relatively small, shallow water, bottom-dwelling fishes, native to the Indo-West Pacific. It is characterized by a steep snout profile, blunt head spines, an elongated and highly laterally compressed body, small mouth, small embedded cycloid body scales, and the first dorsal-fin spine inserted anterior to or above the anterior margin of the orbit (Bleeker 1852; Prokofiev 2008). Three valid species are currently recognized, *Ablabys binotatus* (Peters 1855) (Redskinfish; distributed in the western Indian Ocean), *Ablabys macracanthus* (Bleeker 1852) (Spiny Waspfish; Andaman Sea and western Pacific Ocean) and *Ablabys taenianotus* (Cuvier 1829) (Cockatoo Waspfish; Indo-West Pacific) (Bleeker 1852; Day 1878; Fowler 1934; Randall and Spreinat 2004; Prokofiev 2008; Fricke et al. 2014).

During a revisionary study of the family Tetrarogidae, five distinct Indo-West Pacific species of *Ablabys* were recognized, two of them (from the Great Barrier Reef, and Japan, Taiwan and Vietnam, respectively) being new. Both new species are described herein.

This article was registered in the *Official Register of Zoological Nomenclature* (ZooBank) as 13C5CE1F-ADE4-4447-B1B0-916C5D0A4185.
This article was published as an Online First article on the online publication date shown on this page. The article should be cited by using the doi number.

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Materials and methods

Counts and proportional measurements followed Motomura (2004a) and Motomura et al. (2008), with the following exceptions: head depth − vertical distance through head at middle of orbit; scale rows above lateral line − counted vertically from first pored lateral-line scale to dorsal-fin base; scale rows below lateral line − counted vertically from anal-fin origin to scale beneath lateral line; scale rows between sixth dorsal-fin spine base and lateral line, and between last dorsal-fin spine base and lateral line − counted vertically from lateral-line scale to respective spine base. Counts and measurements were made on left side wherever possible, except for pectoral-fin rays (counted on both sides). Standard and total lengths abbreviated as SL and TL, respectively. Head spine terminology follows Randall and Eschmeyer (2002: fig. 1) and Motomura (2004b: fig. 1). Osteological characters, including vertebral counts, were observed on radiographs of *Ablabys pauciporus* (3 specimens: QM I. 36106, 40672, KAUM–I. 117177), *Ablabys gymnothorax* (2: KAUM–I. 77808, NSMT-P 70563), *Ablabys taenianotus* (2: KAUM–I. 38729, NSMT-P 80853) and *Ablabys macracanthus* (2: KAUM–I. 33282, 33283). The formula for configuration of the supraneural bones, anterior neural spines and anterior dorsal-fin pterygiophores follows Ahlstrom et al. (1976). Swimbladder absence was confirmed by dissection of the abdomen on the right side of the body of *A. pauciporus* (1 specimen: KAUM–I. 117177), *A. gymnothorax* (1: KAUM–I. 77808), *A. taenianotus* (2: KAUM–I. 20310, 83953) and *A. macracanthus* (2: KAUM–I. 33282, 33283). Institutional codes follow Sabaj (2016), with the following addition: National Museum of Nature and Science (NSMT), Tsukuba, Japan.

Ablabys pauciporus sp. nov.

(New English name: Lesser-scaled Cockatoo Waspfish) (Figs. 1, 2; Tables 1, 2)

Holotype. QM I. 36106, 43.6 mm SL, north of Riptide Cay, Swain Reefs, Queensland, Australia, 20°58′05″S, 151°51′03″E, 44 m depth, 26 May 2004, dredge, coll. by Great Barrier Reef Seabed Biodiversity Survey Team.

Paratypes. KAUM–I. 117177, 46.6 mm SL, east of Centenary Cay, Swain Reefs, Queensland, Australia, 21°16′05″S, 152°27′09″E, 65 m depth, 21 Nov. 2005, dredge, coll. by Great Barrier Reef Seabed Biodiversity Survey Team; QM I. 40672, 52.4 mm SL, west of Gannett Cay, Swain Reefs, Queensland, Australia, 21°57′03″S, 152°15′09″E, 63 m depth, 23 Nov. 2005, trawl, coll. by Great Barrier Reef Seabed Biodiversity Survey Team.

Diagnosis. A species of *Ablabys* with the following combination of characters: XVI or XVII, 5 or 6 dorsal-fin rays; III, 4 or 5 anal-fin rays; 11 pectoral-fin rays; 12 or 13 lateral-line pores; 47–55 scale rows in longitudinal series; 0 or 1 scale row above lateral line; 17 or 18 scale rows below lateral line; 4 or 5 scale rows between last dorsal-fin spine base and lateral line; 1–4 scale rows between sixth dorsal-fin spine base and lateral line; scales covering thorax; interspinous dorsal-fin membranes strongly notched; last dorsal-fin soft ray joined posteriorly by membrane to dorsal edge of caudal peduncle but not to upper margin of caudal fin; head length 37.7–38.7% (mean 38.2%) of SL; head depth 28.1–30.3% (29.1%) of SL; orbit diameter 12.4–12.7% (12.5%) of SL; anal-fin base length 19.8–22.8% (21.2%) of SL; pectoral-fin length 37.5–41.8% (39.9%) of SL; longest pelvic-fin soft ray length 30.5–31.2% (30.9%) of SL; large white blotch (sometimes indistinct) on mid-body above lateral line; body bright reddish orange with small whitish spots on fins (in fresh specimens); whitish fins (in preserved specimens); vertebrae 9 + 15.

Description. Selected meristics and morphometrics, expressed as percentages of SL, are shown in Tables 1–2. The description and data for the holotype are presented first, followed by those of paratypes in parentheses when different. Body somewhat elongated, laterally compressed, progressively more compressed posteriorly; body depth slightly less than head length. Caudal-peduncle depth 3.5 (3.0) in body depth. Body sparsely covered with small embedded, non-imbricate cycloid scales; scales absent on dorsal- and anal-fin bases, head and pre-dorsal-fin area. No tentacles, cirri or skin flaps on head, body or fins, except at nasal openings. Lateral line complete, continuous, extending from behind supracleithral spine to caudal-fin base; one lateral-line pore on caudal fin near base; end of tube associated with each lateral-line pore directed upward.

Snout profile almost vertical, with a deep concavity in front of eye. Two pairs of nasal openings, subequal in diameter; anterior nostril tubular with dermal flap; posterior nostril a simple rounded pore with low raised rim on anteroventral margin of orbit. Bony rim of orbit smooth. Interorbital region somewhat narrow; interorbital ridges weakly developed, median ridge and spines absent. Nasal spines absent. Pterotic, upper posttemporal, and lower posttemporal forming ridges without spines. Supracleithral spine short, entirely covered with skin. Suborbital ridge weak, without spines, connected posteriorly to base of uppermost preopercular spine. Preopercle with 5 simple spines; uppermost longest, sharp and projecting from skin, with narrow base; second to fifth blunt, with broad base, hidden under skin. Opercle with smooth V-shaped crests and blunt weak spines, directed upward. Upper end of gill opening reaching horizontal line through middle of eye. Cleithral bone flattened, covered with thick skin. Lacrimal with 2 sharp simple spines; anterior

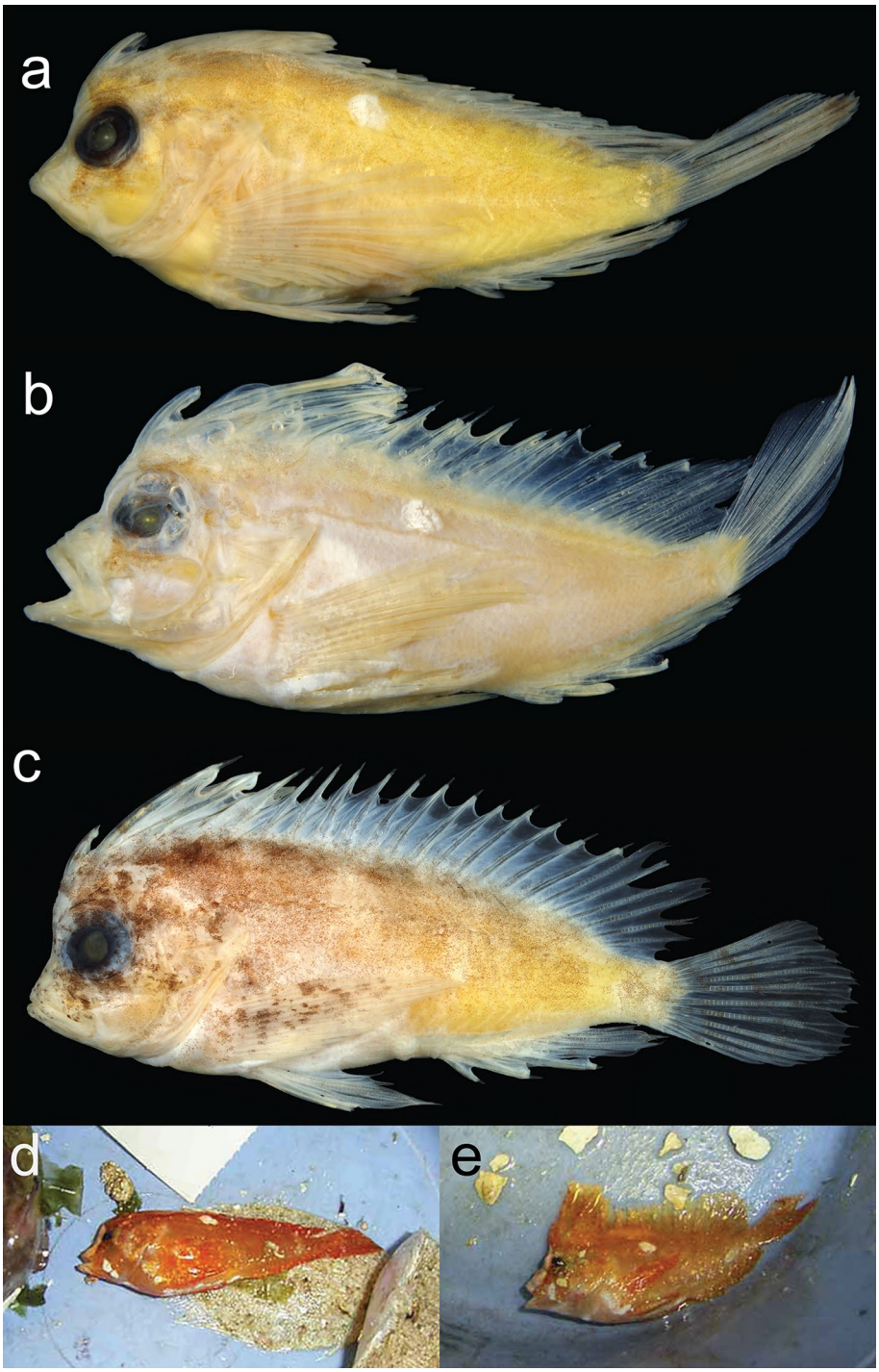

Fig. 1 Preserved (**a**–**c**) and fresh (**d**, **e**) specimens of *Ablabys pauciporus* sp. nov. **a**, **d** QM I. 36106, holotype, 43.6 mm SL; **b**, **e** KAUM–I. 117177, paratype, 46.6 mm SL; **c** QM I. 40672, paratype, 52.4 mm SL. Photos of fresh specimens by J. Johnson

lacrimal spine short, directed posteroventrally, its tip not reaching posterior margin of maxilla; posterior lacrimal spine longer, directed backward, its posterior tip reaching to (or just short of) vertical through middle of orbit; posterior lacrimal spine 3 times longer than anterior lacrimal spine; lateral lacrimal spines absent. Mouth small, terminal, slightly oblique; posterior margin of maxilla reaching to (or just short of) vertical through middle of pupil. Bands of villiform teeth on jaws, vomer, and palatines. Lips thick; symphysial knob absent. No slit behind last gill arch; gill rakers short, blunt.

Origin of first dorsal fin anterior to vertical through middle of eye, but posterior to anterior margin of orbit (anterior to anterior margin of orbit in QM I. 40672); first dorsal-fin spine shortest, its length 2.5 (2.0–2.5) in second spine length; third spine longest, slightly longer than second spine;

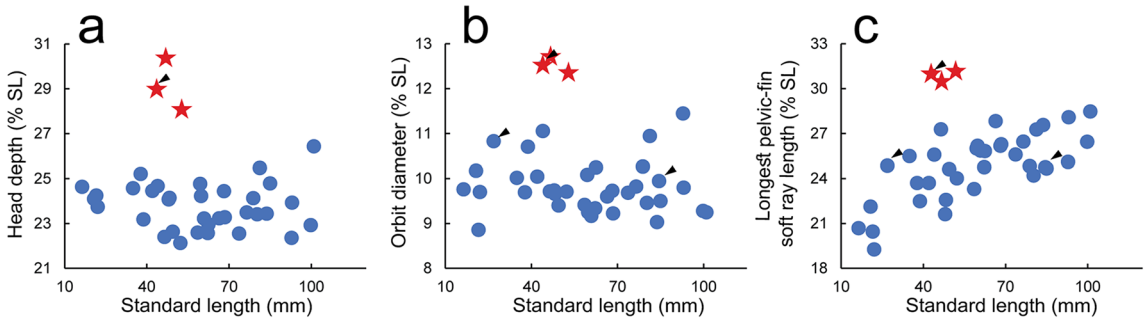

Fig. 2 Relationships of **a** head length; **b** orbit diameter; and **c** longest pelvic-fin soft ray length (all percentages of standard length) to standard length (mm) in *Ablabys pauciporus* sp. nov. (*red stars*) and *A. taenianotus* (*blue circles*). *Arrowheads* indicate holotype

third to eighth spines progressively shorter; eighth to last spines progressively longer; distance between bases of third and fourth spines greatest. Membranes of spinous portion of dorsal fin strongly notched, especially between first and second spines. Second dorsal-fin soft ray longest, its length slightly greater than fourth dorsal-fin spine, 1.2 (1.2–1.3) in second spine; four-fifths of membrane of last dorsal-fin ray posteriorly connected to dorsal edge of caudal peduncle, but not extending onto upper margin of caudal fin. Anal-fin base short, one-fourth of dorsal-fin base length. Origin of anal-fin level with vertical through thirteenth dorsal-fin spine base; first anal-fin spine shortest; third anal-fin spine longest, but shorter than first anal-fin soft ray; membranes of spinous portion of anal fin somewhat notched; membrane of last anal-fin soft ray posteriorly separated from caudal peduncle; posterior margin of fin rounded. Pectoral fin without free rays; fin origin level with vertical through sixth dorsal-fin spine base; fin length slightly greater than head length; posterior tip of fin extending beyond vertical through anal-fin origin; posterior margin of fin rounded. Origin of pelvic fin level with vertical through lower end of pectoral-fin base; second soft ray longest in pelvic fin, posterior tip of depressed fin reaching to anus (reaching to origin of anal fin); more than one-fourth of last soft ray adnate to abdomen via membrane. Caudal fin with 14 segmented rays, its length one-third of dorsal-fin base length. Swimbladder absent. Formula for configuration of supraneural bones, anterior neural spines and anterior dorsal pterygiophores 2+1/1/1 /1/1/1/1/1/1/1/1/1/1/1/ (2+1/1/1/1/1/1/1/1/1/1/1/1/1/1/1/). Vertebrae 9 + 15. Epineurals 16 (15).

Color when fresh (Fig. 1d, e): Head and body bright reddish orange dorsally, paler ventrally; prominent white blotch on body above lateral line. White stripe along snout profile. Fins bright reddish orange with small whitish spots.

Color of preserved specimens (Fig. 1a–c): Head and body creamy-white dorsally, paler ventrally; poorly defined marbled brownish blotches scattered on body. Prominent white blotch (indistinct in QM I. 40672) on body above lateral line. White stripe along snout profile. Fins uniformly translucent yellowish (pectoral fin with small dark blotches in QM I. 40672).

Distribution. Currently known only from the Great Barrier Reef, Queensland, Australia.

Etymology. The specific name, *pauciporus*, is derived from Latin meaning few pores, in reference to the low number of lateral-line pores.

Comparisons. *Ablabys pauciporus* sp. nov. resembles *Ablabys taenianotus* in sharing III, 4 or 5 anal-fin rays and a relatively short anal-fin base (length 19.8–24.7% of SL), 11 or 12 pectoral-fin rays, and a white blotch often present above the lateral line at mid-body (Tables 1–2; Fig. 1). However, it is clearly distinguished from the latter by having strongly notched interspinous dorsal-fin membranes (vs. weakly notched or unnotched), 5 or 6 (mode 6) dorsal-fin soft rays [vs. 6 or 7 (7)], 12 or 13 (12) lateral-line pores [vs. 20–25 (23)], 47–55 scale rows in longitudinal series [vs. 74–99 (89)], 0 or 1 (1) scale row above the lateral line [vs. 6–15 (10)], 17 or 18 (18) scale rows below the lateral line [vs. 24–36 (30)], 4 or 5 (5) scale rows between the last dorsal-fin spine base and lateral line [vs. 6–12 (10)], 1–4 scale rows between the sixth dorsal-fin spine base and lateral line [vs. 7–12 (12)], and bright reddish orange body with small whitish spots on fins when fresh and whitish body and fins in preserved specimens (vs. brownish body with blackish fins in fresh and preserved specimens) (Tables 1–2; Fig. 1, 3). Morphometric differences between the species include greater head depth [28.1–30.3% (mean 29.1%) of SL in *A. pauciporus* vs. 22.1–26.4% (23.7%) in *A. taenianotus*], greater orbit diameter [12.4–12.7% (12.5%) of SL vs. 8.8–11.4% (9.8%)] and longest pelvic-fin soft ray length [30.5–31.2% (30.9%) of SL vs. 19.3–28.5% (24.8%)] (Table 1; Fig. 2). Although examined specimens of *A. pauciporus* had 9 + 15 vertebrae (vs. 10 + 15 in *A. taenianotus*), two specimens only of each species were counted. Examination of further specimens should clarify the existence or otherwise of any variation in this character.

Comments on synonymies of *A. taenianotus*. *Ablabys taenianotus* Cuvier 1829 was originally described in

Table 1 Counts and measurements, expressed as percentages of standard length, of *Ablabys pauciporus* sp. nov. and *Ablabys taenianotus*

	Ablabys pauciporus sp. nov.			*Ablabys taenianotus*			
				Amblyapistus slack-smithi	*Tetraroge cristagalli*	*Ablabys taenianotus*	
	Holotype QM I. 36106	Paratypes $n=2$		Holotype AMS IB. 3898	Holotype BMNH 1843.9.30.21	Non-types $n=34$	
Standard length (SL; mm)	43.6	46.6–52.4		26.9	84.5	16.4–100.9	
Counts			Modes				Modes
Dorsal-fin rays	XVII, 5	XVI–XVII, 6	XVII, 6	XVII, 7	XVII, 7	XVII–XVIII, 6–7	XVII, 7
Anal-fin rays	III, 5	III, 4–5	III, 5	III, 5	III, 5	III, 4–5	III, 5
Pectoral-fin rays (one side/other side)	11/11	11/11	11/11	12/12	11/11	11/11–12/12	11/11
Pelvic-fin rays	I, 5	I, 5	I, 5	I, 5	I, 5	I, 5	I, 5
Scale rows in longitudinal series	55	47–48	–	–	105	74–99	89
Scale rows above lateral line	1	0–1	1	–	–	6–15	10
Scale rows below lateral line	18	17–18	18	–	36	24–33	30
Scale rows between last dorsal-fin spine base and lateral line	5	4–5	5	–	–	6–13	10
Scale rows between sixth dorsal-fin spine base and lateral line	4	1–2	–	–	–	7–13	12
Lateral-line pores	12	12–13	12	22	–	20–25	23
Gill rakers (upper + lower = total)	2 + 6 = 8	1–2 + 5 = 6–7	–	0 + 7 = 7	1 + 4 = 5	0–2 + 3–6 = 5–7	1 + 5 = 6
Measurements (% of SL)			Means				Means
Head length	38.7	37.7–38.1	38.2	38.8	33.6	33.7–37.5	33.8
Head width	20.9	19.0–19.5	19.8	20.9	17.8	12.7–22.9	18.2
Head depth	29.0	28.1–30.3	29.1	–	–	22.1–26.4	23.7
Snout length	9.0	8.3–8.5	8.6	9.4	7.2	6.4–9.9	7.7
Body depth	36.3	34.7–35.0	35.3	33.1	36.6	31.4–39.5	35.2
Body width	19.0	17.8–18.9	18.6	16.0	17.2	11.7–21.8	17.4
Orbit diameter	12.6	12.4–12.7	12.5	10.8	9.9	8.8–11.4	9.8
Suborbital width	3.5	4.8–5.6	4.7	3.8	4.5	2.3–4.8	3.9
Interorbital width	5.7	6.6–6.8	6.4	6.1	5.1	4.8–6.5	5.5
Upper jaw length	13.5	12.4–13.2	13.0	13.1	9.9	9.1–15.1	10.9
Postorbital length	19.2	18.6–17.8	18.5	19.6	18.2	16.1–20.4	17.8
Pre-dorsal-fin length	17.6	15.6–16.3	16.5	15.9	13.0	11.4–16.9	13.4
Pre-anal-fin length	67.2	64.6–69.1	66.9	67.6	68.6	59.5–70.2	66.0
Pre-pelvic-fin length	34.8	35.4–39.1	36.4	38.8	35.4	31.0–38.6	35.0
Caudal-peduncle depth	10.4	9.4–9.7	9.9	10.3	9.7	9.0–11.6	10.3
Caudal-peduncle length	15.3	15.3–15.7	15.4	12.3	10.2	12.8–18.3	15.2
Dorsal-fin base length	85.6	81.9–87.5	85.0	83.0	88.0	78.9–90.3	87.2
Anal-fin base length	19.8	21.1–22.8	21.2	–	–	20.2–24.7	22.4
Caudal-fin length	36.7	33.0–34.3	34.7	37.1	31.1	29.5–39.9	35.2
Pectoral-fin length	41.8	37.5–40.5	39.9	39.1	37.0	29.8–39.5	35.4
Posterior lacrimal spine length	5.6	6.9–7.0	6.5	4.1	4.8	4.0–5.4	4.7

Table 1 (continued)

	Ablabys pauciporus sp. nov.			*Ablabys taenianotus*			
				Amblyapistus slacksmithi	*Tetraroge cristagalli*	*Ablabys taenianotus*	
	Holotype QM I. 36106	Paratypes $n=2$		Holotype AMS IB. 3898	Holotype BMNH 1843.9.30.21	Non-types $n = 34$	
First dorsal-fin spine length	10.9	13.0–15.5	13.1	9.3	10.3	7.1–13.3	10.4
Second dorsal-fin spine length	29.7	31.8–33.6	31.7	29.6	28.9	27.3–39.0	33.4
Third dorsal-fin spine length	30.7	34.1	32.4	26.7	25.7	24.4–34.7	29.8
Fourth dorsal-fin spine length	21.7	22.3–25.1	23.0	21.9	18.7	16.7–25.9	22.2
Fifth dorsal-fin spine length	–	19.8–20.3	20.0	18.8	14.4	13.7–20.1	16.8
Sixth dorsal-fin spine length	13.9	15.9–17.4	15.7	16.0	13.6	12.5–18.1	14.8
Penultimate dorsal-fin spine length	15.2	18.1–20.1	17.8	20.2	16.4	14.2–21.8	18.4
Last dorsal-fin spine length	16.6	21.1–21.5	19.7	17.6	18.1	15.1–23.1	19.8
Longest dorsal-fin soft ray length	25.1	25.4	25.3	26.1	23.8	18.1–30.0	26.1
First anal-fin spine length	–	8.8–9.2	8.7	8.1	8.9	5.9–10.4	8.3
Second anal-fin spine length	13.0	14.6–16.8	14.8	18.2	15.7	11.5–19.5	16.2
Third anal-fin spine length	17.6	19.3–20.2	19.0	–	19.2	15.8–25.8	21.9
Longest anal-fin soft ray length	23.2	22.6–23.0	23.0	23.3	21.8	18.0–28.1	24.3
Pelvic-fin spine length	19.1	18.0–19.2	18.8	19.3	15.5	15.1–19.6	17.5
Longest pelvic-fin soft ray length	31.0	30.5–31.2	30.9	24.8	24.7	19.3–28.5	24.9

a footnote in Cuvier (1829), based on a single specimen collected from Mauritius, Mascarenes, southwestern Indian Ocean. Lacepède's (1802: pl. 2, fig. 2) illustration was probably also based on the Mauritius specimen, which has apparently been subsequently lost (Blanc and Hureau 1968). The illustrated fish had a bilobed (possibly damaged) caudal fin, whereas all species of *Ablabys* have a medially convex fin. Otherwise, Lacepède's illustration agrees closely with specimens considered here as *A. taenianotus*.

Examination of the unique holotypes of *Tetraroge cristagalli* Günther 1860 (type locality: Philippines) (Fig. 3a) and *Amblyapistus slacksmithi* Whitley 1958 (Heron Island, Capricorn Group, Queensland, Australia) (Fig. 3b) in this study showed them to be junior synonyms of *A. taenianotus* (Tables 1–2).

Sauvage (1891) described *Tetraroge alboguttata* on the basis of Liénard's (1843) description of a single specimen from Mauritius. However, the specimen no longer exists and no illustrations of the nominal species were given by either Liénard (1843) or Sauvage (1891). Although Fricke (1999) synonymized *T. alboguttata* with *A. taenianotus*, the original description indicates that *T. alboguttata* is distinguished from the latter in having XII, 10 dorsal-fin rays (vs. XVII–XVIII, 6 or 7); penultimate dorsal-fin spine shorter than first dorsal-fin spine (vs. longer); teeth absent on vomer and palatines (vs. teeth present); 3 and 2 spines above the eye and nasal, respectively (vs. spines absent above eye and nasal); and lateral line interrupted (vs. continuous). The taxonomic status of *T. alboguttata* is unknown, but it is certainly not a species of *Ablabys*.

Tetraroge vestitus, originally described by De Vis (1884) on the basis of a single specimen from "South Seas", has been regarded as a junior synonym of *A. taenianotus* (see Eschmeyer et al. 2018). However, examination of the holotype of *T. vestitus* (QM I. 1597, 57.2 mm SL; Fig. 3c) during this study revealed it to belong to the genus *Centropogon*

Table 2 Frequency distribution of selected meristics in *Ablabys pauciporus* sp. nov. and *Ablabys taenianotus*

	Dorsal-fin spines			Dorsal-fin soft rays			Anal-fin soft rays		Pectoral-fin rays (one side/other side)		
	16	17	18	5	6	7	4	5	11/11	11/12	12/12
Ablabys pauciporus sp. nov.	1	2		1	2		1	2	3		
Ablabys taenianotus		32	1		4	29	1	32	23	2	11

	Scale rows in longitudinal series																				
	47	48	55	74	76	77	78	79	80	81	82	84	87	88	89	90	91	92	98	99	105
Ablabys pauciporus sp. nov.	1	1	1																		
Ablabys taenianotus				2	1	2	1	2	2	1	2	2	1	1	5	1	1	1	1	1	1

	Scale rows above lateral line									Scale rows below lateral line											
	0	1	6	9	10	11	12	13	15	17	18	24	25	26	27	28	29	30	32	33	36
Ablabys pauciporus sp. nov.	1	2								1	2										
Ablabys taenianotus			1	1	11	7	5	1	1			1	3	2	5	4	1	6	5	1	1

	Scale rows between last dorsal-fin spine base and lateral line									Scale rows between sixth dorsal-fin spine base and lateral line							
	4	5	6	7	8	9	10	11	12	1	2	4	7	8	10	11	12
Ablabys pauciporus sp. nov.	1	2								1	1	1					
Ablabys taenianotus			2	1	4	7	9	3	1				1	2	7	5	13

	Lateral-line pores								Upper gill rakers			Lower gill rakers					Total gill rakers			
	12	13	20	21	22	23	24	25	0	1	2	3	4	5	6	7	5	6	7	8
Ablabys pauciporus sp. nov.	2	1								1	2			2	1			1	1	1
Ablabys taenianotus			1	2	4	17	7	2	7	19	7	1	11	13	7	1	8	21	4	

Günther 1860, having the dorsal-fin origin distinctly posterior to the posterior margin of the orbit (vs. around anterior margin of orbit in *Ablabys*; Poss 1999; this study). In addition, the holotype of *T. vestitus* had the following characters: XVI, 8 dorsal-fin rays, 14 pectoral-fin rays, 13 gill rakers, body covered with small embedded ctenoid scales (also below anterior part of spinous dorsal fin), well-developed nasal, supraocular, postocular, sphenotic, posterior lacrimal and preopercular spines, and symphysial knob, and upper jaw length 16.4% of SL. These characters agreed well with the holotype (BMNH 1862.1.6.44, 55.6 mm SL; Fig. 3d) and non-type specimens of *Centropogon marmoratus* Günther 1862 examined in this study. Accordingly, *T. vestitus* is regarded here as a junior synonym of *C. marmoratus*.

Ablabys gymnothorax sp. nov.

(New English name: Scaleless Spiny Waspfish; new Japanese name: Kasasa-haokoze) (Figs. 4, 5; Tables 3, 4)

Holotype. KAUM–I. 77808, 47.9 mm SL, off Kasasa, Minami-satsuma, Kagoshima, Japan, 31°25′44″N, 130°11′49″E, 27 m depth, 21 Aug. 2015, set net, coll. by M. Itou.

Paratypes. NMMB-P 13565, 82.8 mm SL, Nha Trang, Vietnam, 18 Apr. 2009, coll. by H.-C. Ho and M.-Y. Lee; NMMB-P 27337, 67.8 mm SL, Da-Si, Yilan, Taiwan, 25 Feb. 2013, coll. by H.-C. Ho; NSMT-P 70563, 59.9 mm SL, Nha Trang, Vietnam.

Diagnosis. A species of *Ablabys* with the following combination of characters: XVI, 9 dorsal-fin rays; III, 8 or 9 anal-fin rays; 12 or 13 pectoral-fin rays; 6 total gill rakers, including rudiments; 88–90 (mode 89) scale rows in longitudinal series; 11–13 (13) scale rows above lateral line; 30–34 (30) scale rows below lateral line; 10–13 (10) scale rows between sixth dorsal-fin spine base and lateral line; thorax without scales; interspinous dorsal-fin membranes weakly notched; last dorsal-fin soft ray joined posteriorly by membrane to dorsal edge of caudal peduncle and basal upper margin of caudal fin; head and snout short, length 27.7–29.5% (mean 29.2%) of SL and 5.6–6.8% (6.1%) of SL, respectively; orbit diameter 8.1–9.9% (8.9%) of SL; interorbital width 4.1–4.4% (4.2%) of SL; postorbital length 14.9–15.6% (15.2%) of SL; body depth 29.6–35.3% (31.1%) of SL; anal-fin base length

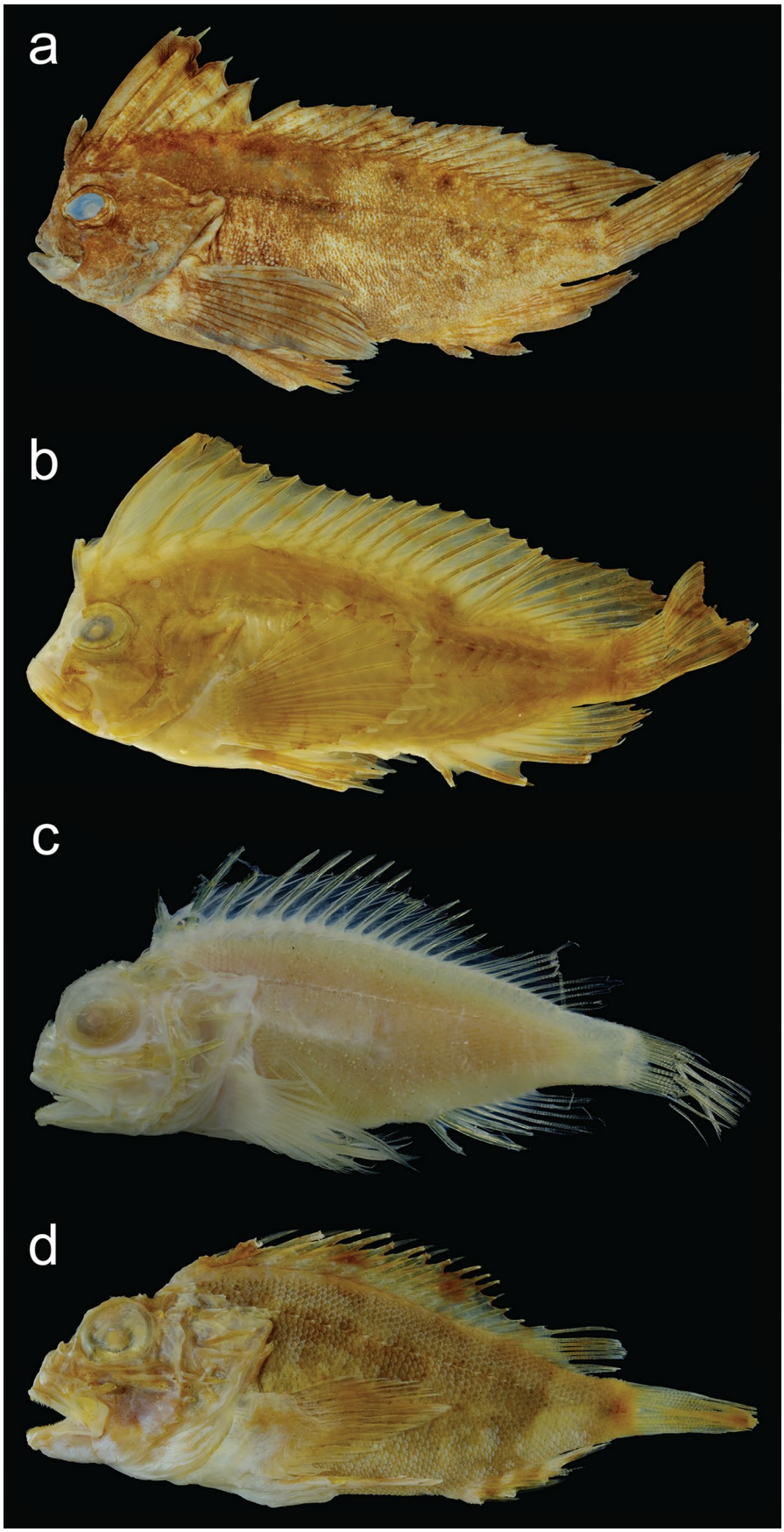

Fig. 3 Holotypes of three nominal species previously identified as *Ablabys taenianotus* (**a**–**c**) and holotype of *Centropogon marmoratus* (**d**). **a** *Tetraroge cristagalli*, BMNH 1843.9.30.21, 84.5 mm SL; **b** *Amblyapistus slacksmithi*, AMS IB. 3898, 26.9 mm SL; **c** *T. vestitus*, QM I. 1597, 57.2 mm SL; **d** *Centropogon marmoratus*, BMNH 1862.1.6.44, 55.6 mm SL

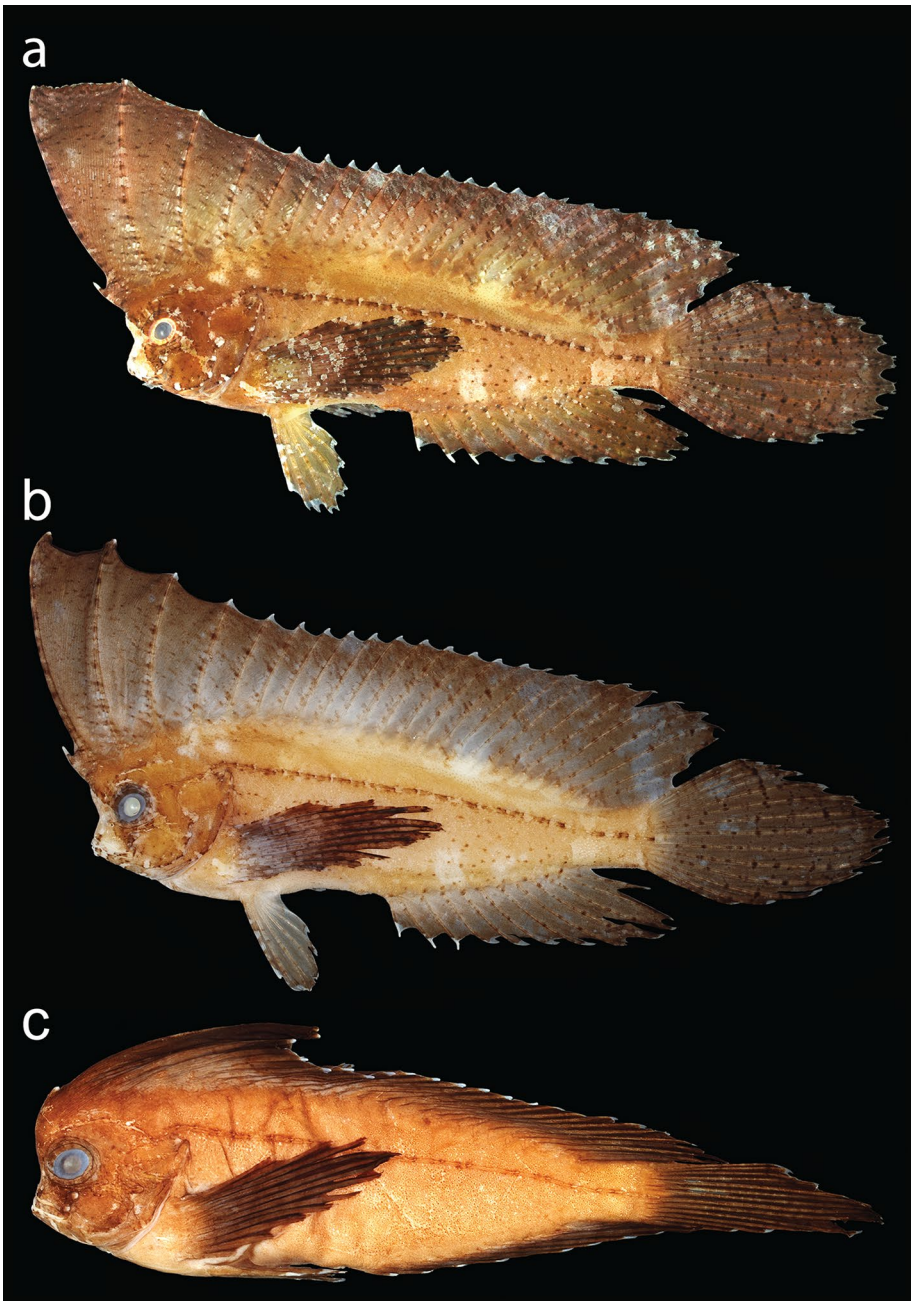

Fig. 4 Fresh (**a**) and preserved specimens (**b**–**c**) of *Ablabys gymnothorax* sp. nov. **a**–**b** KAUM–I. 77808, holotype, 47.9 mm SL; **c** NSMT-P 70563, paratype, 59.9 mm SL

32.1–35.0% (32.9%) of SL; caudal-fin length 39.1–45.0% (42.6%) of SL; dorsal-fin rays and pelvic-fin spine long, second dorsal-fin spine length 39.0–48.5% (44.3%) of SL, third dorsal-fin spine length 35.8–40.8% (38.3%) of SL, fourth dorsal-fin spine length 25.4–30.6% (28.1%) of SL, fifth dorsal-fin spine length 19.1–24.7% (22.2%) of SL, sixth dorsal-fin spine length 17.4–19.6% (18.6%) of SL, penultimate dorsal-fin spine length 17.2–19.8% (18.9%) of SL, last dorsal-fin spine length 17.8–20.6% (19.5%) of SL, longest dorsal-fin soft ray length 24.2–29.9 % (28.2%) of SL, pelvic-fin spine length 12.7–14.9% (14.0%) of SL; body uniformly brown, fins blackish (fresh and preserved specimens); vertebrae 9 + 17.

Description. Selected meristics and morphometrics, expressed as percentages of SL, are shown in Tables 3 and 4. The description and data for the holotype are presented first, followed by those of paratypes in parentheses when different. Body elongated, highly laterally compressed, progressively more compressed posteriorly; body depth subequal to head length (except for NMMB-P 13565 with expanded gonads). Caudal-peduncle depth 3.0 in body depth. Body sparsely covered with small embedded, non-imbricate cycloid scales extending onto dorsal-fin and anal-fin bases; no scales on

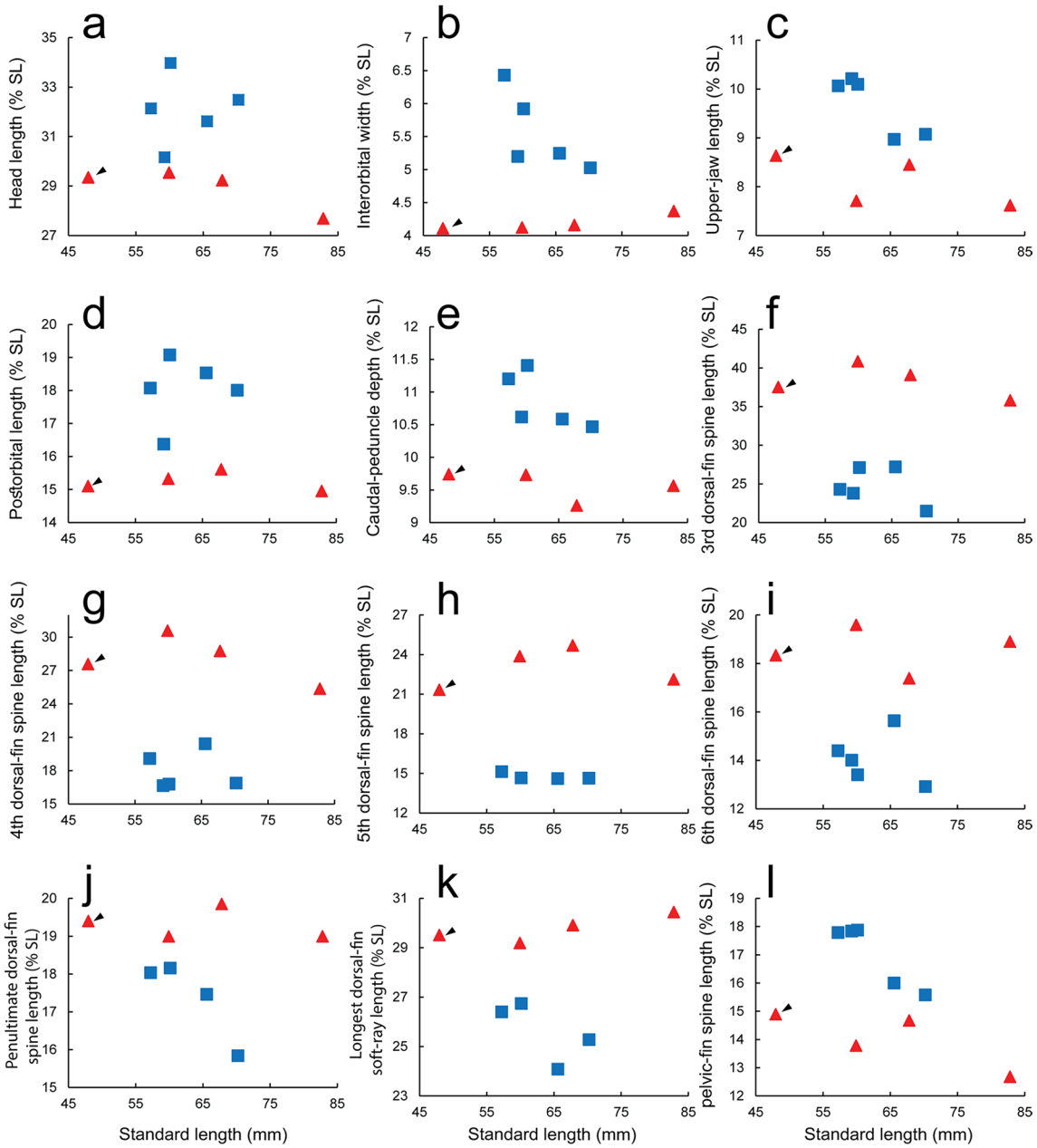

Fig. 5 Relationships of **a** head length; **b** interorbital width; **c** upper jaw length; **d** postorbital length; **e** caudal-peduncle depth; **f** third dorsal-fin spine length; **g** fourth dorsal-fin spine length; **h** fifth dorsal-fin spine length; **i** sixth dorsal-fin spine length; **j** penultimate dorsal-fin spine length; **k** dorsal-fin soft-ray length; and **l** pelvic-fin spine length (all percentages of standard length) to standard length (mm) in *Ablabys gymnothorax* sp. nov. (*red triangles*) and *A. macracanthus* (*blue squares*). *Arrowhead* indicates holotype

head, thorax and pre-dorsal-fin area. No tentacles, cirri, or skin flaps on head, body or fins, except at nasal openings. Lateral line complete, continuous, extending from behind supracleithral spine to caudal-fin base; one lateral-line pore on caudal fin near base; end of tube associated with each lateral-line pore directed upward.

Snout profile almost vertical, with deep concavity in front of eye. Two pairs of nasal openings, subequal in diameter; anterior nostril tubular with dermal flap; posterior nostril a simple rounded pore with low raised rim on anteroventral margin of orbit. Bony rim of orbit smooth. Interorbital region narrow; interorbital ridges weakly developed, median ridge and spines absent. Nasal spines absent. Pterotic, upper posttemporal, and lower posttemporal bones forming ridges without spines. Supracleithral spine short, entirely covered with skin. Suborbital ridge weak, without spines, connected posteriorly to base of uppermost preopercular spine. Preopercle with 5 simple blunt spines, entirely covered with

Table 3 Counts and measurements, expressed as percentages of standard length, of *Ablabys gymnothorax* sp. nov. and *Ablabys macracanthus*

	Ablabys gymnothorax sp. nov.			*Ablabys macracanthus*	
	Holotype KAUM–I. 77808	Paratypes $n=3$		Non-types $n=5$	
Standard length (SL; mm)	47.9	59.9–82.8		57.2–70.2	
Counts			Modes		Modes
Dorsal-fin rays	XVI, 9	XVI, 9	XVI, 9	XV–XVI, 8–9	XV, 8
Anal-fin rays	III, 8	III, 9	III, 9	III, 7	III, 7
Pectoral-fin rays (one side/other side)	13/13	12/12	12/12	12/12–13/13	13/13
Pelvic-fin rays	I, 5	I, 5	I, 5	I, 5	I, 5
Scale rows in longitudinal series	89	88–90	89	73–78	73
Scale rows above lateral line	11	12–13	13	5–7	5–6
Scale rows below lateral line	34	30–31	30	23–28	
Scale rows between last dorsal-fin spine base and lateral line	11	11	11	8–11	8–9
Scale rows between sixth dorsal-fin spine base and lateral line	10	10–13	10	6–8	7–8
Lateral-line pores	20	20	20	18–20	20
Gill rakers (upper + lower = total)	1 + 5 = 6	1 + 5 = 6	1 + 5 = 6	1–2 + 3–4 = 4–5	1 + 4 = 5
Measurements (% of SL)			Means		Means
Head length	29.4	27.7–29.5	29.0	30.2–34.0	32.1
Head width	13.2	12.2–15.3	13.8	14.6–16.7	15.3
Head depth	20.5	17.8–22.9	20.2	20.1–21.3	20.5
Snout length	5.9	5.6–6.8	6.1	6.2–6.6	6.5
Body depth	29.8	29.6–35.3	31.1	31.7–34.2	32.8
Body width	12.6	11.9–16.0	13.9	12.5–15.1	13.9
Orbit diameter	8.7	8.1–9.9	8.9	8.9–9.4	9.1
Suborbital width	3.0	3.2–3.5	3.3	3.7–3.9	3.8
Interorbital width	4.1	4.1–4.4	4.2	5.0–6.4	5.6
Upper jaw length	8.6	7.6–8.4	8.1	9.0–10.2	9.7
Postorbital length	15.1	14.9–15.6	15.2	16.4–19.0	18.0
Pre-dorsal-fin length	9.8	8.1–12.2	10.3	10.0–11.6	10.6
Pre-anal-fin length	53.2	55.9–60.1	57.9	56.1–63.2	59.9
Pre-pelvic-fin length	32.5	27.4–32.2	30.5	30.3–33.0	31.6
Caudal-peduncle depth	9.7	9.3–9.7	9.6	10.5–11.4	10.8
Caudal-peduncle length	15.0	11.6–15.7	13.6	12.2–16.3	14.8
Dorsal-fin base length	91.6	85.8–1.0	89.2	90.0–94.5	92.1
Anal-fin base length	32.1	32.1–35.0	32.9	28.2–33.3	30.8
Caudal-fin length	45.0	39.1–43.3	42.6	34.2–42.0	38.0
Pectoral-fin length	38.4	36.1–38.2	37.7	34.6–38.6	36.4
Posterior lacrimal spine length	3.8	2.4–3.3	3.1	3.6–4.4	3.9
First dorsal-fin spine length	8.4	7.6–8.9	8.2	7.6–10.3	8.8
Second dorsal-fin spine length	42.8	39.0–48.5	44.3	33.6–41.1	37.2
Third dorsal-fin spine length	37.5	35.8–40.8	38.3	21.5–27.2	24.8
Fourth dorsal-fin spine length	27.6	25.4–30.6	28.1	16.6–20.4	18.0
Fifth dorsal-fin spine length	21.3	19.1–24.7	22.2	14.6–15.1	14.8
Sixth dorsal-fin spine length	18.3	17.4–19.6	18.6	12.9–15.6	14.1
Penultimate dorsal-fin spine length	19.4	17.2–19.8	18.9	15.8–18.2	17.4
Last dorsal-fin spine length	20.6	17.8–19.8	19.5	16.6–19.4	17.8
Longest dorsal-fin soft ray length	29.5	24.2–29.9	28.2	24.1–26.7	25.6
First anal-fin spine length	7.3	5.6–6.9	6.5	5.6–7.2	6.2
Second anal-fin spine length	11.0	10.0–11.6	10.7	10.1–12.0	10.9
Third anal-fin spine length	11.3	10.9–12.2	11.4	11.2–14.5	13.1

Table 3 (continued)

	Ablabys gymnothorax sp. nov.			*Ablabys macracanthus*	
	Holotype KAUM–I. 77808	Paratypes $n=3$		Non-types $n=5$	
Longest anal-fin soft ray length	25.4	21.9–28.5	25.2	20.9–25.8	24.1
Pelvic-fin spine length	14.9	12.7–14.9	14.0	15.6–17.9	17.0
Longest pelvic-fin soft ray length	21.6	20.7–21.7	21.5	20.3–24.3	23.2

Table 4 Frequency distribution of selected meristics in *Ablabys gymnothorax* sp. nov. and *Ablabys macracanthus*

	Dorsal-fin spines		Dorsal-fin soft rays		Anal-fin soft rays			Pectoral-fin rays (one side/other side)		Scale rows in longitudinal series					
	15	16	8	9	7	8	9	12/12	13/13	73	76	78	88	89	90
Ablabys gymnothorax sp. nov.		4		4		1	3	3	1				1	2	1
Ablabys macracanthus	4	1	4	1	5			1	3	3	1	1			

	Scale rows above lateral line						Scale rows below lateral line								Scale rows between last dorsal-fin spine base and lateral line		
	5	6	7	11	12	13	23	24	25	26	28	30	31	34	8	9	11
Ablabys gymnothorax sp. nov.				1	1	2						2	1	1			4
Ablabys macracanthus	2	2	1				1	1	1	1	1				2	2	1

	Scale rows between sixth dorsal-fin spine base and lateral line						Lateral-line pores		Upper gill rakers		Lower gill rakers			Total gill rakers		
	6	7	8	10	11	13	18	20	1	2	3	4	5	4	5	6
Ablabys gymnothorax sp. nov.				2	1	1		4	4				4			4
Ablabys macracanthus	1	2	2				4	1	3	1	2	2		1	3	

skin; uppermost longest with narrow base; second to fifth small with broad base. Opercle with smooth V-shaped crests, no spines projecting from skin. Upper end of gill opening reaching to horizontal line through dorsal margin of eye. Cleithral bone flattened, covered with thick skin. Lacrimal with 2 blunt spines; anterior lacrimal spine short, directed posterodorsally; posterior lacrimal spine directed posterodorsally, its tip almost reaching to vertical through middle of orbit; its length twice that of anterior lacrimal spine; lateral lacrimal spines absent. Mouth small, terminal, slightly oblique; posterior margin of maxilla not reaching to vertical through middle of eye. Bands of villiform teeth on jaws, vomer, and palatines. Lips thick; symphysial knob and cirrus absent. No slit behind last gill arch; gill rakers short, blunt.

Origin of dorsal fin anterior to vertical through anterior margin of orbit; first dorsal-fin spine shortest, its length 5.0 (6.0) in second spine length; second spine longest, slightly longer than third spine; third to eighth spines progressively shorter; eighth to sixteenth spines progressively longer; distance between bases of fourth and fifth spines greatest.

Membrane of spinous portion of dorsal fin weakly notched; sixth dorsal-fin soft ray longest, its length subequal to fourth dorsal-fin spine; four-fifths of membrane of last dorsal-fin ray posteriorly connected to dorsal caudal peduncle and upper basal caudal fin. Anal-fin base long, one-third of dorsal-fin base length. Origin of anal-fin level with vertical through fourteenth dorsal-fin spine base; first anal-fin spine shortest; second anal-fin spine subequal to third, both shorter than first anal-fin soft ray; membrane of spinous portion of anal fin weakly notched; membrane of last anal-fin soft ray not continuous with caudal peduncle; posterior margin of fin pointed. Pectoral fins without free rays; fin origin level with vertical through sixth dorsal-fin spine base; fin length 1.3 in head length, posterior tip of fin extending beyond vertical through anal-fin origin; posterior margin of fin rounded. Origin of pelvic fin level with vertical through lower end of pectoral-fin base; second soft-ray longest; posterior tip of depressed fin extending beyond anus; basal half of last soft ray adnate to abdomen via membrane. Caudal fin with 14 segmented rays, its length half that of dorsal-fin base length. Swimbladder absent. Formula for configuration of supraneural bones, anterior neural spines, and anterior dorsal pterygiophores 2+1/1/1/1/1/1/1/1/1/1/1/1/1/. Vertebrae 9 + 17. Epineurals 15.

Color when fresh (Fig. 4a): Head and body brown dorsally, light brown ventrally, with large whitish blotches and scattered dark spots on body; a single dark spot on each lateral-line pore. White stripe along snout. Fins dark brown, with white margins.

Color of preserved specimens (Fig. 4b,c): similar to fresh color but paler.

Distribution. Currently known only from East Asia, including waters off southern Japan, Taiwan and central Vietnam.

Etymology. The specific name *gymnothorax* is derived from Latin, meaning naked chest, in reference to the lack of scales on the thorax.

Remarks. One female specimen (NMMB-P 13565, 82.8 mm SL) from Nha Trang, Vietnam, which possessed expanded gonads with well-developed ova (some eggs being released when the individual was captured), indicated that *Ablabys gymnothorax* matures at a relatively small size.

Ablabys macracanthus was originally described by Bleeker (1852) as *Apistus macracanthus*, based on a single specimen (86 mm TL) from Wahai, northern Ceram, Indonesia. Hubrecht (1879) later referred to two Bleeker specimens deposited at Naturalis Biodiversity Center, Leiden, the Netherlands (registered as RMNH.PISC 5882) as *Amblyapistus macracanthus.* Although the Naturalis fish collection was inaccessible due to building renovation at the time of this study, and the holotype consequently unavailable, a subsequent Bleeker's (1878) figure of *Am. macracanthus* matched non-type specimens considered here as *Ablabys macracanthus* in having XV, 9 dorsal-fin rays; III, 8 anal-fin rays; anal-fin base long; body with small scaled scattered; head and snout short; snout profile almost vertical; first dorsal-fin spine short and its origin before eyes; second dorsal-fin spine longest; last dorsal-fin soft ray joined posteriorly by membrane to dorsal edge of caudal peduncle and basal upper margin of caudal fin.

Comparisons. *Ablabys gymnothorax* sp. nov. resembles *A. macracanthus*, both sharing more than 7 anal-fin soft rays and a relatively long anal-fin base (length 28.2–35.0% of SL). However, it is distinguished from the latter by having XVI, 9 dorsal-fin rays [vs. XV or XVI, 8 or 9 (mode XV, 8) in the latter], 8 or 9 (9) anal-fin soft rays (vs. 7), 6 total gill rakers [vs. 4 or 5 (5)], 88–90 (89) scale rows in longitudinal series [vs. 73–78 (73)], 11–13 (13) scale rows above the lateral line [vs. 5–7 (5 or 6)], 30–34 (30) scale rows below the lateral line [vs. 23–28], the last dorsal-fin soft ray joined posteriorly by a membrane to the dorsal edge of the caudal peduncle and basal upper margin of the caudal fin (vs. joined to peduncle, but not to caudal fin), and scales absent on the thorax (vs. present) (Tables 3–4). In morphometrics, *A. gymnothorax* differs from *A. macracanthus* in shorter head length [27.7–29.5% (mean 29.2%) of SL vs. 30.2–34.0% (32.1%) in the latter], narrower interorbital width [4.1–4.4% (4.2%) of SL vs. 5.0–6.4% (5.6%)], shorter upper jaw length [7.6–8.4% (8.1%) of SL vs. 9.0–10.2% (9.7%)], shorter postorbital length [14.9–15.6% (15.2%) of SL vs. 16.4–19.0% (18.0%)], shallower caudal-peduncle depth [9.3–9.7% (9.6%) of SL vs. 10.5–11.4% (10.8%)], longer third dorsal-fin spine length [35.8–40.8% (38.3%) of SL vs. 21.5–27.2% (24.8%)], longer fourth dorsal-fin spine length [25.4–30.6% (28.1%) of SL vs. 16.6–20.4% (18.0%)], longer fifth dorsal-fin spine length [19.1–24.7% (22.2%) of SL vs. 14.6–15.1% (14.8%)], longer sixth dorsal-fin spine length [17.4–19.6% (18.6%) of SL vs. 12.9–15.6% (14.1%)], longer penultimate dorsal-fin spine length [17.2–19.8% (18.9%) of SL vs. 15.8–18.2% (17.4%)], longer last dorsal-fin spine length [17.8–20.6% (19.5%) of SL vs. 16.6–19.4% (17.8%)], longer longest dorsal-fin soft ray length [24.2–29.9% (28.2%) of SL vs. 24.1–26.7% (25.6%)], and shorter pelvic-fin spine length [12.7–14.9% (14.0%) of SL vs. 15.6–17.9% (23.2%)] (Table 3, Fig. 5). Although examined specimens of *A. gymnothorax* had 9 + 17 vertebrae (vs. 9 + 16 in *A. macracanthus*), two specimens only of each species were counted. Examination of further specimens should clarify the existence or otherwise of any variation in this character.

The naked thorax, last dorsal-fin soft ray joined posteriorly by a membrane to the dorsal edge of the caudal peduncle and basal upper margin of the caudal fin, and 8 or 9 anal-fin soft rays found in *A. gymnothorax* are unique characters within *Ablabys*.

A preliminary ribosomal RNA analysis by T. Sado (Natural History Museum and Institute, Chiba) revealed high

genetic divergence among *A. gymnothorax* (KAUM–I. 77808, holotype), *A. macracanthus* (KAUM–I. 33283) and *Ablabys taenianotus* (KAUM–I. 71170), supporting their separate specific status. Within the amplified region, 170–172 bp of 12S gene sequences from the three specimens were successfully aligned, the sequence divergence between *A. gymnothorax* and *A. macracanthus* being 10%, between *A. macracanthus* and *A. taenianotus* 15%, and between *A. gymnothorax* and *A. taenianotus* 17%. The determined sequences were deposited in GenBank (accession numbers LC021105, LC278192, and LC340100). The three species of *Ablabys* formed a clade within the family Tetrarogidae, having a sister relationship with *Paracentropogon* Bleeker 1876 (T. Sado, pers. comm.).

Comparative material examined. *Ablabys taenianotus*: 36 specimens (16.4–100.9 mm SL)—**AUSTRALIA:** AMS IB. 3898, 26.9 mm SL, holotype of *Amblyapistus slacksmithi*, Heron Island, Capricorn Group, Queensland, 23°26′S, 151°55′E; AMS I. 19119-001, 35.0 mm SL, Camp Cove, Sydney Harbour, New South Wales, 33°83′S, 151°27′E; AMS I. 24011-001, 37.8 mm SL, Sugarloaf Island, Lord Howe Island, New South Wales, 31°55′S, 159°08′E; AMS I. 27139-001, 66.4 mm SL, Middleton Reef, Tasman Sea, 29°49′S, 159°07′E; AMS I. 30310-036, 16.4 mm SL, North Solitary Island, New South Wales, 29°93′S, 153°38′E; QM I. 37450, 93.0 mm SL, Waddy Point, Fraser Island, Queensland, 24°54′S, 153°26′E; QM I. 38729, 46.4 mm SL, Southport Seaway, Queensland, 27°56′23″N, 153°25′18″E. **CHINA:** NSMT-P 63009, 20.8 mm SL, west coast of Dadonghai, Hainan. **INDONESIA:** FRLM 15683, 78.8 mm SL, FRLM 15694, 48.0 mm SL, FRLM 16753, 92.8 mm SL, FRLM 16754, 52.2 mm SL, FRLM 20273, 80.3 mm SL, NSMT-P 56883, 76.5 mm SL, NSMT-P 56963, 81.2 mm SL, Kuta, Lombok; FRLM 26409, 68.4 mm SL, Tandurusa, Bitung, Sulawesi. **JAPAN:** FAKU 121549, 62.2 mm SL, Shirahama, Wakayama; FAKU 121706, 100.9 mm SL, Tanabe Bay, Shirayama, Wakayama; KAUM–I. 2013, 59.4 mm SL, Yoron Island, Amami Islands; KAUM–I. 2909, 70.2 mm SL, off Kouzaki-yama, Kataura, Kasasa, Minami-satsuma, Kagoshima, 31°26′00″N, 130°10′05″E; KAUM–I. 20310, 68.2 mm SL, west of Kamazeno-hana, Kurio, Yaku Island, Osumi Islands, 30°16′03″N, 130°24′48″E; KAUM–I. 37692, 42.0 mm SL, off south coast of Iwo Island, Osumi Islands, 30°46′32″N, 130°16′43″E; KAUM–I. 39723, 22.1 mm SL, off Shinaha, northwest coast of Yoron Island, Amami Islands, 27°03′41″N, 128°25′00″E; KAUM–I. 65178, 49.5 mm SL, Kurose Port, Akaogi, Kasasa, Minami-satsuma, Kagoshima, 31°22′29″N, 130°10′06″E; KAUM–I. 71170, 48.2 mm SL, Chabana Port, Chabana, Yoron Island, Amami Islands, 27°02′56″N, 128°24′20″E; KAUM–I. 79321, 21.6 mm SL, Kasari Bay, Kasari, Amami, Amami-oshima Island, Amami Islands, 28°30′29″N, 129°39′35″E; KAUM–I. 83663, 38.8 mm SL, Omonawa Port, Isen, Tokuno-shima Island, Amami Islands, 27°40′05″N, 128°58′09″E; KAUM–I. 83671, 83.7 mm SL, off Kuba, Nakagusuku, Okinawa Island, Okinawa Islands, 26°16′59″N, 127°49′00″E; KAUM–I. 83953, 60.9 mm SL, off east of Sakinoyama, Kataura, Kasasa, Minami-satsuma, Kagoshima, 31°25′4″N, 130°11′49″E; KAUM–I. 104281, 44.0 mm SL, off Chabana Beach, Yoron Island, Amami Islands, 27°03′07″N, 128°24′02″E; NSMT-P 119414, Shiba, Kakerom Island, Amami Islands; NSMT-P 30209, 99.8 mm SL, NSMT-P 30216, 62.5 mm SL, Igaya Bay, Miyake Island, Izu Islands; NSMT-P 80853, 73.7 mm SL, Taketomi, Iriomote Island, Yaeyama Islands. **PAPUA NEW GUINEA:** QM I. 9086, 85.0 mm SL, Cape Gazelle, New Britain, 04°20′S, 152°24′E. **PHILIPPINES:** BMNH 1843.9.30.21, 84.5 mm SL, holotype of *Tetraroge cristagalli*.

Ablabys macracanthus: 5 specimens (57.2–70.2 mm SL)—**MYANMAR:** SAIAB 203482, 2 specimens, 60.1–65.6 mm SL, off Clara Islands, 10°70′57″N, 97°49′57″E. **THAILAND:** KAUM–I. 33282, 70.2 mm SL, KAUM–I. 33283, 57.2 mm SL, Pak Nam Ranong Fishing Port, Ranong, 09°56′N, 98°35′E; ZSI 1747, 59.2 mm SL, Andaman Sea.

Ablabys binotatus: 3 specimens (90.6–95.2 mm SL)—**MOZAMBIQUE:** ZMB 814, holotype of *Apistus binotatus*, 95.2 mm SL, Ibo; CAS 48679, 90.6 mm SL, Delagoa Bay. **SOUTH AFRICA:** BMNH 1919.4.1.32, holotype of *Amblyapistus marleyi*, 94.3 mm SL, Durban, KwaZulu-Natal.

Centropogon marmoratus: 5 specimens (55.6–57.2 mm SL)—**AUSTRALIA:** BMNH 1862.1.6.44, holotype of *C. marmoratus*, 55.6 mm SL, QM I. 365, 68.6 mm SL, QM I. 14305, 50.2 mm SL, QM I. 20635, 63.2 mm SL, Moreton Bay, Queensland. **LOCALITY UNKNOWN:** QM I. 1597, holotype of *Tetraroge vestitus*, 57.2 mm SL, "south seas".

Acknowledgments We are especially grateful to M. McGrouther, A. Hay and S. Reader (AMS), J. Maclaine (BMNH), Y. Kai (FAKU), S. Kimura (FRLM), H.-C. Ho and K. Koeda (NMMB), M. Nakae (NSMT), J. Johnson (QM), R. Bills and O. Gon (SAIAB), and P. Bartsch (ZMB) for providing opportunities to examine specimens, J. Johnson (QM) for providing color photographs of *A. pauciporus*, T. Sado (CMNH) for providing results of DNA analysis, J. Johnson and staff of QM, M. Itou, Y. Haraguchi and other volunteers and students of KAUM for curatorial assistance, and G. S. Hardy (Ngunguru, New Zealand) for reading the manuscript and providing help with English. All specimens of *A. pauciporus* were collected during the Great Barrier Reef Seabed Biodiversity Project, a collaboration between the Australian Institute of Marine Science (AIMS), CSIRO, Queensland Department of Primary Industries & Fisheries (QDPIF), and QM; funded by the CRC Reef Research Centre, the Fisheries Research and Development Corporation, and the National Oceans Office; and lead by R. Pitcher (CSIRO), P. Doherty (AIMS), J. Hooper (QM) and N. Gribble (QDPIF). We also wish to thank the field team lead by D. Gledhill (CSIRO) and the crew of the FRV *Gwendoline May*. This study was supported in part by JSPS KAKENHI Grant Numbers JP19770067, JP26241027, JP24370041, JP23580259, and JP26450265; the JSPS Core-to-Core Program: B Asia-Africa Science Platforms; the "Biological Properties

of Biodiversity Hotspots in Japan" project of the National Museum of Nature and Science, Tsukuba, Japan; "Establishment of Research and Education Network on Biodiversity and Its Conservation in the Satsunan Islands" project of Kagoshima University adopted by the Ministry of Education, Culture, Sports, Science and Technology, Japan; and the "Island Research" project of Kagoshima University.

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