



Four new species of *Agaue* (Acarina: Halacaridae) from the Great Barrier Reef Marine Park

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Abstract: Four new species of *Agaue* (Acarina: Halacaridae) are described from the Great Barrier Reef Marine Park, namely *Agaue aliena*, *Agaue bella*, *Agaue galatea*, and *Agaue reichelti*. These species, collected from algae, dead coral, and coarse sediment, bring the total number of *Agaue* species known from Australia to ten and the number of *Agaue* species known from tropical regions to ten.

Résumé : Quatre espèces nouvelles d'*Agaue* (Acarina : Halacaridae) du Parc Marin de la Grande Barrière: Quatre nouvelles espèces d'*Agaue* (Acarina: Halacaridae) de la Grande Barrière de Corail, sont décrites. Ces espèces sont *Agaue aliena*, *Agaue bella*, *Agaue galatea* et *Agaue reichelti*. Ces espèces, recoltées à partir d'algues, de corail mort et de débris de sédiment portent le nombre total d'espèces d'*Agaue* connues de l'Australie à dix et le nombre d'espèces d'*Agaue* connues des régions tropicales à dix.

Keywords: Acarina, Halacaridae, *Agaue*, new species, Great Barrier Reef.

Introduction

Marine mites (Halacaridae) of the genus *Agaue* are common throughout the world's oceans. Some of the 42 described species live in shallow coastal waters, others occur at depths greater than 4000 m. *Agaue* includes some of the most spectacular halacarid mites, some of which are adorned with elaborate lamellae on body and legs which are not present in other genera.

The only species of *Agaue* previously known from tropical parts of the western South Pacific is *Agaue*

polynesia Bartsch, 1992, from the Islands Moorea and Bora Bora. A survey of the halacarid fauna of Australia's Great Barrier Reef revealed the existence of four previously unknown species of *Agaue*, which are here described.

Material and methods

Sand, coral rubble, and algae were collected by hand either intertidally or from various depths using SCUBA equipment. Mites were extracted by washing the substrates in a bowl of water and decanting the supernatant through a 100 µm sieve. All material was collected by the author except where stated otherwise. Mites were cleared in lactic acid and mounted in PVA (Boudreaux and Dosse, 1963). Drawings were made with the aid of a camera lucida.

In the accounts of each species only one sex is described in detail, while for the opposite sex only characters that differ are described. Terminology follows Bartsch (1993). In the accounts of leg chaetotaxy, numbers enclosed in brackets refer to setal complements found only on one side of a specimen, while those not enclosed in parentheses refer to setal complements present on both sides of a specimen. Numbers of setae present on both sides of a specimen but variable within a species are separated by a slash.

Abbreviations used in the descriptions and figures are: AD, anterior dorsal plate; AE, anterior epimeral plate; fs, fossary seta(e); GA, genitoanal plate; gb, gnathosomal base; GO, genital opening; OC, ocular plate; pas, parambulacral seta(e); PD, posterior dorsal plate; PE, posterior epimeral plate; P-3, third palp segment counted from base of palp; pgs, perigenital seta(e); ro, rostrum; sgs, subgenital seta(e); I-IV, leg I to leg IV.

All holotype and paratype material is deposited in the Queensland Museum (QM) at the branch Museum of Tropical Queensland in Townsville (Australia), except where stated otherwise. Abbreviations for other depositories of paratypes are: ANIC, Australian National Insect Collection, Canberra (Australia); ZMH, Zoologisches Museum Hamburg (Germany).

Description

Agauae aliena sp. nov. (Figs. 1,2)

Material

Holotype male QM105285, Great Barrier Reef Marine Park, Club 21 Reef, 19°22.36' S 149°01.05' E, 26 December 1997, coarse sand and rubble at 15 m. Paratypes: Great Barrier Reef Marine Park: 1 female QM105286, Loadstone Reef, 18°42.03' S 147°06.54' E, 12 April 1998, coral rubble at 12-15 m; 1 male, Loadstone Reef, 18°41.91' S 147°06.49' E, sand and rubble at 2 m (ZMH).

Male

Idiosoma 460-472 µm long (holotype 472). Dorsal plates with large cerotegumental lamellae (Fig. 1A); widely separated by membranous cuticle. Two pairs of slender setae inserted in membranous cuticle, posterior to AD and anterior to PD respectively. AD with anterior nose-like projection; pair of setae inserted at distance less than 1/4 of width of plate at same level; posterolateral parts of plate with pair of gland pores on protrusions; posterior to pores with groups of shallow pits

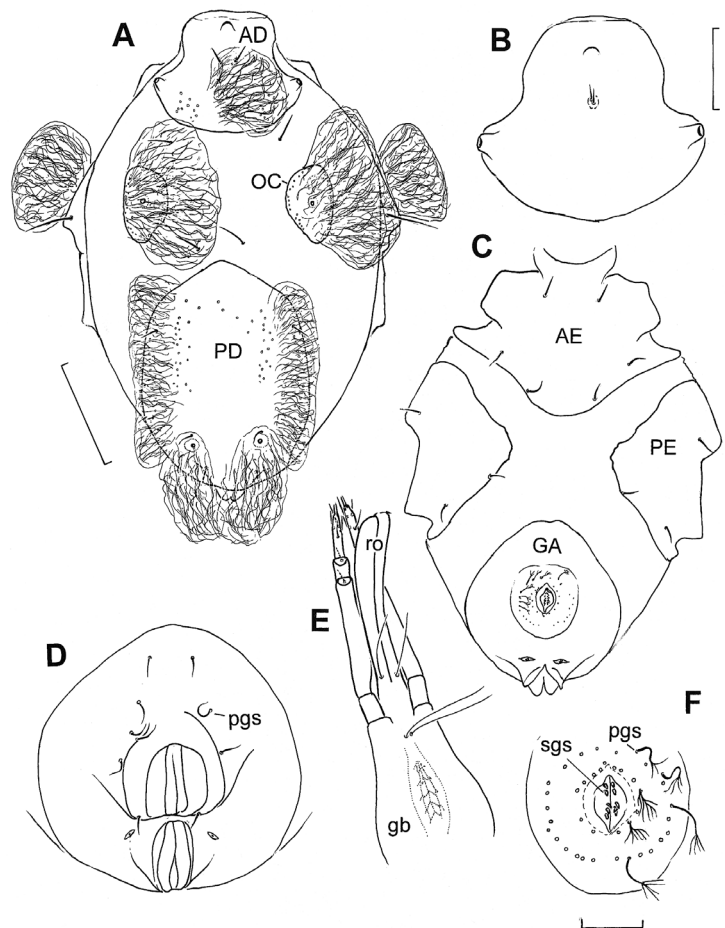


Figure 1. *Agauae aliena* sp. nov. (A) dorsal idiosoma of male: (AD) anterior dorsal plate, (OC) ocular plate, (PD) posterior dorsal plate, scale bar: 100 µm. (B) anterior dorsal plate of female, scale bar: 50 µm. (C) ventral idiosoma of male, (AE) anterior epimeral plate, (PE) posterior epimeral plate, (GA) genitoanal plate, same scale as A. (D) genitoanal plate of female, (pgs) perigenital seta, same scale as B. (E) gnathosoma of male, ventral view, (ro), rostrum, (gb), gnathosomal base, same scale as B. (F) genital opening of male, (sgs), subgenital seta, scale bar: 25 µm.

Figure 1. *Agauae aliena* sp. nov. (A) vue dorsale de l'idiosome du mâle: (AD) plaque dorsale antérieure, (OC) plaque oculaire, (PD) plaque dorsale postérieure, échelle: 100 µm. (B) plaque dorsale antérieure de la femelle, échelle: 50 µm. (C) vue ventrale de l'idiosome du mâle, (AE) plaque épimérale antérieure, (PE) plaque épimérale postérieure, (GA) plaque génitoanale, même échelle que A. (D) plaque génitoanale de la femelle, même échelle que B, (pgs) soie périgénitale, même échelle que B. (E) vue ventrale du gnathosome du mâle, (ro), rostre, (gb), base du gnathosome, même échelle que B. (F) pore génital du mâle, (sgs), soie subgénitale, échelle: 25 µm.

on either side. OC more or less oval, lacking cornea, covered by large lamella; distinct pore near middle of plate; row of minute depressions along margins; inconspicuous pore canaliculus laterally. PD with convex anterior margin; pair of gland pores posteriorly; one pair of setae in anterior

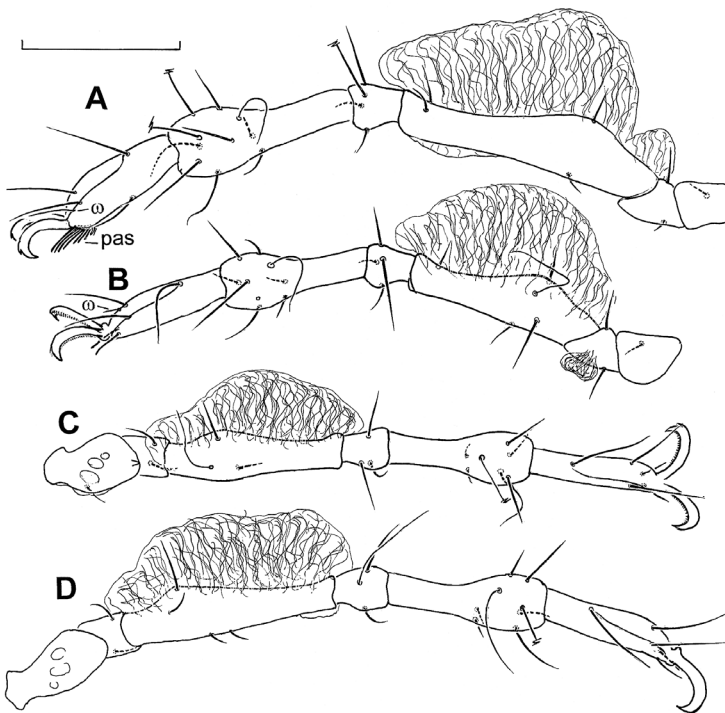


Figure 2. *Agaue aliena* sp. nov., male. (A) leg I, dorsolateral view, (pas) parambulacral setae, (ω) solenidion. (B) leg II, dorsolateral view. (C) leg III, dorsal view. (D) leg IV, dorsolateral view. All to same scale: 100 μm

Figure 2. *Agaue aliena* sp. nov., mâle. (A) patte I, vue dorsolatérale, (pas) soie parambulacraire, (ω) solénidion. (B) patte II, vue dorsolatérale. (C) patte III, vue dorsale. (D) patte IV, vue dorsolatérale. Même échelle : 100 μm.

half of plate, second pair of setae in posterior half near pore; lateral parts of plate with scattered pits. Pair of adanal setae inserted dorsally on anal cone, hidden underneath PD. PE with distinctly uneven margins; one pair of dorsal and three pairs of ventral setae; laterally with large lamella. GA with ca. 40–42 branched pgs, arranged in two circles; five pairs of short thickened sgs; base of anal cone ventrally with pair of slit-like pores.

Gnathosoma with two pairs delicate maxillary setae; posterior pair on gnathosomal base, anterior pair on proximal part of rostrum; setae of posterior pair inserted much closer to each other than those of anterior pair (Fig. 1E). Palp segment P-3 with dorsal seta.

Telofemora of all legs proximally swollen and longer than tibiae (Fig. 2). Tibiae distinctly clavate. Basifemur II with small lamella (Fig. 2B); telofemora with larger dorsal lamella; tibiae without lamellae. Chaetotaxy (trochanter-tibia): I 1-2-4-4-10, II 1-2-5-4-9, III 1-2-3-3-7, IV 0-2-4-3-8. Telofemora II and III, genu IV and tibiae I–IV each with one conspicuously long and delicate seta. Tarsus I with one ventral seta and ca. ten pairs of pas; tarsi II–IV with one pair of pas. Solenidion on tarsus I longer than half the length of

fossary setae; solenidion on tarsus II shorter than half the length of fossary setae. All tarsi without empodial claw. Paired claws of all tarsi with accessory process; on legs II and III with pecten, on legs I and IV smooth. Claw fossa of tarsi III and IV extending to proximal fossary seta.

Female

Idiosoma, 513 μm long. AD in the only specimen available for examination with the two dorsal setae inserted as in Fig. 1B. GA with six pgs on one side and four pgs on the other side (further setae may be obscured on the latter).

Etymology: *alienus* [Latin] = foreign, strange.

Remarks

Other species of *Agaue* that have large lamellae on dorsal plates and legs are *A. agauoides* (Lohmann, 1907), *Agaue arubaensis* Bartsch, 1984, *Agaue adriatica* Viets, 1940, *A. nationalis* (Lohmann, 1893), *A. bella* sp. nov., and *A. reichelti* sp. nov. *Agaue aliena* can be distinguished from these by the lack of corneae, presence of only two pairs of setae in the membranous dorsal integument, close proximity of the two ventral setae on the gnathosomal base and the lack of lamellae on the ventral part of the telofemora.

Agaue bella sp. nov. (Figs. 3,4)

Material

Holotype female QM105287, Great Barrier Reef Marine Park, Yonge Reef, ca. 14°36' S 145°38'E, 10 October 1998, coarse sand and rubble at 9 m. Paratype: 1 female QM105288, Great Barrier Reef Marine Park, Faraday Reef, 18°25.93' S 147°21.11' E, 13 April 1998, coarse sand and rubble at 6–9 m.

Female

Idiosoma 480–540 μm long (holotype 540). All dorsal plates with conspicuous lamellae structured as indicated in Fig. 3A. Dorsally with three pairs of thickened hollow setae; in holotype two of these pairs inserted in membranous cuticle (anterior and posterior to OC respectively) and third pair on anterolateral corner of OC, in paratype all three pairs inserted in membranous cuticle; second pair (from anterior) of thickened setae closer to anterior than to posterior pair. AD with pair of gland pores and posterior to these with several shallow pits; pair of setae widely separated. OC roughly triangular; with two corneae, pore, and several shallow pits. PD with convex anterior margin; pair of gland pores posteriorly; one pair of setae anterior to pair of pores;

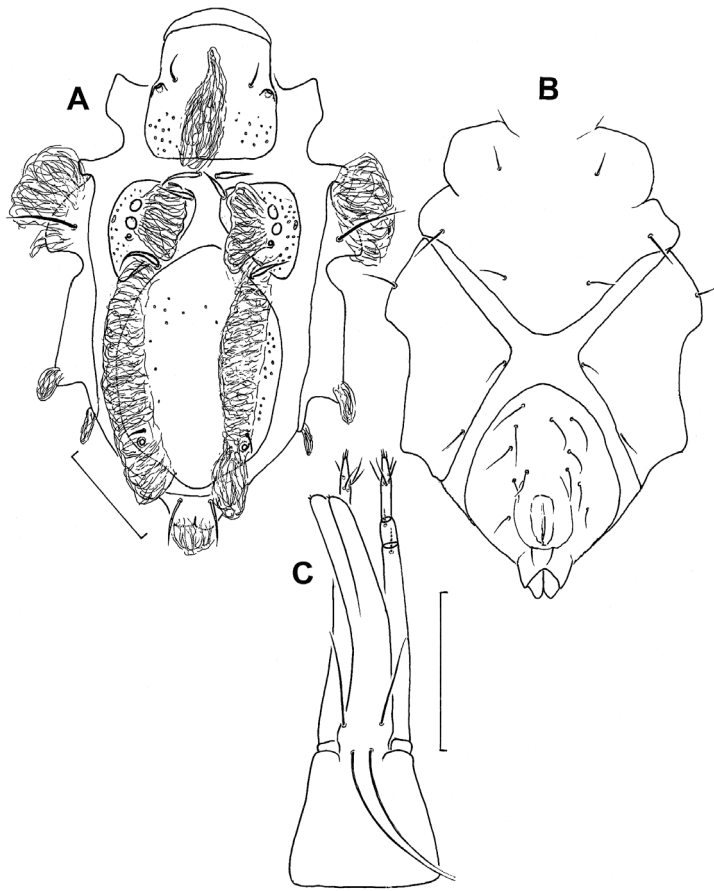


Figure 3. *Agaue bella* sp. nov., female. (A) idiosoma, dorsal view, scale bar: 100 μ m. (B) idiosoma, ventral view, same scale as A. (C) gnathosoma, ventral view, scale bar: 100 μ m.

Figure 3. *Agaue bella* sp. nov., femelle. (A) idiosome, vue dorsale, échelle : 100 μ m. (B) idiosome, vue ventrale, même échelle que A. (C) gnathosome, vue ventrale, échelle : 100 μ m.

scattered pits laterally; lamellae not surpassing anal cone which carries a lamella and a pair of dorsal adanal setae. AE with second pair of setae (from anterior) slightly more developed than other two pairs (Fig. 3B). PE with one well developed dorsal seta and three less developed ventral setae. GA with seven pairs of pgs inserted as illustrated (Fig. 3B).

Gnathosoma with both pairs of maxillary setae inserted on base of rostrum, setae of the posterior pair distinctly closer to each other than setae of anterior pair (Fig. 3C). Palp segment P-3 with dorsal seta.

Telofemora of all legs proximally swollen (Fig. 4); tibiae distinctly clavate; telofemora I and II slightly longer than tibiae of same legs. Basifemora, telofemora and tibiae of all legs with conspicuous lamellae, structured as shown in Fig. 4. Chaetotaxy: I 1-2-5-5(6)-10, II 1-2-5(6)-4-9(10), III 2-2-3-3-7(6,8), IV 0-2-3(4)-3-7. Distal fossary setae of tarsi slightly serrated. Tarsus I with one ventral seta and ca. ten

pairs of single pas, tarsi III and IV with one pair of single pas. Claw fossa on tarsus I extending to proximal fossary seta, claw fossa of other legs hardly extending beyond insertions of distal fossary setae. Paired claws of all tarsi with accessory process and pecten.

Male: unknown.

Etymology: *bellus* [Latin] = pretty.

Remarks

Agaue bella sp. nov. belongs to a group of species with elaborate lamellae on dorsal plates and legs (see remarks on *A. aliena*). It differs from all other species in this group by having 3-4 separate lamellae on tibiae I and II, and by the morphology of the corneae, which are either considerably larger or completely absent in the other species. In addition, it may be distinguished from *A. nationalis*, *A. reichelti* sp. nov. and *A. arubaensis* by the presence of a seta on P-3, from *A. aliena* sp. nov. by smaller lamellae on the ocular plates and larger separation of the setae on the AD, and from *A. adriatica* by a much longer rostrum and shorter claw fossae on tarsi III and IV.

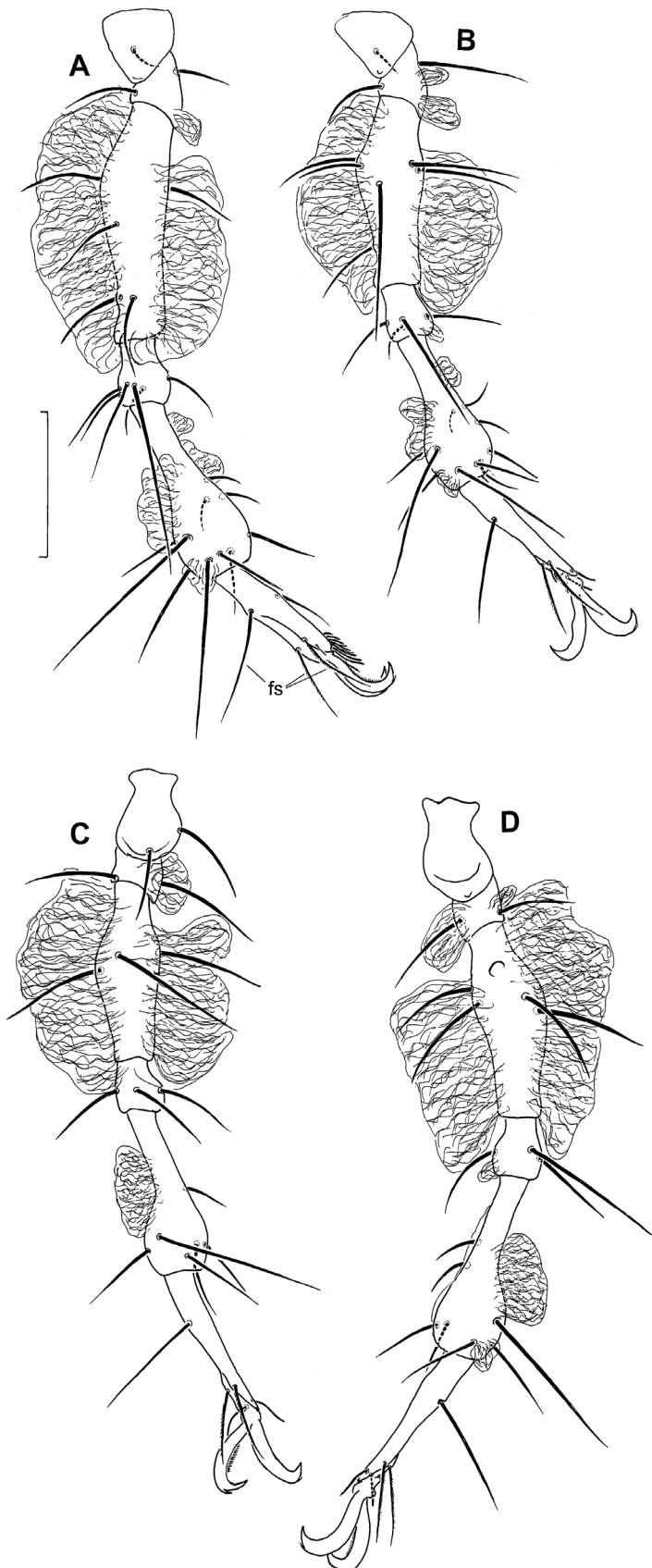
Agaue galatea sp. nov. (Figs. 5, 6)

Material

Holotype male QM105289, Great Barrier Reef Marine Park, Cape Ferguson, AIMS beach, 19°16.09' S 147°03.05' E, 13 July 1997, intertidal coralline algae. Paratypes: Great Barrier Reef Marine Park: 1 male QM105290, 1 female QM105291, data as for holotype; 1 female, Townsville, 16 February 1997, algae on intertidal rocks (ZMH); 1 male QM105292, Cairns, Yorkeys Knob, 21 June 1997, intertidal algae and mussels; 1 female QM105293, Pandora Reef, 18°48.67' S 146°25.87' E, 22 January 1998, chunks of coral rubble overgrown with *Clavularia* sp. at 1 m; 1 female, Magnetic Island, 16 November 1996, intertidal algae (ANIC).

Female

Idiosoma 500-540 μ m long. Cerotegument laterally on AD, PD and OC slightly thickened, forming low ridges but no conspicuous lamellae; ridges on AD parallel (Fig. 5A). Three pairs of thickened hollow setae in membranous cuticle, anterior, medial and posterior to OC respectively; thickened setae shorter than twice the length of seta on AD (Fig. 5A). OC roughly triangular; with two corneae on elevated part of plate and pore slightly posterior; medial half of plate pierced by canaliculi. PD anteriorly and posteriorly truncate. Adanal setae thickened and hollow, on anal cone.



PE with one dorsal seta and three ventral setae. GA with five pairs of pgs anterolaterally and several smaller pgs posterior to GO (Fig. 5D).

Gnathosoma with posterior pair of maxillary setae on gnathosomal base and anterior pair on base of rostrum (Fig. 5B); anterior pair shorter than half the length of posterior pair. Rostrum relatively short, ca. 1.4 times the length of gnathosomal base. Palp segment P-3 with dorsal seta.

Tibiae of all legs distinctly clavate (Fig. 6A, C, E, F), those of legs III and IV slightly longer than telofemora on same leg (Fig. 6E,F). Most segments with untextured lamellae. Chaetotaxy (trochanter-tibia): I 1-2-5-5-12, II 1-2-5-5-9, III 2-2-3-3-7, V 0-2-3-3-7. Tarsus I with one ventral seta and ca. 7-8 pairs of pas (Fig. 6B), tarsus II with pair of doubled pas and a one single pas (Fig. 6D). Minute bidentate median claw present on all tarsi. Paired claws of all legs with accessory process and cluster of ca. 5-6 teeth.

Male

Idiosoma 440-460 μm long (holotype 440); GA with ca. 84-94 pgs, not distinctly arranged in two circles (Fig. 5C); those close to GO shorter than others; five pairs of leaf-shaped sgs.

Etymology: *galatea* [Latin] = a sea nymph.

Remarks

Agaue galatea sp. nov. is similar to *A. chevreuxi* (Trouessart, 1889), *A. panopae* (Lohmann, 1893), and *A. polynesia* Bartsch, 1992, in having an anteriorly and posteriorly truncated PD and distinctly clavate tibiae as well as lacking dorsal idiosomal lamellae.

Agaue galatea differs from *A. polynesia* by lacking setae on trochanter IV and having smooth ventral plates, and from *A. panopae* and *A. chevreuxi* by the thickened cerotegumental ridges on the AD being parallel instead of converging anteriorly. Further characters which may be used to separate *A. chevreuxi* and *A. galatea* are the length of the rostrum and morphology of the dorsal idiosomal setae. In *A. chevreuxi* the rostrum extends beyond the basal whorl of setae on P-4 (Bartsch 1998; Mari and

Figure 4. *Agaue bella* sp. nov., female. (A) leg I, lateral view, (fs) fossary setae. (B) leg II, lateral view. (C) leg III, dorsolateral view. (D) leg IV, lateral view. All to same scale: 100 μm .

Figure 4. *Agaue bella* sp. nov., femelle. (A) patte I, vue latérale, (fs) soies. (B) patte II, vue latérale. (C) patte III, vue dorsolatérale. (D) patte IV, vue latérale. Même échelle : 100 μm .

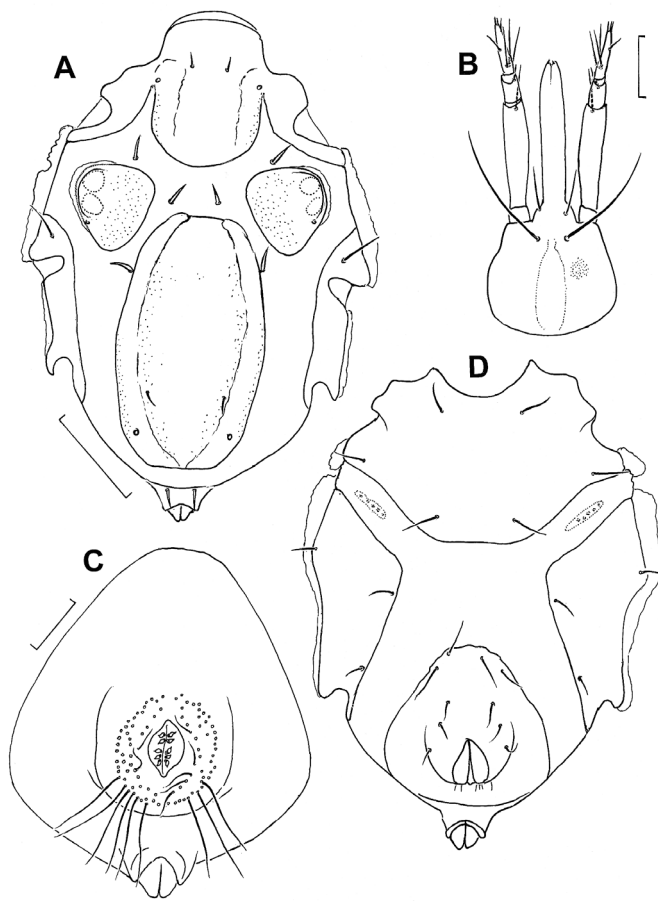


Figure 5. *Agaue galatea* sp. nov., adult. (A) idiosoma of female, dorsal view, scale bar: 100 μ m. (B) gnathosoma, ventral view, scale bar: 25 μ m. (C) genitoanal plate of male, same scale as B. (D) idiosoma of female, ventral view, same scale as A.

Figure 5. *Agaue galatea* sp. nov., adulte. (A) idiosome de la femelle, vue dorsale, échelle : 100 μ m. (B) gnathosome, vue ventrale, échelle : 25 μ m. (C) plaque génitoanale du mâle même échelle que B. (D) idiosome de la femelle, vue ventrale, même échelle que A.

Morselli 1990) and the dorsal idiosomal setae that insert in the membranous cuticle possess a cover of cerotegument (Bartsch 1998). In contrast, the rostrum in *A. galatea* is distinctly shorter and a cover of cerotegument on idiosomal setae is absent.

Agaue reichelti sp. nov. (Figs. 7, 8)

Material

Holotype QM105294, male, Great Barrier Reef Marine Park, Elizabeth Reef, 19°20.12' S 149°02.85' E, 26 December 1997, on *Halimeda* at 15 m. Paratypes: Great Barrier Reef Marine Park: 1 male, Elizabeth Reef, 19°20.12' S 149°02.85' E, 25 December 1997, coral rubble at 10 m (ANIC); 1 female, Club 21 Reef, 19°22.36' S 149°01.05' E,

26 December 1997, coarse sand and rubble at 15 m (ZMH); 1 male QM105295, Myrmidon Reef, 18°16.46' S 147°22.88' E, 13 April 1998, dead coral overgrown with algae, at 3-15 m; 1 male QM105296, Faraday Reef, 18°25.93' S 147°21.11' E, 13 April 1998, coarse sand and rubble at 6-9 m; 1 female, Loadstone Reef, 18°41.91' S 147°06'49E, 12 April 1998, sand and rubble at 2 m (ANIC); 1 male, Bramble Reef, 18°25.70' S 146°40.90' E, 9 April 1998, chunks of rubble at 8 m (ZMH); 1 female QM105297, Loadstone Reef, 18°42.03' S 147°06.54' E, 12 April 1998, coral rubble at 12-15 m; 1 male QM105298, 1 female QM105299, Bramble Reef, 18°26.36' S 146°42.24' E, 9 April 1998, tips of dead coral at 10 m; 1 male QM105300, Phillips Reef, 18°58.49' S 146°36.94' E, 16 April 1998, muddy rubble at 12 m; 1 male QM105301, Myrmidon Reef, 18°15.27' S 147°23.11' E, 14 April 1998, coralline algae on reef wall at 10 m; 1 female QM105302, Bramble Reef, 18°26.36' S, 146°42.24' E, 9 April 1998, coarse sand at 5 m; 1 female QM105303, Bramble Reef, 18°25.25' S 146°40.65' E, 10 April 1998, chunks of coral rubble at 3-6 m; 1 female QM105304, Great Palm Island, channel, 18°40.60' S 146°34.29' E; 8 April 1998, chunks of dead coral at 10 m; 1 female QM105305, data as previous specimen except from dead coral overgrown with algae at 3 m; 1 female QM105306, Lizard Island, Research Point, 15 October 1998, coralline algae with ascidians at 0.5 m; 1 male QM105307, Lizard Island, site "Washing Machine", 14 October 1998, chunky coral rubble at 7 m. Coral Sea: 1 male QM105308, Willis Islet, 15 September 1998, site 2.1.3, slope, ca. 16°10' S 150°00' E, G. A. Diaz-Pulido, coral rubble (fine), 0-10 m.

Female

Idiosoma 528-687 μ m long. All dorsal plates with cerotegumental lamellae (Fig. 7A). Three pairs of hollow thickened setae in striated dorsal integument adjacent to OC. OC with two large closely abutting corneae on a conspicuous swelling; remainder of plate pierced by canaliculi. PD wider in anterior than in posterior half; anterior margin convex; slight constriction about half way along plate. Pair of non-thickened adanal setae in membranous cuticle between PD and anal cone. PE with one dorsal seta, one lateral seta and two ventral setae. AE and PE with clavate lamella posteriorly. GA with ca. 7-9 pairs of pgs; of these only the anterior four pairs clearly visible in all specimens, other pgs often obscured (Fig. 7B).

Rostrum in some specimens protruding laterally (Fig. 7D), in others without such protrusions; both pairs of maxillary setae on base of rostrum, the anterior less than 1/3 the length of the other; rostral sulcus extending beyond half of rostrum. P-3 without seta.

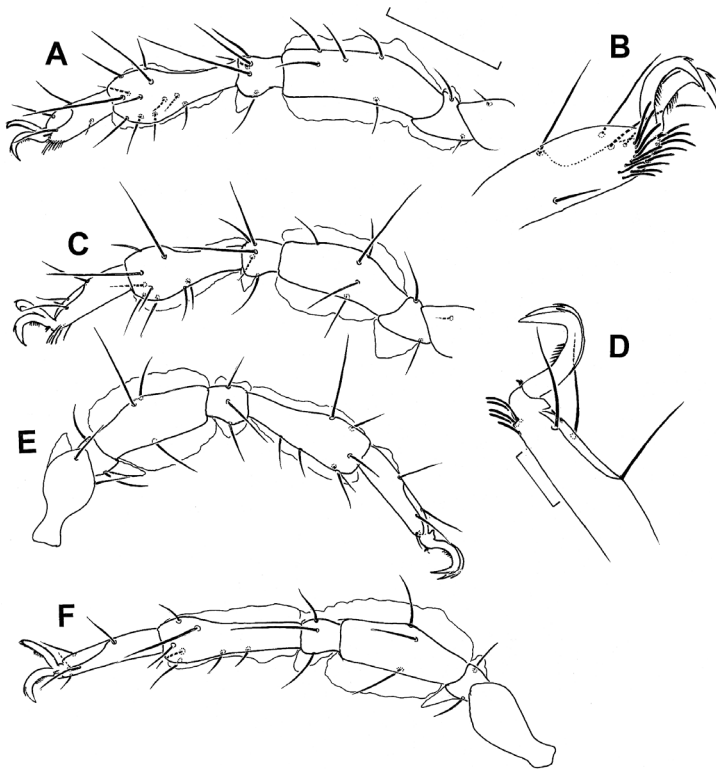


Figure 6. *Agaue galatea* sp. nov., adult. (A) leg I, dorsolateral view. (B) tarsus I, mediolateral view, scale bar: 25 µm. (C) leg II, lateral view. (D) tarsus II, lateral view, same scale as B. (E) leg III, lateral view. (F) leg IV, dorsolateral view. A, C, E, F to same scale: 100 µm.

Figure 6. *Agaue galatea* sp. nov., adulte. (A) patte I, vue dorsolatérale. (B) tarse I, vue médiolatérale, échelle : 25 µm. (C) patte II, vue latérale. (D) tarse II, vue latérale, même échelle que B. (E) patte III, vue latérale. (F) patte IV, vue dorsolatérale. A, C, E, F même échelle : 100 µm.



Legs with large cerotegumental lamellae on trochanters, basifemora, telofemora and genua and to lesser extent on tibiae; lamellae structured as indicated in Fig. 8. Tibiae distinctly clavate. Chaetotaxy (trochanter-tibiae): I 1-2-5-5-10, II 1-2-5-4-9, III 2-2-3/4-3-7, IV 0-2-3-3-7. Tarsus I with one ventral seta and ca. 11 pairs of single pas, tarsus II with pair of doubled pas and one single pas. Claw fossae of legs III and IV not extending to proximal fossary seta. Empodial claw absent on all tarsi; paired claws of all tarsi with pecten and accessory process.

Male

Idiosoma 460-592 µm long. GA with ca. 40-59 branched pgs. GO on a sharply demarcated protrusion of the GA. Genital sclerites with five pairs of short thickened sgs.

Etymology: this species is named in honour of Dr. Russell Reichelt, presently director of the Australian Institute of Marine Science, who gave his support for this project being carried out at the Institute.

Remarks

Among the species with conspicuous dorsal lamellae (see remarks on *A. aliena* sp. nov) *Agaue*

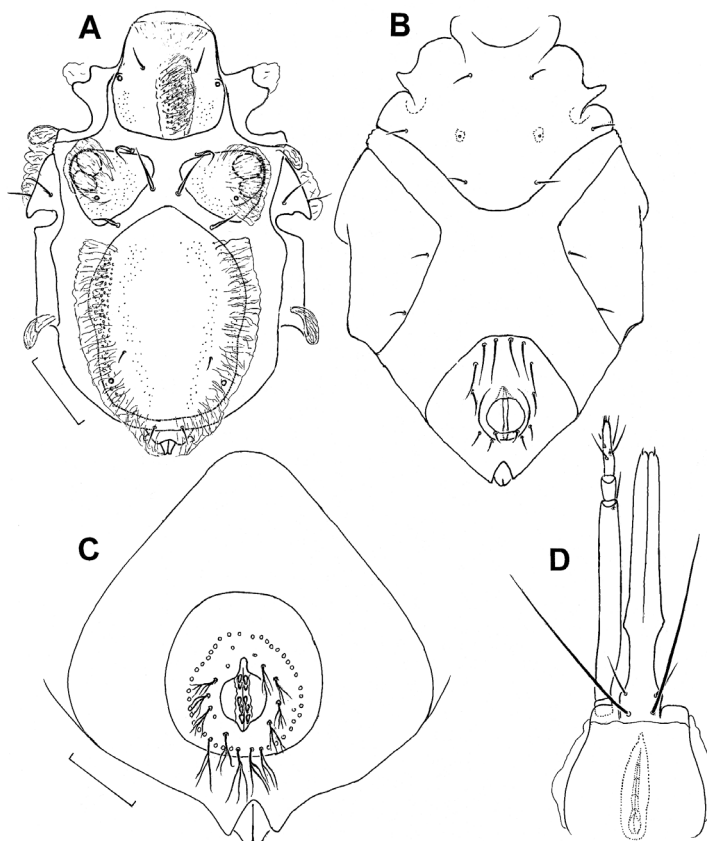
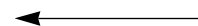


Figure 7. *Agaue reichelti* sp. nov., adult. (A) idiosoma of male, dorsal view, scale bar: 100 µm. (B) idiosoma of female, ventral view, same scale as A. (C) genitoanal plate of male, scale bar: 50 µm. (D) gnathosoma, ventral view, same scale as C.

Figure 7. *Agaue reichelti* sp. nov., adulte. (A) idiosome du mâle, vue dorsale, échelle : 100 µm. (B) idiosome de la femelle, vue ventrale, même échelle que A. (C) plaque génitoanale du mâle, échelle : 50 µm. (D) gnathosome, vue ventrale, même échelle que C.



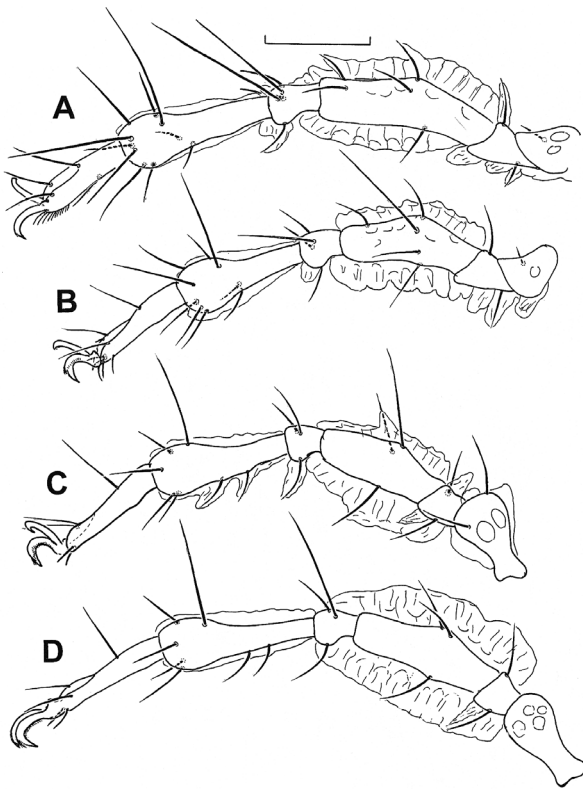


Figure 8. *Agaue reichelti* sp. nov., adult. (A) leg I, lateral view. (B) leg II, lateral view. (C) leg III, lateral view. (D) leg IV, lateral view. All to same scale : 100 μ m.

Figure 8. *Agaue reichelti* sp. nov., adulte. (A) patte I, vue latérale. (B) patte II, vue latérale. (C) patte III, vue latérale. (D) patte IV, vue latérale. Même échelle : 100 μ m.

reichelti sp. nov. is similar to *Agaue nationalis* and *A. arubaensis* in lacking a seta on P-3. *Agaue reichelti* differs from *A. nationalis* by having the setae on the AD separated by a distance equivalent to at least half the width of the AD at the same level. In *A. nationalis* the setae on the AD are inserted much closer together, separated only by a distance of about 1/4 of the width of the AD at the same level (Lohmann 1893). A further differences between *A. reichelti* and *A. nationalis* exists in the dimensions of the female GA, which in *A. reichelti* is slightly wider than long, whereas in *A. nationalis*, according to Lohmann's (1893) illustration, it is clearly longer than wide.

Agaue reichelti can be distinguished from *A. arubaensis* by having only one pair of setae inserted on the PD and having pectines on the paired claws over their entire length.

Comments

The only *Agaue* species previously described from tropical regions of the world are *A. hypertrophicus* Lohmann, 1893,

and *A. thalei* Lohmann, 1893, both from Zanzibar, *A. arubaensis* from the Caribbean, *A. nationalis* from Brazil and the Caribbean, *A. panopae* from Brazil and the Cape Verde Islands, and *A. polynesia* from French Polynesia. The newly described species thus are the first *Agaue* species described from the Australian tropics and increase the total number of *Agaue* species known from tropical regions to ten.

Six species of *Agaue* have been previously described from Australia, *A. chevreuxi*, *A. hispida* Lohmann, 1893 and *A. panopae*, all from Sydney (see Lohmann, 1893), and *A. brevipes* Bartsch, *A. circellaris* Bartsch, and *A. tenuipes* Bartsch from Rottneest Island (Bartsch, 1999). The correctness of Lohmann's identification of *A. chevreuxi* is doubtful as the type locality of this species is the northern Atlantic and such a wide distribution is unlikely for any halacarid species (Bartsch, 1998). Lohmann's specimens show strong similarities to *A. galatea* sp. nov. and it could be argued that these may perhaps be conspecific. However, the narrower posterior dorsal plate and the presence of only a short comb of teeth on the paired claws in *A. galatea* are inconsistent with Lohmann's description. Lohmann's specimens therefore most likely belong to an undescribed species. Thus, ten species of *Agaue* are now described from Australian waters.

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