Bull. Natn. Sci. Mus., Tokyo, Ser. A, **30**(3), pp. 147–154, September 22, 2004

Revision of the Genus *Amarygmus* Dalman, 1823 and Related Genera. Part XXVI. The *Amarygmus* Species (Insecta, Coleoptera, Tenebrionidae, Amarygmini) of the Palau Islands (West Caroline Islands) Collected by K. Takahashi

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Abstract On the Palau Islands (West Caroline Islands), the following species of the genus *Amarygmus* Dalman, 1823 occur: *Amarygmus hydrophiloides* Fairmaire, 1849, *A. iris* Kulzer, 1957, and *A. palauensis* sp. nov. *Amarygmus palauensis* sp. nov. is described and illustrated. Figures of *A. hydrophiloides* Fairmaire and of *A. iris* Kulzer are provided.

Key words: Coleoptera, Tenebrionidae, Amarygmini, *Amarygmus*, new species, Palau Islands.

Introduction

Tenebrionid species of the genus *Amarygmus* Dalman, 1823 have their main centres of distribution in New Guinea as well as the Peninsular Malaysia and the Great Sunda Islands. I presume that around 600 different species occur in these two areas. Towards the periphery the number of extant species decreases. Our knowledge about the species of *Amarygmus* on the islands of the Pacific Ocean is limited. Fairmaire described two species, *Amarygmus hydrophiloides* Fairmaire, 1849 and *Amarygmus decipiens* (Fairmaire, 1881) from the Fiji Islands and another species, *Amarygmus orientalis* Fairmaire, 1883, from the New Britains. Haag-Rutenberg (1879) published on one species from Samoa, *Amarygmus samoensis* Haag-Rutenberg, 1879, which in my opinion is either a synonym of *A. hydrophiloides* Fairmaire or a very close taxon. In three papers Kaszab dealt with the Tenebrionidae of the Fiji Islands and of Samoa, among which he described several *Amarygmus* species (Kaszab, 1955 a, b and 1985). Besides *Amarygmus morio* (Fabricius, 1775), *A. hydrophiloides* Fairmaire, 1849 and *A. decipiens* (Fairmaire, 1881), Kaszab described from the Fiji Islands *A. cuprifulgens* (Kaszab, 1955a), *A. fijianus* (Kaszab, 1985), *A. fulgidus* (Kaszab, 1955a), *A. gracilis* (Kaszab, 1955a), *A. gyorffyi* (Kaszab, 1955a), *A. korovulii* (Kaszab, 1985), *A. kuscheli* (Kaszab, 1985), *A. lucidus* (Kaszab, 1955a), *A. micros* (Kaszab, 1955a), *A. kochi* (Kaszab, 1955a) [=*A. pacificus* Bremer, 2001a; nom. nov.], *A. nandarivatui* (Kaszab, 1985), *A. ovalauensis* (Kaszab, 1955a), and *A. simillimus* (Kaszab, 1955a). Most of these species including *A. decipiens* (Fairmaire, 1881) are endemic to Fiji. *Amagrymus morio* (Fabricius, 1775) is distributed from Fiji through Australia and New Guinea to Buru (the Moluccas). *Amarygmus hydrophiloides* Fairmaire, 1849 has a very wide range of distribution, occurring on Samoa, Fiji, the Truk Islands, the Islands of the Bismarck Archipelago, the Solomon Islands (Kaszab, 1980), New Guinea, and on the islands of the Moluccas up to Morotai (Bremer, 2002). Records from New Zealand (described as *Amarygmus zelandicus* Bates, 1874) and from Madagascar (described as *Amarygmus tarsatus* Fairmaire, 1902) might have been based either on wrongly labelled specimens or only on short introductions. Since then these species have not been found there. The occurrence of *A. hydrophiloides* on the Truk Islands has been mentioned by Kaszab in his monograph of the Tenebrionidae from the Fiji Islands (Kaszab, 1955a). Kulzer in his monograph on the Tenebrionidae of Micronesia described *Amarygmus iris* Kulzer,

1957 from Babelthuap (Babeldaob) Island, the Palau Islands.

The collecting activity of Dr. K. Takahashi of the Tenebrionidae of the Palau Islands on which the first paper has already been published (Masumoto, 2003) gives us an opportunity to deal more closely with the *Amarygmus* species of these islands. The material described here was submitted to me by Prof. Dr. Kimio Masumoto, Tokyo, to whom I am much indebted.

Abbreviations

NSMT=Collection of the National Science Museum (Nat. Hist.), Tokyo, through Prof. Dr. K. Masumoto, Tokyo; ZSM-B=Zoologische Staatssammlung München, former collection of the author; m.=male; f.=female.

Morphometry

Length corresponds to distance between the middle of frontal edge of prothorax and apices of elytra, width to maximum width across elytra, length of elytra to distance between base of scutellum and apices of elytra, length of prothorax to distance between the middle of their anterior and posterior edges, respectively.

Amarygmus hydrophiloides Fairmaire, 1849

(Fig. 1A–G)

Amarygmus hydrophiloides Fairmaire, 1849, 450.
Amarygmus zelandicus Bates, 1874, 112; [syn.]: Bremer, 2001 b, 85.
Amarygmus tarsatus Fairmaire, 1902, 337; [syn.]: Ardoin, 1967, 1619.
Amarygmus cyaneus Pic, 1915, 24; [syn.]: Bremer, 2001 b, 85.
Platolenes hydrophiloides: Gebien, 1943, 926; [stat. restitut.] Bremer, 2001 a, 57.
Platolenes bradleyi Buck, 1958, 117; [syn.]: Kaszab, 1980, 47.

Notes. This species is characterized by oblong-ovate shape, striae on its elytra, deeply impressed fronto-clypeal suture, and sexual dimorphism (broadening of the apical halves of the inner aspects of meso- and metatibiae as shown in Fig. 1, slight enlargement of the protarsomeres 1 to 3, a hairy metasternum in males). The usual colour of the upper side, and mostly found in specimens from New Guinea and the Moluccas, is blue, but the prothorax and elytra may show different colours (violet prothorax and blue elytra or vice versa); sometimes the colour of the upper side may also be darker and tends to be gray-brown (especially found in the syntypes of *A. samoensis* Haag-Runtenberg, 1879) or a greenish colour of the prothorax as in specimens from Merir Island and Pula Anna Island of the West Caroline Islands (but also in specimens I saw from the New Hebrides). Convexity of the prothorax may also be differently expressed (more markedly convex in specimens from New Guinea and the Moluccas). I presume that there are some variations with respect to geographical origin but I have been unable to establish different subspecies as yet. I checked three syntypes of *Amarygmus samoensis* Haag-Rutenberg, 1879, deposited in ZSM, and found them, despite a somewhat darker colour, in all aspects including aedoeagus and sexual dimorphisms identical with *Amarygmus hydrophiloides* Fairmaire, 1849. According to Kaszab (1955 a) *A. samoensis* is broader than *A. hydrophiloides*. Before I could form a final opinion about a synonymy of *A. samoensis* with *A. hydrophiloides*, I need to examine more specimens from the islands of the Pacific with the darker colour like that of *A. samoensis*.

Measurements. Length: 5.60–7.27 mm. Width: 3.35–4.70 mm. Ratios. Prothorax: width/length 1.72–1.78; width hind angles/width anterior angles 1.63–1.74. Elytra: length/width 1.51–1.57; length elytra/length prothorax 3.22–3.50; maximum width elytra/maximum width prothorax 1.21–1.27.

Material. Babeldaop (Babelthuap) Island, 7°30′N-134°36′E; Palau Islands, W. Caroline, 7-III-2002, K. Takahashi leg. (4 exs., m., 2 exs., f., NSMT)—ditto, but 11-II-2002 (1 ex., m., NSMT)—ditto, but 3-II-2002 (1 ex., m., 1 ex., f., ZSM-B)—ditto, but 16-XI-2002 (1 ex., m., 1 ex.,

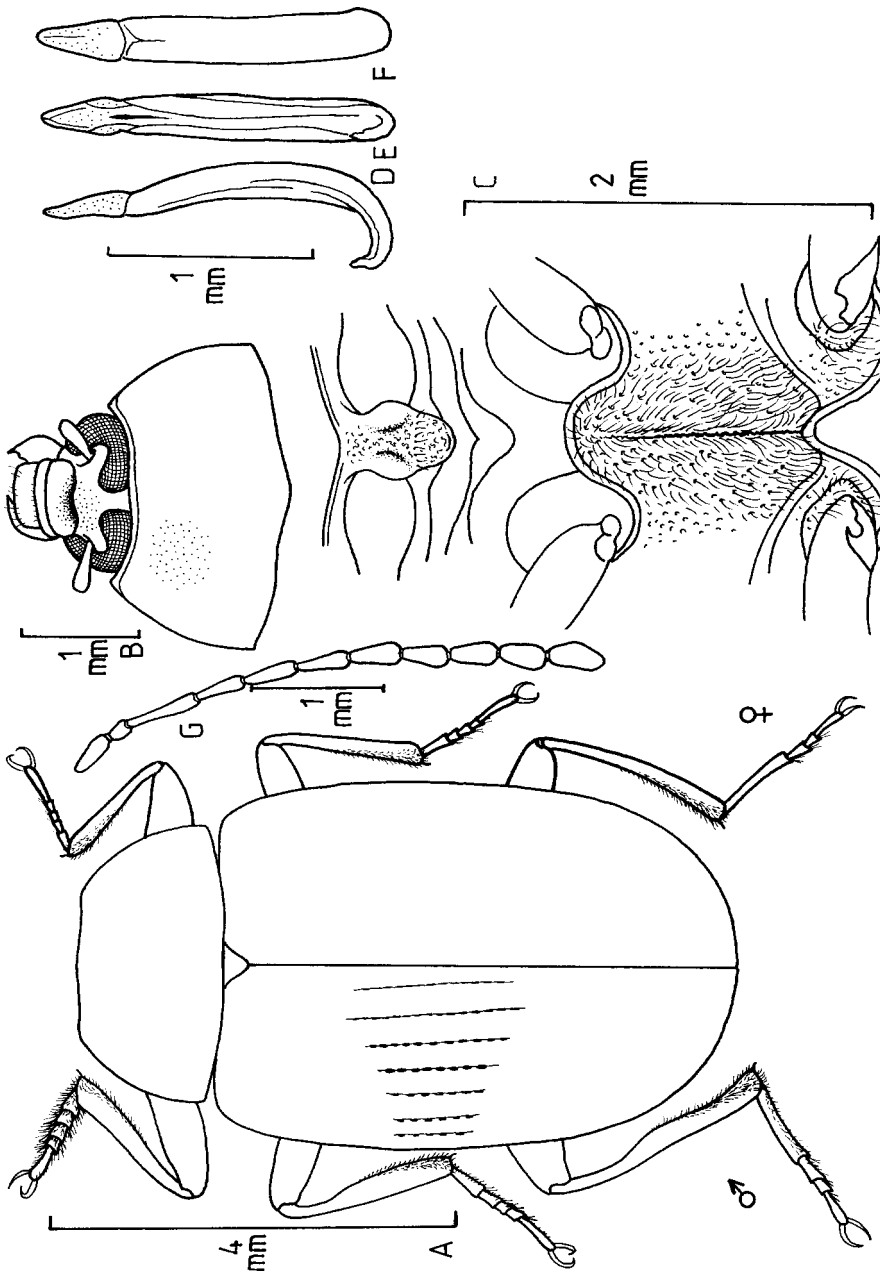

Fig. 1. *Amarygmus hydrophiloides* Fairmaire: A, habitus, left side legs of the male, right side legs of the female; B, head and prothorax; C, prosternal process, mesosternum and metasternum of the male; D, aedoeagus lateral; E, aedoeagus ventral; F, aedoeagus dorsal; G, antenna.

f., NSMT) - ditto, but 4-III-2003 (1 ex., m., 1 ex., f., NSMT) - Merir Is., Palau, W. Caroline, 24-XII-2002, K. Takahashi leg. (1 ex., m., 1 ex., f., NSMT) - Pulo Anna Is., Palau, W. Caroline, 29-XII-2002, K. Takahashi leg. (1 ex., f., NSMT).

Amarygmus iris Kulzer, 1957

(Fig. 2A–J)

Amarygmus iris Kulzer, 1957, 256.

Notes. The original description of *Amarygmus iris* Kulzer was cited in a preceding paper (Bremer, 2001 c, p. 228). The occurrence of this species on Babelthuap was already noticed by Kulzer, 1957. It is a very characteristic species by its sexual dimorphism (a hairy spot at the front side of the profemora in males). There is only one close relative of *A. iris*, *Amarygmus wiedemanni* Bremer, 2004 from Sulawesi, also with this hairy spot on the profemora, and with a body shape very alike *A. iris*. *Amarygmus wiedemanni* is somewhat longer than *A. iris* (7.4–8.6 mm), the fronto-clypeal suture is less markedly incised, and the punctures of the striae of elytra are more distant from one another than in *A. iris*. Kulzer did not illustrate *A. iris*; therefore, this species is figured in this paper.

Measurements. Length: 6.05–6.85 mm. Width: 3.30–3.74 mm. Ratios. Prothorax: width/length 1.75–1.89; width hind angles/width anterior angles 1.54–1.67. Elytra: length/width 1.44–1.51; length elytra/length prothorax 3.44–3.68; maximum width elytra/maximum width prothorax 1.31–1.37.

Material. Babeldaop (Babelthuap) Island, Palau, W. Caroline; 9-I-2001, K. Takahashi leg. (1 ex., f., NSMT)—ditto, but 11-II-2002 (1 ex., f., NSMT)—ditto, but 20-VI-2002 (1 ex., m., ZSM-B)—ditto, but 18-VII-2002 (1 ex., m., NSMT)—ditto, but 13-X-2002 (1 ex., m., NSMT, 1 ex., m., ZSM-B, 2 exs., f., NSMT, 1 ex., f., ZSM-B,)—Babeldaop, Palau, 26-I-2003, K. Takahashi leg. (1 ex., m., NSMT)—ditto, but 4-III-2003 (1 ex., m., 1 ex., f., NSMT)—Peleliu Is. [7°01′N-134°15′E], Palau, W. Caroline, 27-VII-2002, K. Takahashi leg. (1 ex., f., NSMT)—ditto, but 18-I-2003 (1 ex., f., NSMT)—ditto, but 14-VIII-2003 (2 exs., m., 4 exs., f., NSMT)—Carp Is., Palau, 13-III-2003, K. Takahashi leg. (1 ex., f., NSMT)—Angaur Is. [6°54′N-134°09′E], Palau, 16-VIII-2003, K. Takahashi leg. (2 exs., m., NSMT).

Amarygmus palauensis sp. nov.

(Fig. 3A–H)

Holotype; ♂, NSMT: Babeldaop (Babelthuap) Island, 7°30′N-134°36′E]; Palau; W. Caroline; 5-I-2002, K. Takahashi leg.

Paratypes: ditto (1 ex., m., 1 ex., f., NSMT)—ditto, but 24-XII-2001 (1 ex., m., NSMT)—ditto, but 1-IV-2002 (1 ex., m., NSMT)—ditto, but 27-IV-2002 (1 ex., m., 2 exs., f. NSMT)—ditto, but 7-VI-2002 (1 ex., m., 1 ex., f., NSMT)—ditto, but 20-VI-2002 (1 ex., f., NSMT)—ditto, but 18-VII-2002 (1 ex., m., 1 ex., f., NSMT)—ditto, but 5-IX-2002 (1 ex., f., NSMT)—ditto, 23-III-2003 (1 ex., f., ZSM-B)—ditto, 21-V-2003 (1 ex., m., ZSM-B)—ditto, 18-VI-2003 (1 ex., m., ZSM-B).

Diagnosis. Small, elongate-ovate, elytra with moderately impressed striae, strial punctures relatively small. There is a contrast of the pale, ferruginous legs and the black to dark brown luster of the side beneath; small areas of hairs missing at the frontal aspects of the profemora in males (they are present in the larger *Amarygmus iris* Kulzer, 1957). The closest relatives of *A. palauensis* sp. nov. are some species described from the Fiji Islands by Kaszab, 1955a and 1985, which are of similar size and shape: *A. korovulii* (Kaszab, 1985) has a narrower frons than *A. palauensis*, and its legs are not really pale as in *A. palauensis*; *A. micros* (Kaszab, 1955a) possesses rows of punctures on its elytra and no striae, additionally its frons is broader than in *A. palauensis*; *A. pacificus* Bremer, 2001a [=*Platolenes kochi* Kaszab, 1955a; homonym] has, alike *A. palauensis*, pale legs, and the colour of the legs is contrasting with the body colour beneath, but the length of the 1st metatarsomere of *A. pacificus* are essentially longer than that of the rest of the metatarsomeres (in *A. palauensis* not

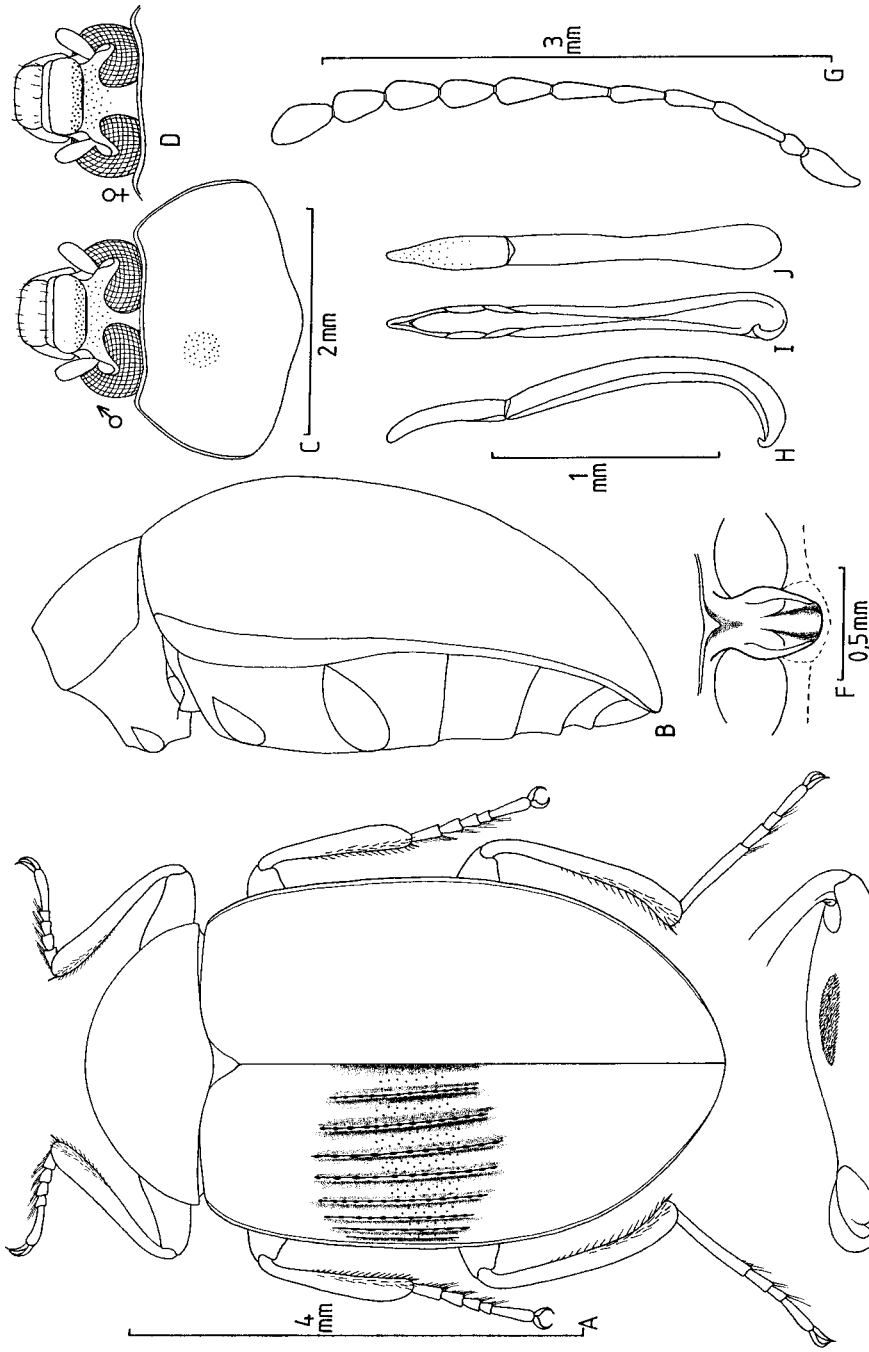

Fig. 2. *Amarygmus iris* Kulzer: A, habitus; B, body, lateral; C, head and prothorax, m.; D, head, f.; E, profemur, frontal aspect, m.; F, prosternal apophysis; G, antenna; H, aedoeagus lateral; I, aedoeagus ventral; J, aedoeagus dorsal.

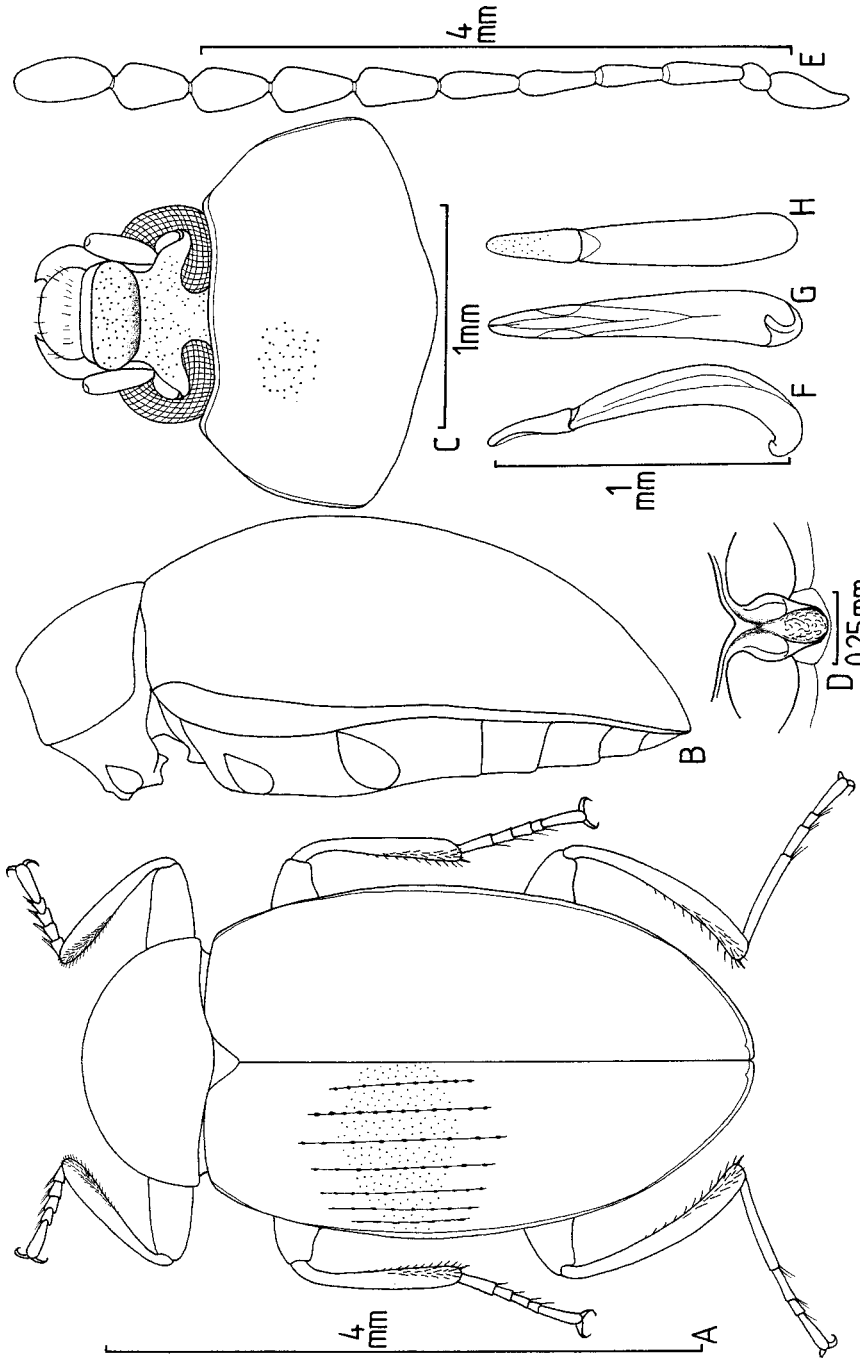

Fig. 3. *Amarygmus palauensis* sp. nov.: A, habitus; B, body lateral; C, head and prothorax; D, prosternal process; E, antenna; F, aedoeagus lateral; G, aedoeagus ventral; H, aedoeagus dorsal.

longer than the rest of metatarsomeres), and its protarsomeres 1–3 are enlarged in males (not enlarged in *palauensis*), the underside of *A. pacificus* is not lustrous (lustrous in *A. palauensis*); *A. simillimus* Kaszab, 1955a elicits rows of punctures on its elytra and no striae.

Description. Measurements. Length: 4.29–4.71 mm. Width: 2.26–2.59 mm. Ratios. Prothorax: width/length 1.72–1.83; width hind angles/width anterior angles 1.58–1.70. Elytra: length/width 1.55–1.57; length elytra/length prothorax 3.61–3.79; maximum width elytra/maximum width prothorax 1.32–1.36.

Colour. Upper surface copper-coloured, concolorous, lustrous; legs pale ferruginous, antennomeres 1–6 light brown, 7–11 dark brown to black; underside dark brown to black, forming a contrast to the light pale ferruginous femora.

Head. Eyes very large. Frontal space between eyes moderately wide, width corresponding to the length of the 3rd antennomere. Genae short, slightly convergent forwards and neligibly raised. Fronto-clypeal suture fine, shallow and either transversely very short, not visible laterally or visible as fine line to the lateral edges of the head. Clypeus apically produced, weakly convex. Punctures on clypeus and frons fine, not very dense, partly evanescent. Mentum dilated forwards, transversely convex, lustrous, with sides broadly flat. Underside of neck black, shiny, with isodiametric microsculpture and with only very few small punctures. Mandibles apically bifid.

Prothorax. Not very broad, transversely convex but less convex longitudinally. Sides convergent apically. Anterior angles not prominent. Frontal edge straight. Sides and frontal edge continuously bordered. In dorsal view the borders of the sides are visible but narrow. In lateral view the anterior and posterior angles obtuse. Surface only laterally with isodiametric microsculpture, and on whole surface with small, somewhat elongate punctures, distances between them ranging from 1 to 3 times their diameters.

Scutellum. Triangular. Without punctures.

Elytra. With weak isodiametric microsculpture. Oblong-ovate. Markedly convex transversely, longitudinally somewhat less convex, with the maximum of height shortly before middle. Shoulders slightly produced. In dorsal view lateral edges except shoulders continuously and narrowly visible, somewhat broader at the apex. Continuous, somewhat impressed striae with small round to oblong punctures present on the surface, having distances between them about twice their diameters, within the 4th stria there are approximately 33 punctures. Intervals laterally slightly convex, with minute but well distinguished punctures.

Prosternum. Continuously reflexed at anterior edge, somewhat produced backwards at the middle. Prosternal process covered with isodiametric microsculpture and evanescent punctures, outwardly produced aside procoxae, where it is strongly raised ventrad, bordering a deep middle groove, horizontally expanded behind procoxae, with apex rounded.

Mesosternum. Frontal edge of the hind part roundly excavated at the middle.

Metasternum. Disc slightly convex, sparsely and minutely punctured, with short, thin hairs in both sexes. Median suture not impressed.

Abdominal sternites. Sparsely and minutely punctured. Sternite 5 without sexual dimorphism.

Antennae. Long, bent backwards reaching the middle of elytra, and of the same length in both sexes. Ratios of length/width of antennomeres 1 to 11: 14 : 51/2 / 5 : 4 / 12 : 4 / 10 : 4 / 12 : 4 / 14 : 41/2 / 15 : 7 / 13 : 7 / 13 : 7 / 12 : 7 / 17 : 7.

Legs. Relatively short. Femora gradually broadened near middle and becoming narrower towards apex. Protibiae straight in external aspect; mesotibiae in their external aspect straight, in inner aspect in males slightly broadened in apical three-fifths; metatibiae moderately curved. Lengths of protarsomeres 1–5:— 5 : 5 : 5 : 4.5 : 14, of mesotarsomeres:— 14 : 6 : 5 : 4 : 15, of metatarsomeres 1–4:— 29 : 10 : 6 : 15, respectively.

Etymology. The specific name *palauensis* is derived from the “Palau” Islands.

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