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Description of new Braconidae (Hymenoptera) from Papua New Guinea*

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Abstract

Several new taxa collected in Papua New Guinea are described as new and partially illustrated : *Pedinopleura christinae* sp. n. (Braconinae), *Chelonus (Areselonus) missai* sp. n. and *C. (A.) minutissima* sp. n. (Cheloninae). Another species of *Pedinopleura*, near *P. christinae* sp. n., is also illustrated. *P. australiensis* is recorded for the first time for the country. The subgenus *Areselonus* subgen. n. is established to group the species of *Chelonus* that share the presence of a dorso-apical spine on the carapace. Three identification keys to the new taxa are given.

Keywords : Braconinae, Cheloninae, *Areselonus*, *Pedinopleura*, *Chelonus*.

Résumé

Plusieurs nouveaux taxons récoltés en Papouasie Nouvelle Guinée sont reconnus, décrits et, au moins, partiellement illustrés. *Pedinopleura christinae* sp. n. (Braconinae) est ici décrite tandis que *P. australiensis* est signalé pour la première fois de la région. Une autre espèce de *Pedinopleura*, proche de *P. christinae* sp. n., est également illustrée. Le sous-genre *Areselonus* subgen. n. est créé pour regrouper les espèces de *Chelonus* possédant une excroissance dorso-apicale en forme d'épine sur l'abdomen. Deux espèces nouvelles de Papouasie Nouvelle Guinée, *Chelonus (Areselonus) missai* sp. n. and *C. (A.) minutissima* sp. n., sont décrites et partiellement illustrées. Trois clés d'identification pour les nouveaux taxons sont proposées.

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Introduction

From the material collected during several missions of the "Institut royal des Sciences naturelles de Belgique" (IRSNB) in Papua New Guinea, i.e. GROOTAERT mission (1982-1983) and Canopy mission (1993-1996), we reported several new taxa which have different aberrant characters.

These new species have been collected by fogging of several specimens of *Pometia pinnata* (Sapindaceae) (= FOG T on labels), *Chisocheton ceramicus* (Meliaceae) (= FOG XN on label) or with a Malaise trap. Their hosts are unknown.

Systematic account

For identification of the Braconidae subfamilies, see VAN ACHTERBERG (1990, 1993) and for terminology used in this paper, see VAN ACHTERBERG (1988, 1994a). The new taxa are described below according to the subfamilies.

All type specimens are deposed in the collections of IRSNB.

Notes and descriptions about the taxa

Subfamily Braconinae

For the identification of the genera in the Braconinae and *Pedinopleura* species see QUICKE (1987), QUICKE & INGRAM (1993) and VAN ACHTERBERG (1984), respectively.

Pedinopleura VAN ACHTERBERG, 1984

Type-species : *Pedinopleura emarginata* VAN ACHTERBERG, 1984. VAN ACHTERBERG, 1984 : 149; QUICKE & INGRAM, 1993 : 319.

Key to the species of *Pedinopleura* VAN ACHTERBERG

1 Lateral lamella of tergites 1-3 wide and emarginate near level of 2nd metasomal spiracle (Figs 1, 3); anterior depressions of tergites 4-6 not crenulate; face finely punctuate; lateral aspect of scapus partly black 2

- Lateral lamella of tergites 1-3 not emarginate (Fig. 21); anterior depressions of tergites 4-6 distinctly crenulate; face distinctly transversely striate-rugulose; scapus variable 3

2 Hind coxa with one blunt blister dorsally (Figs 3, 5); apical border of tergites 3-6 with a few weak tubercules; anterior depressions of tergites 4-6 rather coriaceous; 6th tergite of female not emarginated. Papua New Guinea . ..... ***P. christinae*** sp. n.

- Hind coxa without any blister dorsally; apical border of tergites 3-6 without tubercules; anterior depressions of tergites 4-6 largely smooth; 6th tergite of female widely emarginated. Irian Jaya .....
..... ***P. emarginata*** VAN ACHTERBERG, 1984

3 Lateral lamella of tergites 1-3 strongly expanded near level of the 3rd spiracle; tergites 3-5 brownish yellow; scapus with only a black stripe black on outer side; 6th tergite of female very weakly emarginate (Fig. 22). Papua New Guinea ..... ***P. australiensis*** QUICKE & INGRAM, 1993

- Lateral lamella of tergites 1-3 narrow and straight; tergites 3-5 with black spots on either side; scapus and pedicellus completely black; 6th tergite of female more acutely incised. Taiwan .....
..... ***P. koshunensis*** (WATANABE, 1934)

Pedinopleura christinae sp. n.
(Figs 1-2, 5)

Material examined : Holotype, ♀ (IRSNB) : "Canopy mission, FOG T 4, 6.IV.1993" "Papua New Guinea, Madang : Baiteta, 5°1'0"S 145°45'0"E, leg. O. Missa".

Etymology : From the girl name.

Holotype, ♀, body length 6 mm, fore wing 5 mm.

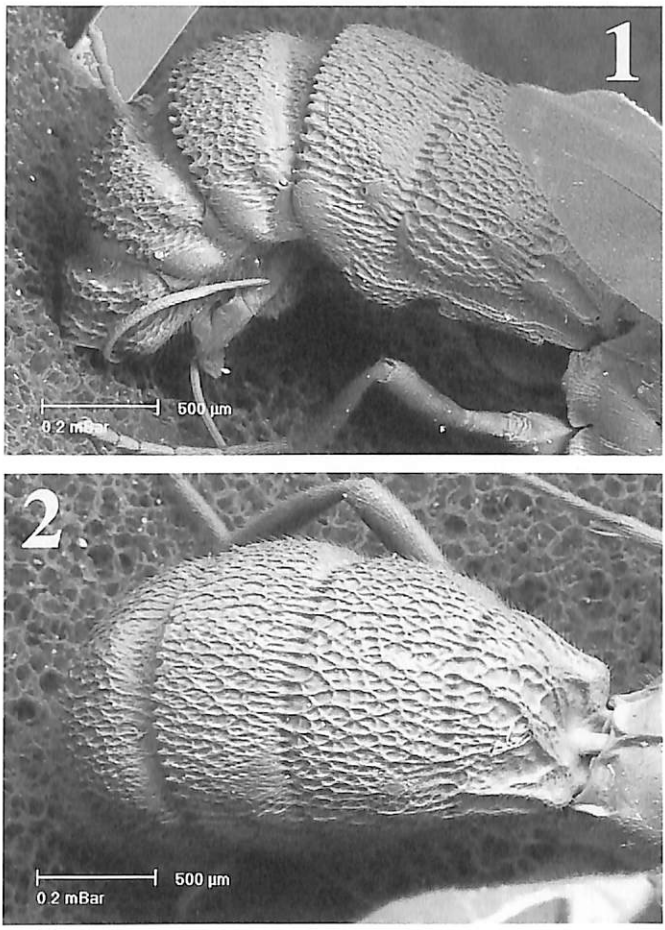
Head. Antennal segments 48, length of 3rd segment 1.25 times 4th segment, length of 3rd, 4th and apical segments 2.27, 1.8 and 2.2 times their width, respectively; length of maxillary palp 0.9 times height of head; length of eye in dorsal view 2.75 times temple; POL : diameter of ocellus (OD) : OOL = 5 : 3 : 1.5; face, frons and vertex punctulate; length of malar space equal two times basal width of mandible; temples coriaceous.

Mesosoma. Length of mesosoma 1.36 times its height; mesopleuron finely punctulate anteriorly and glabrous except ventro-posteriorly; metapleural flange small and obtuse; mesoscutum and scutellum finely and sparsely punctulate; surface of propodeum smooth, with two latero-longitudinal carinae present posteriorly.

Wings. Similar to *P. emarginata* except for the following characters. Fore wing : r : 3-SR : SR1 = 6 : 9 : 32; angle between 1-SR and C+SC+R around 45°; 2-SR : 3-SR : r-m = 8 : 9 : 10; m-cu converging to 1-M posteriorly.

Legs. Hind coxa smooth with a dorsal blunt spine (Fig. 5); femur, tibia and basitarsus of hind leg 4.16, 7.5 and 6.5 times their width, respectively; length of hind spurs 0.38 and 0.3 times hind basitarsus.

Metasoma (Figs 1-2). Length of joined tergites 1-3 1.2 times their apical width, their surface granulous and dorsal carina present basally; dorsal carina



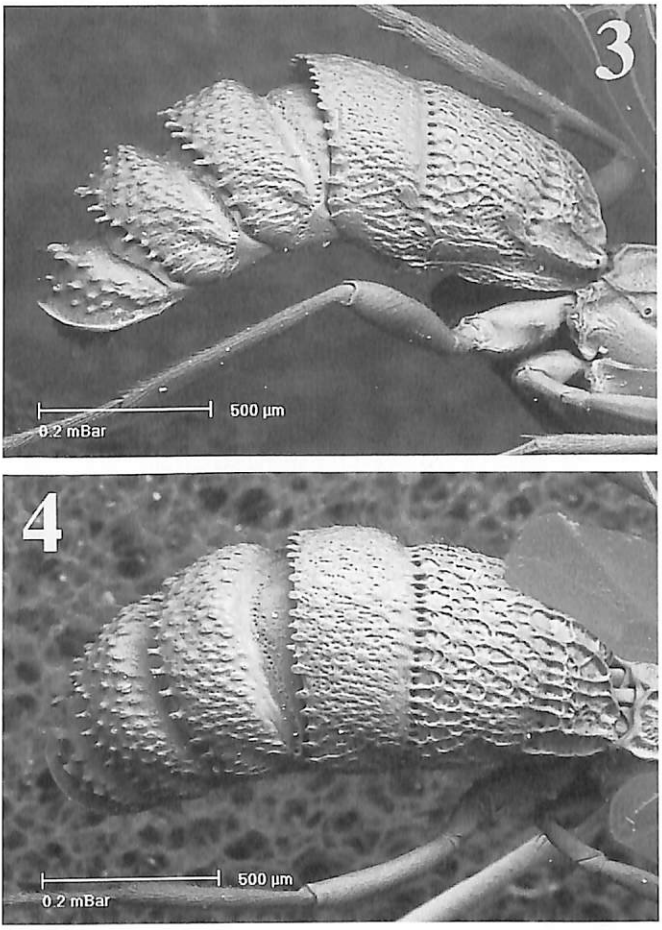
Figs 1-2. *Pedinopleura christinae* sp. n., holotype, ♀. Metasoma lateral (1) and dorsal (2) view.

delimiting a medio longitudinal groove on the 2nd tergite; lateral margin of tergites 1-3 very wide - especially near the 3rd tergite - and emarginate near the 2nd suture; tergites 4-6 deeply impressed and largely coriaceous basally; apical border of tergites 3-5 with tubercules; tergites 2-6 coarsely reticulate-rugose; 6th tergite not emarginate apically with a smooth posterior border; length of ovipositor sheath 0.3 times fore wing.

Colour. Yellowish-brown; 3rd-5th tergites with pale infuscate spot on each side; pterostigma yellowish; antenna yellow-brownish; outer stripe on scapus, ovipositor sheath, blackish; hind tarsus largely infuscated; parastigma and veins brown; wing membrane weakly infuscate.

Distribution. Papua New Guinea.

Host. Unknown.



Figs 3-4. *Pedinopleura* sp. near *christinae*, ♂. Metasoma lateral (3) and dorsal (4) view.

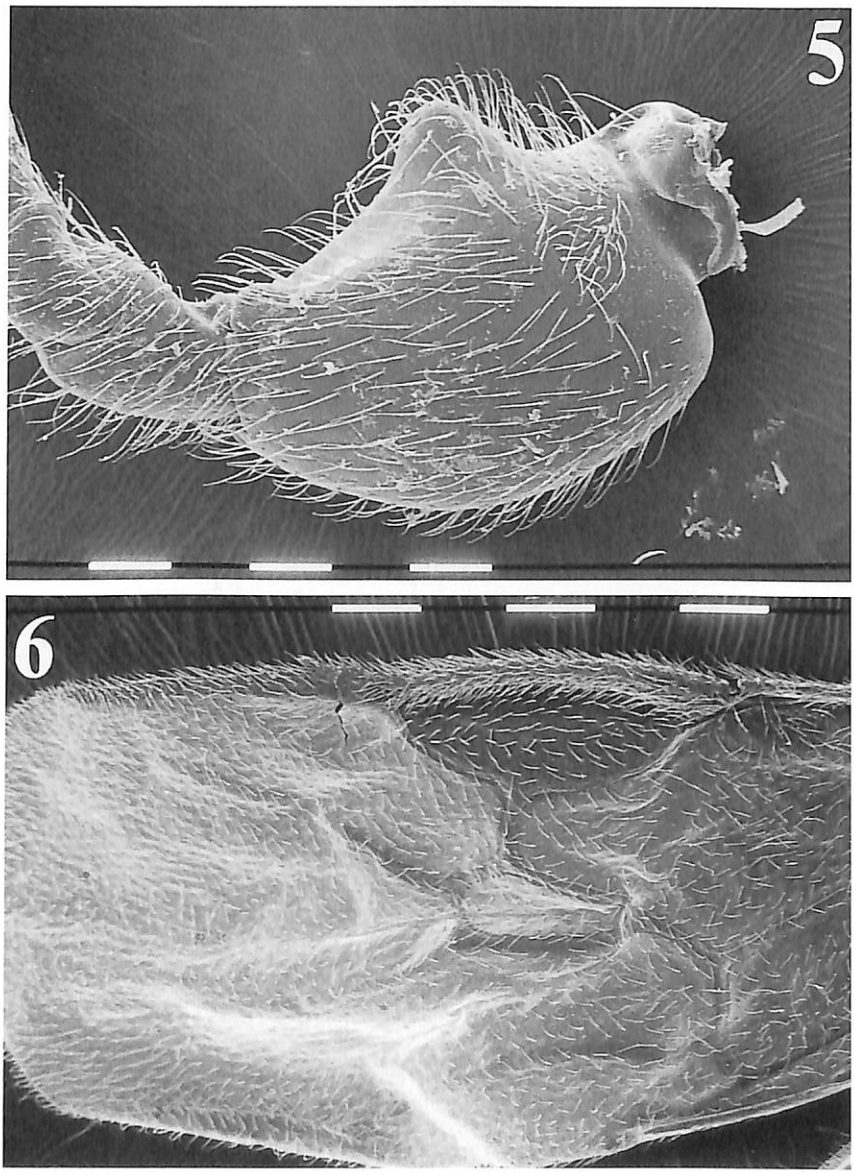
Remarks. We have seen a topotypic male specimen which differ from *P. christinae* sp. n. by its smaller body size; the coarse tubercules on the apical border and on the surface of tergites 3-6 (Figs 3-4); the yellowish scapus, antenna and hind tarsus; the dark-brown ultimate segment of antenna; the frons and vertex smooth and a reduced number of antennal segments (33). It belongs probably to a new species but we prefer to postpone its description until we have collected the female.

***Pedinopleura australiensis* QUICKE & INGRAM, 1993**
(Figs 21-22)

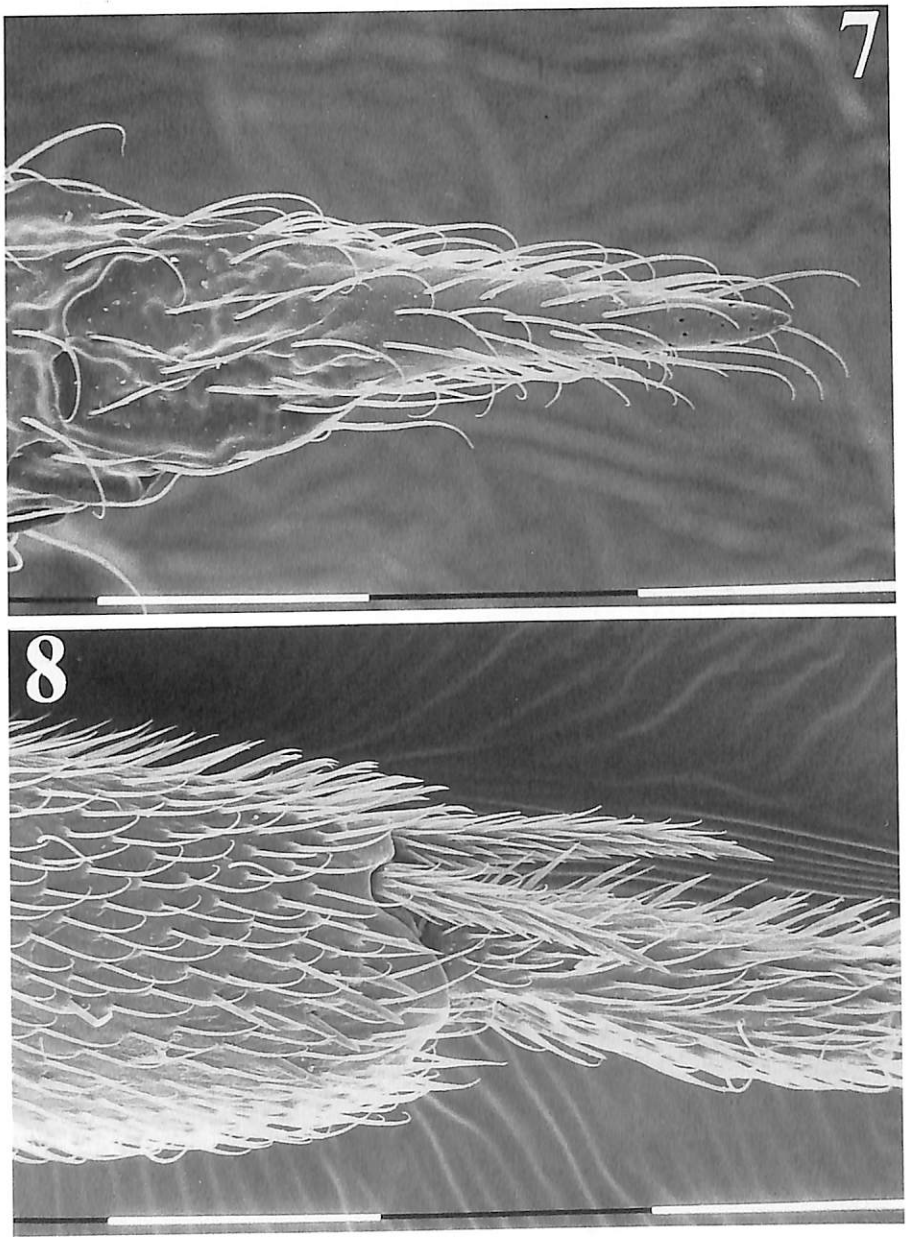
Pedinopleura australiensis QUICKE & INGRAM, 1993 : 319.

Materiel examined : ♀, "Canopy mission, FOG T 2'', 23.VI.1994" "Papua New Guinea, Madang : Baiteta, 5°1'0''S 145°45'0''E, leg. O. Missa" and ♀, "Canopy mission, FOG XN'', 3.V.1994" "Papua New Guinea, Madang : Baiteta, 5°1'0''S 145°45'0''E, leg. O. Missa". This is the first record for this country.

Remark. One female has 41 antennal segments.



Figs 5-6. 5 : *Pedinopleura christinae* sp. n., holotype, ♀, detail of hind coxa. 6 : *Chelonus (Areselonus) minutissima* sp. n., holotype, ♀, detail of fore wing. Scale line = 100 μm.



Figs 7-8. *Chelonus (Areselonus) minutissima* sp. n., holotype, ♀. 7 : Detail of the apex of apical spine; 8 : Detail of apex of hind tibia. Scale line = 100 μm.

Subfamily Cheloninae

For the identification of the genera in the Cheloninae and the subgenera of the genus *Chelonus*, see ZETTEL (1990) and CHEN & VAN ACHTERBERG (1997), respectively.

The new taxa described here share with another species previously described, *Chelonus (Areselonus) chailini* WALKER & HUDDLESTON, 1987, the presence of a dorso-apical spine-like prominence at the apex of the carapace, the specific trend to reduce the length of the SR1 vein of the fore wing (Fig. 6) - previously overlooked by WALKER and HUDDLESTON - and a mesopleuron which is polished and finely punctate posteriorly. These two latter aberrant characters are also displayed by two specimens of *Ascogaster* sp. collected in the same locality. Despite the lack of revisionnary works on *Chelonus* species of this region - the recent work of HUDDLESTON & WALKER (1994) excepted - this dorso-apical spine character indicates a distinct lineage within this genus. Therefore, we place these species in a new subgenus which can be separated from other three subgenera of *Chelonus* with the key included below.

The function of the dorso-apical spine on carapace is unknown but WALKER & HUDDLESTON (1987) have suggested its use as an anchor or as a lever to give the newly emerged adult extra purchase in making its way out of the host cocoon. Observation of the apex of the spine for the three species, has only revealed the presence of pores (Fig. 7) for *C. (A.) minutissima* and *C. (A.) missai* spp. n. These pores may be used to release or to detect odours or pheromones.

Key to subgenera of the genus *Chelonus* JURINE

1 Temple strongly swollen with 3 distinct ridge-like carinae ..... subg. ***Scabrichelonus*** CHEN & VAN ACHTERBERG, 1997

- Temple normal, without any carinae 2

2 Carapace ending with a spine-like structure dorso-apically; vein SR1 of fore wing incomplete ..... subg. ***Areselonus*** n.

- Carapace rounded dorso-apically; vein SR1 of fore wing complete 3

3 Carapace of male and female without an apical opening ..... subg. ***Chelonus*** JURINE, 1801

- Carapace of male with an apical opening and female without apical opening. ..... subg. ***Microchelonus*** SZÉPLIGETI, 1908

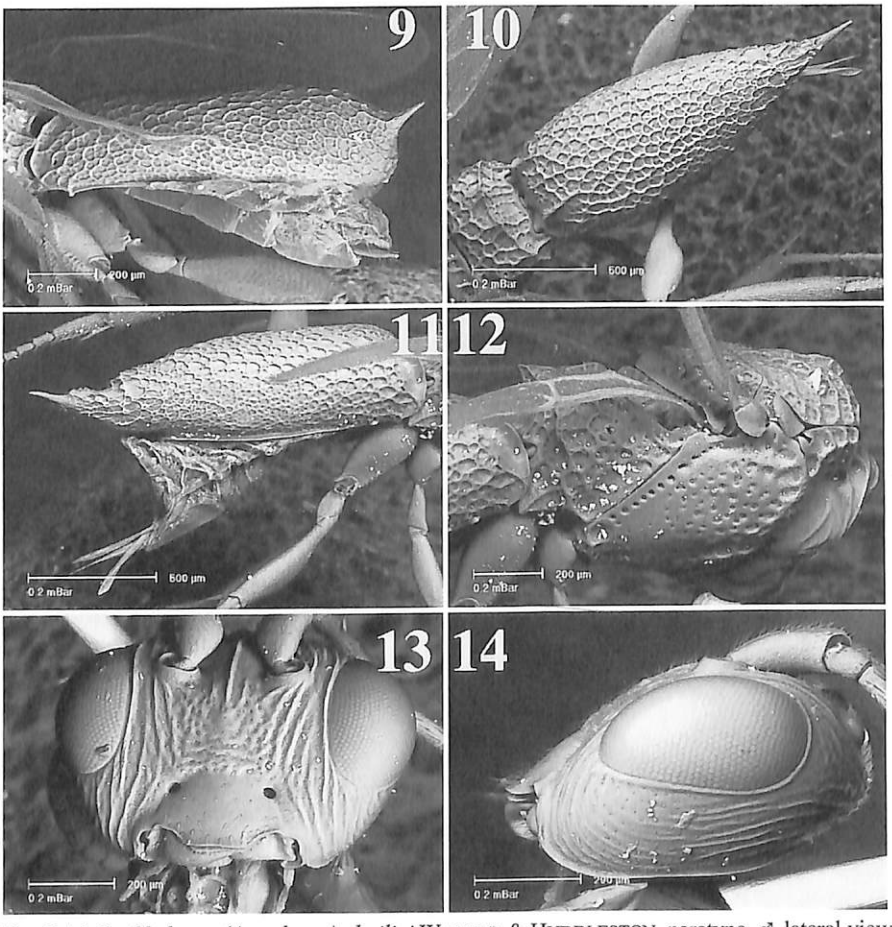
Chelonus JURINE, 1801

Subgenus *Areselonus* nov.

Type species : *Chelonus chailini* WALKER & HUDDLESTON, 1987. WALKER & HUDDLESTON, 1987 : 438.

Etymology : From the Greek god of war "Ares" and the generic name [*Ch*]*elonus*. Gender : masculine.

Diagnosis. Head in dorsal view roundly contracted behind eyes; female with 16 antennomeres, male with 18 antennomeres; flagellum weakly dilated medially; ocelli small; eyes not protuberant; frons at most slightly depressed; occipital carina complete and thin; face weakly convex, strigose laterally, about



Figs 9-14. 9 : *Chelonus (Areselonus) chailini* WALKER & HUDDLESTON, paratype, ♂, lateral view of metasoma. 10-14 : *C. (A.) missai* sp. n., holotype, ♀. Metasoma in dorsal (10) and lateral (11) view, mesosoma in lateral view (12), head in frontal (13) and lateral (14) view.

twice as broad as high; genae in frontal view strongly rounded; clypeus narrower than face, weakly convex, polished and punctate (at least sparsely); mandibles strongly twisted and bidentate; genae in face view strongly rounded; mesoscutum coarsely reticulate-rugose; notauli absent; mesonotum coarsely reticulate-rugose; mesopleuron mainly coarsely reticulate-rugose; precoxal sulcus absent; propodeum divided into dorsal and posterior face by a strong median transversal carina which is produced into four strong dentate flanges; second sub marginal cell of fore wing very short; vein SR1 of fore wing present basally, coloured medially and absent apically; vein 1-SR+M absent; 2-CU2 4-6 times longer than 1-CU1; carapace elongate-oval in dorsal view, completely coarsely-rugose, produced into a prominent apical spine which is directed postero-dorsally, its ventral opening narrow and not reaching the apex; carapace in lateral view not clavate to slightly clavate; spine polished apically, setose basally and sometimes apically, sometimes with pores apically; ovipositor sheath short.

Distribution. West Malaysia, ?India, Papua New Guinea.

Biology. The type species of the new subgenus is recorded as parasite of gracillariid moths, such as *Conopomorpha cramerella* (SNELLEN) and several *Acrocercops* species (WALKER & HUDDLESTON, 1987).

Key to the species of the subgenus *Areselonus* nov.

1 Apical spine very small (Fig. 9), setose and without pores apically ..... ***C. (A.) chailini*** WALKER & HUDDLESTON, 1987

- Apical spine more robust (Figs 11, 17), setose only basally, with pores apically 2

2 Mesopleuron densely and finely punctate posteriorly (Fig. 18), ovipositor sheath less than 0.1 times fore wing ..... ***C. (A.) minutissima*** sp. n.

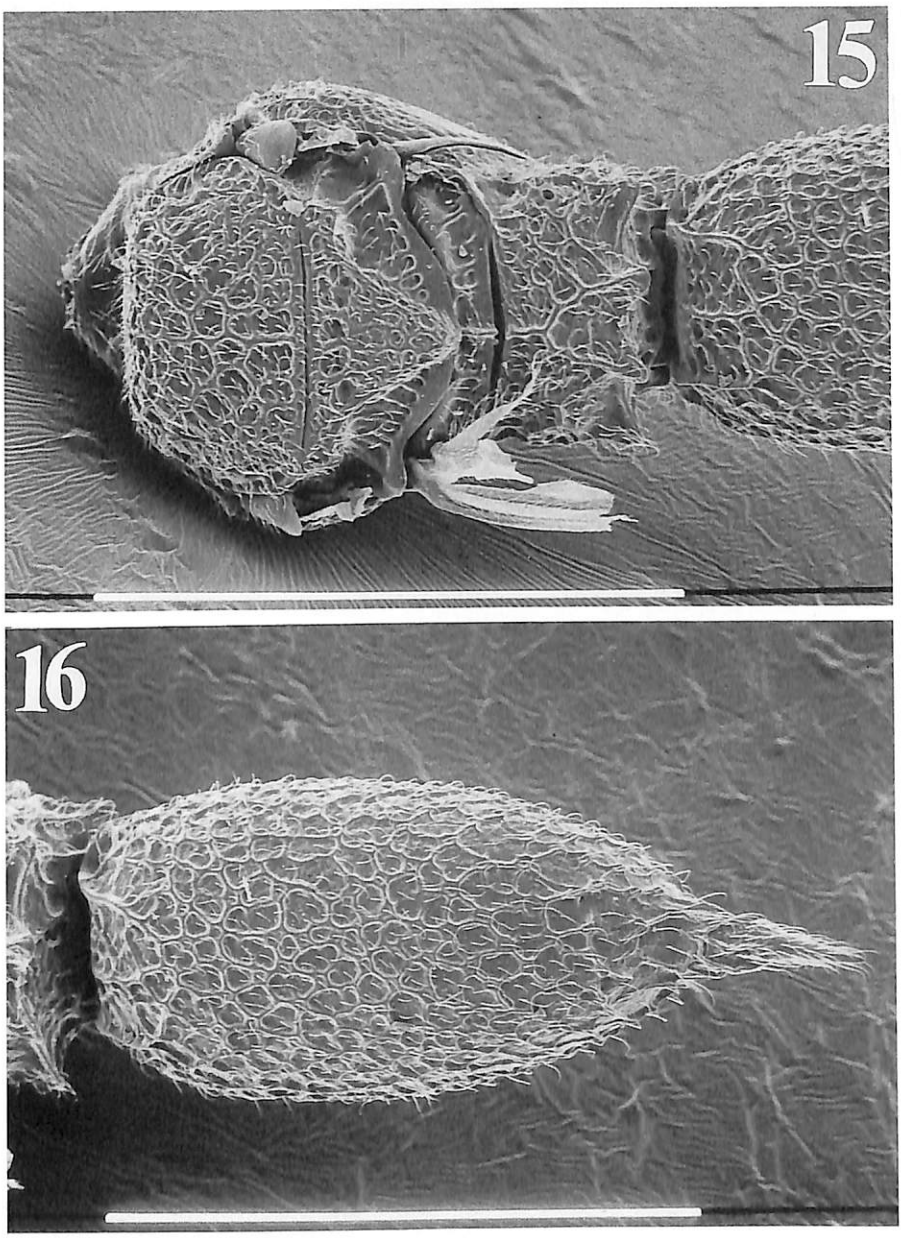
- Mesopleuron smooth and sparsely punctate posteriorly (Fig. 12), ovipositor sheath more than 0.1 times fore wing ..... ***C. (A.) missai*** sp. n.

***Chelonus (Areselonus) minutissima* sp. n.**
(Figs 6-8, 15-20)

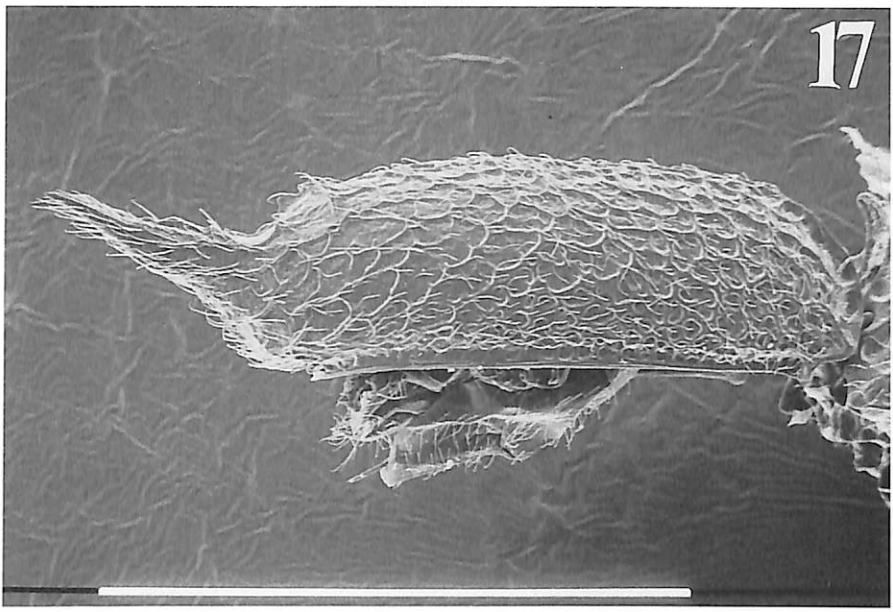
Material examined : Holotype, ♀ (IRSNB) : "Canopy Mission, FOG T2, 23.VI.1994" "Coll. I.R.Sc.N.B., Papua New Guinea, Madang : Baiteta, 5°1'0''S 145°45'0''E, leg. O. Missa". Paratypes, 2♂♂ and ♀ (IRSNB) : ♂ and ♀ (coated specimen) "Papua New Guinea, Laing St., 24.VII.1982, P. Grootaert, (P.M.)"; ♂, "Papua New Guinea, Laing St., 16.VII.1982, P. Grootaert, (P.M.)".

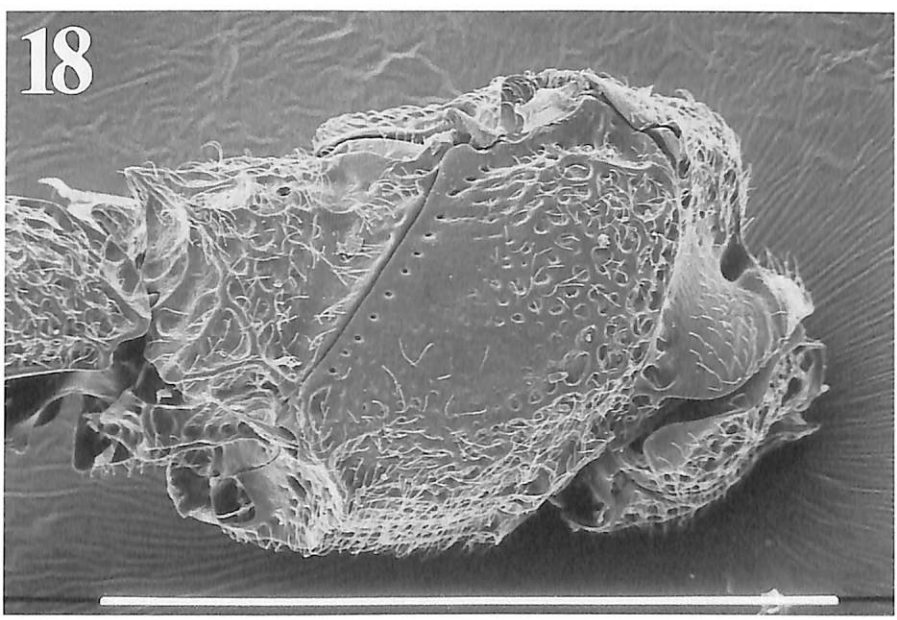
Etymology : From the Latin word meaning very small.

Holotype, ♀, body length 2.6 mm, fore wing 2 mm.



Figs 15-16. *Chelonus (Areselonus) minutissima* sp. n., holotype, ♀. 15 : Mesosoma in dorsal view; 16 : Metasoma in dorsal view. Scale line : 1 mm.





Figs 17-18. *Chelonus (Areselonus) minutissima* sp. n., holotype, ♀. 17 : Metasoma in lateral view; 18 : Mesosoma in lateral view. Scale line : 1 mm.

Head. Antennal segments 16; length of third segment 1.3 times the fourth, length of apical segment 1.3 times its width, third and fourth antennal segments of flagellum 1.3, 1 times their width, respectively, all segments always rectangular; in lateral view, length of maxillar palp 0.7 times height of head; head in dorsal view roundly contracted behind the eyes; length of eyes 2 times temple in dorsal view (Fig. 19); temples rounded posteriorly; OOL : OD : POL = 3 : 1 : 3; vertex striate; frons strigose laterally; ocelli small on an isosceles triangle; eyes with sparse short setae; face longitudinally rugose laterally, medially rugose with a median carina starting between antennal sockets and reaching the upper third of the face; genae in front view strongly rounded, and longitudinally strongly strigose in lateral view; clypeus smooth, shiny, with a straight apical border; length of malar space 2 times basal width of mandible.

Mesosoma (Figs 15, 18). Pronotum projecting little in front of mesonotum, laterally reticulate-rugose except along ventral border, which is weakly strigose; mesopleuron coarsely punctate anteriorly with, posteriorly, an area shiny and very densely finely punctate; propodeum completely reticulate-rugose with transversal median carina with 4 teeth.

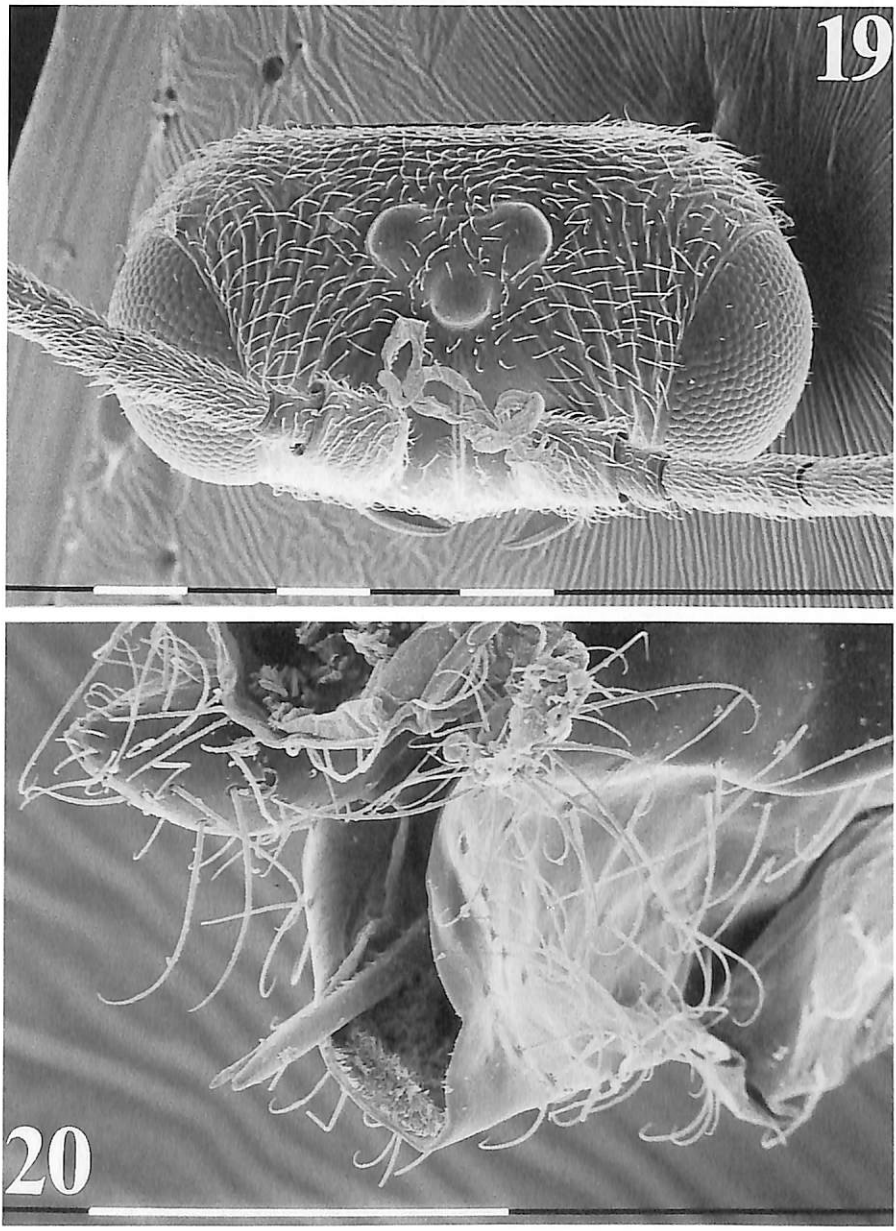
Wings (Fig. 6). Fore wing : SR1 incomplete, only the basal quarter sclerotized, remainder of the vein only coloured; r : SR1 = 2 : 3; 3-Cu1 2 times longer than CU1b; second submarginal cell small.

Legs. Hind coxa completely smooth; hind tibia club-like and very narrowed basally; length of femur, tibia, basitarsus of hind leg 3.25, 4.25, 3.3 times their width, respectively; length of tibial spurs 0.6 and 0.4 times basitarsus; outer face of hind tibia with 5 short spines (Fig. 8).

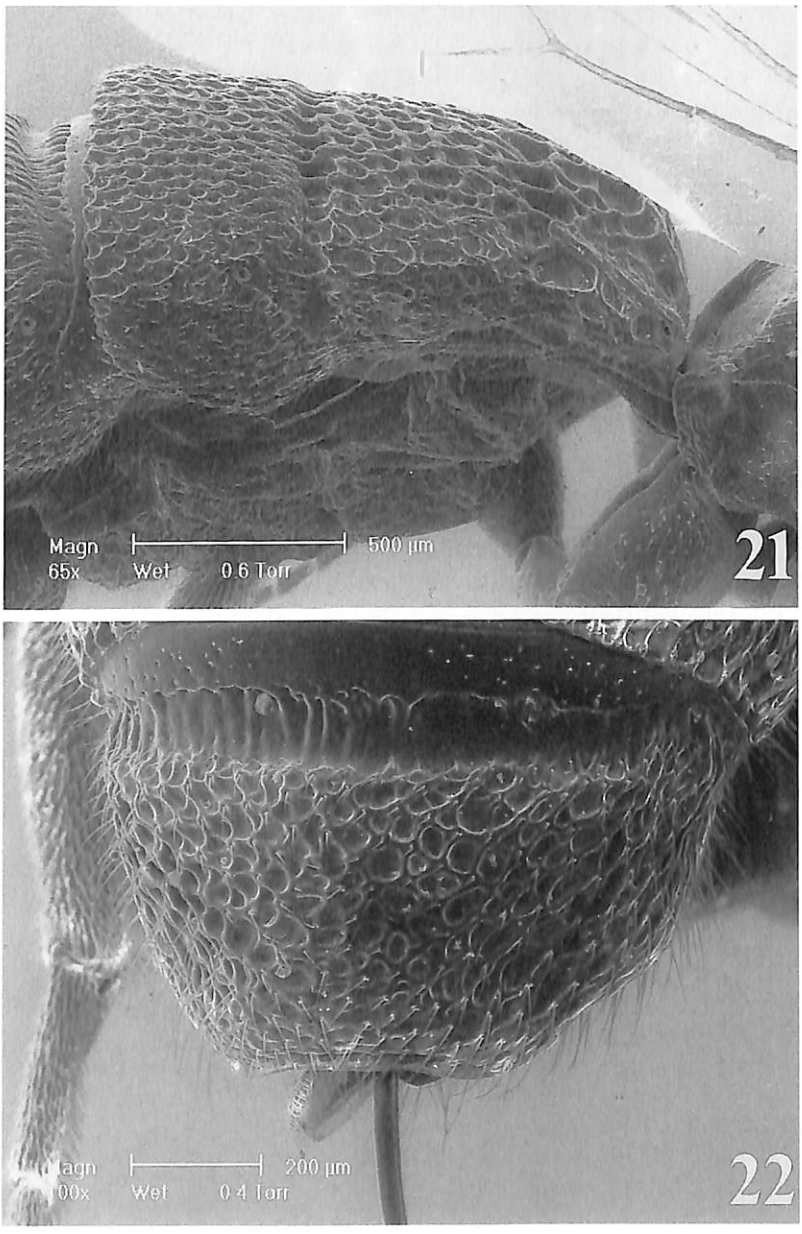
Carapace. Carapace setose, in dorsal view weakly oval medially, basally with two short carinae, its length 2.2 times its width in dorsal view, 4.7 its maximal height in lateral view (Fig. 17); carapace not clavate in lateral view, not gradually acute in dorsal view (Fig. 16); length of the ventral opening at most 0.64 its length; apical quarter of carapace before the spine and base of this one with a very irregular surface; spine smooth and polished apically, completely setose excepted 1/5 apically; presence of some pores apically (Fig. 7); hypopygium medium sized (Fig. 20); ovipositor sheath 0.04 times fore wing, straight and weakly spatulated apically, with some setae apically.

Colour. Black; hind tibial spurs whitish; antennal segments 2-7, 1A+2A and 1-1A veins, sutures between mesonotum-metanotum and metanotum-propodeum, fore tibia, mid- and fore tarsus (except telotarsus), mid trochanter and trochantellus, hind coxa, hind trochanter and trochantellus yellowish; mid- and fore coxa, mid femur totally, fore and hind femur apical 0.5, hind tibia, hind tarsus, fore- and mid telotarsus, scape, veins of wings brownish; fore wing mainly (excepted a small transversal line), hind wing apically, antenna apically infuscate.

Males. Similar to female.



Figs 19-20. *Chelonus (Areselonus) minutissima* sp. n., holotype, ♀. 19 : Head in dorsal view; 20 : Detail of the apex of ovipositor. Scale line : 100 μm.



Figs 21-22. *Pedinopleura australiensis* QUICKE & INGRAM, ♀. 21 : Metasoma in lateral view; 22 : Apical view of 6th tergite.

Chelonus (Areselonus) missai sp. n.
(Figs 10-14)

This species is very similar to *C. (A.) minutissima* sp. n. except for its larger size, the mesopleuron densely and finely punctate posteriorly, the longer ovipositor sheath and the glabrous posterior half of carapace spine.

Material examined : Holotype, ♀ (IRSNB) : "Papua New Guinea, Awar bush, St. 9/18.IX.1982, P. Grootaert (PM)". Paratypes, 1♀ (IRSNB), "Canopy mission, FOG T4, 6.IV.1993" "Papua New Guinea, Madang : Baiteta, 5°1'0''S 145°45'0''E, leg. O. Missa".

Etymology : In honour of the collector Olivier MISSA.

Holotype, ♀, body length 2.9 mm, fore wing 2.4 mm.

Head. Antennal segments 18; length of third segment 1.25 times the fourth, length of apical segment 3 times its width, third and fourth antennal segments of flagellum 4.1, 3.3 times their width, respectively, segments 9-16 more or less quadrate; in lateral view, length of maxillar palp 0.8 times height of head; head in dorsal view roundly contracted behind the eyes; length of eyes 1 time temple in dorsal view; temples rounded posteriorly; OOL : OD : POL = 4 : 1 : 3; vertex striate posteriorly and punctuated laterally; frons strigose laterally; ocelli small on an equilateral triangle; eyes with sparse short setae; face strongly rugose laterally, medially rugose-reticulate with a median carina starting between antennal sockets and reaching the middle of the face (Fig. 13); genae in front view strongly rounded, and longitudinally strongly strigose in lateral view (Fig. 14); clypeus smooth, shiny, with a straight apical border; length of malar space 1 time basal width of mandible.

Mesosoma. Pronotum projecting little in front of mesonotum, dorsally with a deep median rectangular fovea, laterally reticulate-rugose except along ventral border which is weakly strigose; mesopleuron coarsely reticulate-rugose anteriorly with posteriorly a polished area sparsely punctate (Fig. 12); propodeum completely reticulate-rugose, transversal median carina with 4 teeth.

Wings. Fore wing : SR1 incomplete, only the basal quarter sclerotized, remainder of the vein only coloured; r : SR1 = 2 : 3.5; 3-Cu1 3 times longer than CU1b; second submarginal cell small.

Legs. Hind coxa completely smooth; hind tibia club-like and very narrowed basally; length of femur, tibia, basitarsus of hind leg 3.25, 4.25, 3 times their width, respectively; length of tibial spurs 0.5 and 0.4 times basitarsus.

Carapace. Carapace setose, weakly oval medially, basally with two short carinae, its length 2.75 times its width in dorsal view, 6.6 its maximal height in lateral view (Fig. 11); carapace not clavate in lateral view, gradually acute in dorsal view (Fig. 10); length of the ventral opening at most 0.7 its length; apical quarter of carapace before the spine and base of spine with a very irre-

gular surface; spine mainly smooth and polished apically, weakly setose basally; hypopygium medium sized; ovipositor sheath 0.14 times fore wing, straight and weakly spatulated apically, with some setae apically.

Colour. Black; hind tibial spurs whitish; antennal segments 2-7, 1A+2A and 1-1A veins, sutures between mesonotum-metanotum and metanotum-propodeum, fore tibia, mid- and fore tarsus (except telotarsus), mid trochanter and trochantellus, hind coxa, hind trochanter and trochantellus yellowish; mid- and fore coxa, midfemur totally, fore- and hind femur apical 0.5, hind tibia, hind tarsus, fore- and mid telotarsus, scape, veins of wings brownish; fore wing mainly (excepted a small transversal line), hind wing apically, antenna apically infuscate; carapace dark-reddish.

Males. Similar to female except for the black carapace; legs completely brownish including tibial spurs and the mesopleural punctures deeply impressed.

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