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Contribution to the knowledge of Galerucinae of New Caledonia (Coleoptera: Chrysomelidae)

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ABSTRACT. Galerucinae from New Caledonia are studied. Nine new species are described: *Malacotheria joliveti* n. sp., *Aulacophora montrouzieri* n. sp., *A. fauveli* n. sp., *Metroioidea millei* n. sp., *M. lateralimaculatus* n. sp., *M. cornuphallus* n. sp., *M. petrae* n. sp., *M. wanati* n. sp., *M. schoelleri* n. sp. Lectotype and paralectotypes are designated for *Aulacophora deplanchei* (PERROUD & MONTROUZIER). Additional taxonomic and distributional data on some other Galerucinae are provided.

Key words: entomology, taxonomy, new species, lectotype designation, Coleoptera, Chrysomelidae, Galerucinae, New Caledonia.

INTRODUCTION

Recently interest in Chrysomelidae of the New Caledonian archipelago has increased. New species have been described (JOLIVET *et al.* 2005, 2006), a catalogue is in preparation (JOLIVET in prep.) and the origin of the leaf beetle fauna of New Caledonia is discussed in relation to the Gondwana landmass (JOLIVET & VERMA in press). Information on Galerucinae of New Caledonia is restricted to descriptions of a few species. Although several leaf beetle species have been introduced, it is not known if the Galerucinae have been translocated to New Caledonia (BEENEN 2006). Recent collecting trips to the archipelago have been undertaken by a number of chrysomelid workers, such as, Pierre JOLIVET, Christian MILLE, Marek WANAT, Mauro DACCORDI and Matthias SCHÖLLER. Pierre JOLIVET and Christian MILLE kindly asked me to study these newly collected specimens. In this article the first results of the study based on this material is presented.

Besides, in the repository of the Institut Royal des Sciences naturelles de Belgique (Brussels) the collection of Charles Adolphe Albert FAUVEL is curated. It contains many specimens from New Caledonia, which FAUVEL recognized as new to science. Many of his designated types have been published, but some are not. FAUVEL had a very active entomological life but abruptly stopped all his entomological work in 1910, discontinued all scientific connections and withdrew entirely from public life until his death in 1921 (HERMAN 2001; JOLIVET pers. comm. 2006). Most probably the species that have not been published have been recognized and labelled shortly before the ending of his entomological work. These names are regarded as manuscript names (*nomina nuda*) and should not be used since they have no meaning in nomenclature. However, since some of the Galerucinae concerned are listed as types or syntypes on the website of the Institut Royal des Sciences naturelles de Belgique, I will mention them in those cases where it seems relevant for future students of Galerucinae.

ABBREVIATIONS

The following acronyms will be used in this article:

CIAC: Collection Institut Agronomique néo-Calédonien, La Foa, Nouvelle Calédonie.

HNHM: Hungarian Natural History Museum, Budapest, Hungary.

ISNB: Institut Royal des Sciences Naturelles de Belgique, Brussels, Belgium.

MDCT: Mauro DACCORDI Collection Torino, Italy.

MESC: Matthias SCHÖLLER Collection, Berlin, Germany.

MNHN: Muséum National d'Histoire Naturelle, Paris, France.

MNHW: Museum of Natural History, Wroclaw, Poland.

RBCN: Ron BEENEN Collection, Nieuwegein, The Netherlands.

ZMHB: Museum für Naturkunde der Humboldt-Universität, Berlin, Germany.

[h]: hand written (on labels).

Genus *Malacotheria* FAIRMAIRE, 1881

Malacotheria joliveti n. sp.

(figs. 1, 2)

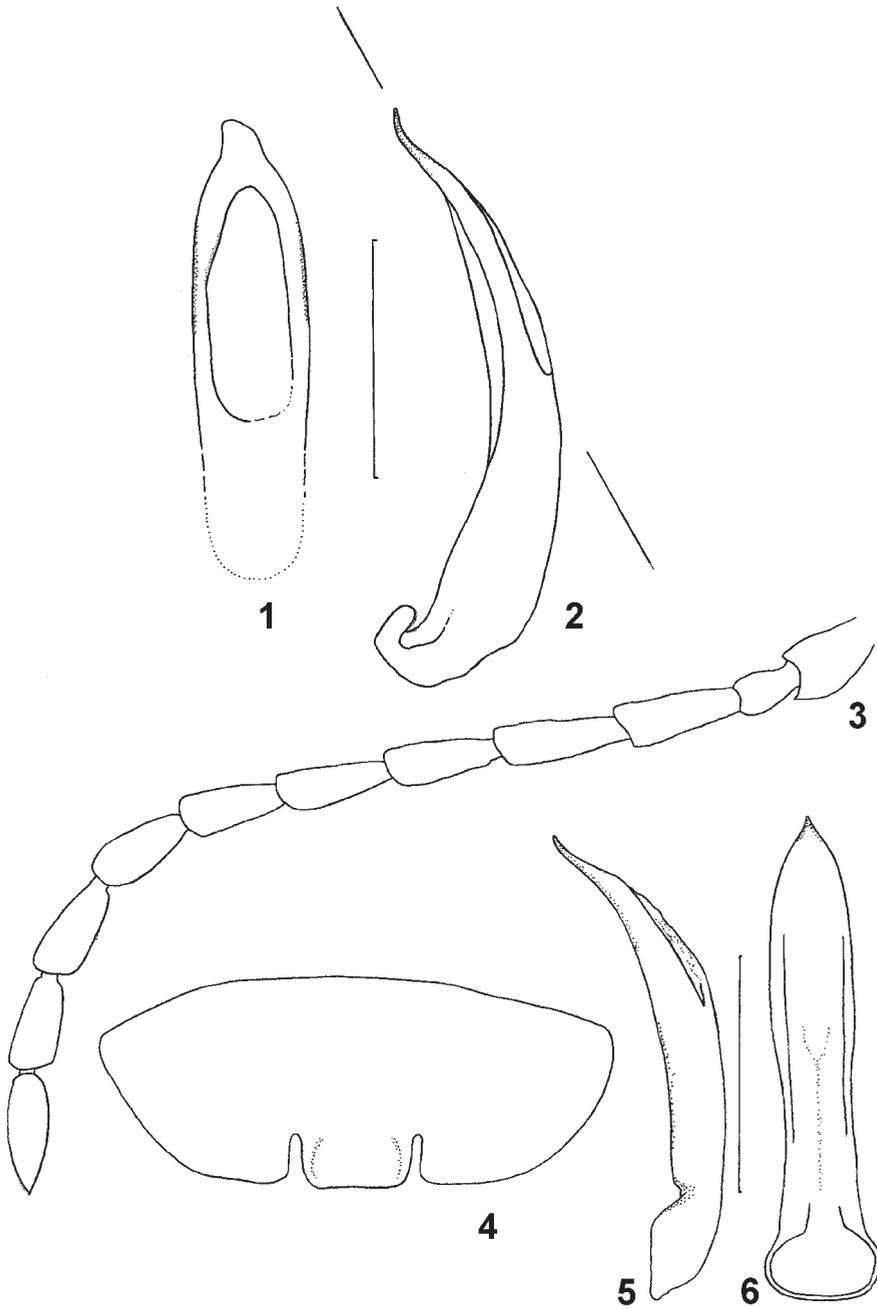
TYPE MATERIAL

Holotype (♂): NEW CALEDONIA (Province des îles Loyauté): Ouvéa – Hôpital d'Hulup, A. Mantilleri & E.-A. Leguin leg., 12 xi 2002, A la lumière (MNHN).

Paratypes: NEW CALEDONIA (Province Sud): Farino, M. Barbou, Lat. S 21.61431, Long. E 165.70065, Alt. 408 m. Collecté sur: Divers arbres de forêt, Le 09/09/04, Par battage, par S. Cazères (1♂, RBCN). NEW CALEDONIA (Province Sud): Pocquereux, 26 viii 2005, malaise trap, COL/168/05 (1♀, CIAC).

DESCRIPTION

Length 6.55-7.40 mm. Greatest width across elytra 3.00-4.20 mm. Macropterous. General colour yellowish brown. Elytra brown, with lateral margins black. Apex of



1-2. *Malacotheria joliveti* n. sp.: 1 – aedeagus dorsal view, 2 – aedeagus left lateral view; 3-6. *Aulacophora montrouzieri* n. sp.: 3 – right antenna, 4 – last abdominal sternite, 5 – aedeagus left lateral view, 6 – aedeagus ventral view. Scale bar = 1 mm

tibiae, antennal segments 3 onwards and scutellum black. Pronotum with lateral margins broadly, anterior margin narrowly and a longitudinal stripe in the middle, black. In the paratypes black markings are narrower and the pronotal stripe interrupted in middle.

Head: Greatest width across eyes 1.55-1.70 mm; dorsal surface punctate, dull and pubescent; frontal tubercles small, oblong; labrum with shallow emargination.

Pronotum: Length 1.00-1.10 mm; greatest width 2.00-2.25 mm, broadest in middle; sides evenly rounded; anterior corners produced, posterior corners obtuse; anterior and posterior border completely margined; dorsal surface punctate, dull and pubescent, with depressions on both sides of the middle in apical third.

Scutellum: Trapezoidal, pubescent.

Elytra: Broader at base than pronotum; sides parallel, regularly rounded in apical fourth; surface closely punctate, covered with fine pubescence; humerus prominent; elytral epipleuron broad at base and distinctly abbreviated behind the middle, pubescent.

Legs with first segment of front tarsus widened in male; tarsal claws bifid.

Abdomen: Last abdominal sternite of the male triangularly emarginate, reaching about half the length of the sternite.

Ventral surface yellowish brown. Procoxal cavities closed posteriorly.

Aedeagus: figs 1, 2.

DIAGNOSIS

The genus *Malacotheria* was represented by four species (WILCOX 1971-1975): the genotype *M. funereal* FAIRMAIRE, and *M. lateritia* FAIRMAIRE, *M. picticollis* FAIRMAIRE and *M. strigiscuta* FAIRMAIRE. BRYANT & GRESSITT (1957) studied the Fijian species of *Malacotheria* (all except *M. picticollis*) and depicted the aedaeagi, which have differences in the form of the apex. They noticed much variation among the material studied and concluded that there might be more species. *Malacotheria picticollis* was described in 1883 by FAIRMAIRE. This species differs from *M. joliveti* n. sp. in having smaller size and elytra distinctly widened posteriorly, which are parallel and rounded towards suture in the new species.

ETYMOLOGY

This species is named in honour of my long time friend Pierre JOLIVET, who encouraged me to study the New Caledonian Galerucinae.

DISTRIBUTION

New Caledonia : Province Sud and Province des Iles Loyauté.

ADDITIONAL REMARKS

The new species is similar to three specimens from ISNB designated by FAUVEL as *Galeruca australis*. Since this name is regarded as a manuscript name, it has no taxonomic meaning. These specimens are labelled: Coll. R. I. Sc. N. B., Nouvelle Calédonie, Nouméa [h], ex coll. Fauvel. Coll. et det. A. Fauvel. *Galeruca australis* Fvl [h]. Syntype (ISNB).

Genus *Pleronexis* WEISE, 1908***Pleronexis caledonica* (FAUVEL, 1862)**

Adimonia caledonica FAUVEL, 1862: 168
Plesistia brunnea MAULIK, 1929: 199 (nov. syn.)

In the material collected by Marek WANAT, a specimen from New Caledonia (Province Nord: 20°35'S/164°50'E, 5 m, Camping Panié, 31 i 2004 ad lucem. MNHW) proved to be similar to a specimen from ISNB designated by FAUVEL as *Galleruca caledonica*. This name has never been published, but this specimen exactly fits the description of *Adimonia caledonica* FAUVEL, 1862. Since the names *Galleruca* and *Adimonia* were used at that time for the same genus it seems likely that FAUVEL changed the generic name either on the label or in the manuscript. However, according to this description there is no doubt and the type specimen of *Galleruca caledonica* is designated the type specimen of *Adimonia caledonica* FAUVEL. The specimen is labelled: Coll. R. I. Sc. N. B., Nouvelle Calédonie, Nil. Caledonie [h] rec. Deplanche [h], ex coll. Fauvel // Coll. et det. A. Fauvel, *Galleruca caledonica* Fv1 [h] // TYPE // Type of *Adimonia caledonica* Fauvel, 1862: 168, R. Beenen design. 2007.

WILCOX (1971-1975) classified *Adimonia caledonica* in *Pleronexis* WEISE. During the investigation of the specimens mentioned above it became clear that they also perfectly fitted the description of *Plesistia brunnea* MAULIK. Therefore, *Plesistia brunnea* MAULIK is to be regarded as a junior synonym of *Pleronexis caledonica*. The species was described on specimens from Samoa, but was also recorded from Fiji Islands (MAULIK 1929) and later from Vanuatu (New Hebrides) (BRYANT 1936).

Genus *Aulacophora* CHEVROLAT in DEJEAN, 1836***Aulacophora austrocaledonica* (MONTROUZIER, 1861)**

Galleruca austrocaledonica MONTROUZIER, 1861: 299.

This species description is based on specimens from Îles Belep (Art), Grande-Terre (Balade) and Île de Pins (MONTROUZIER 1861). It is said to be very common in vegetable gardens on Cucurbitaceae. The species is characterized by four black spots on the elytra and black spots behind the eyes. BRYANT (1936) mentioned this species from Vanuatu (New Hebrides). MAULIK (1929) holds it for quite probable that *A. austrocaledonica* is identical with *A. quadrimaculata* (FABRICIUS). He describes the variation of black spots on head and elytra of Samoan *A. quadrimaculata* (FABRICIUS). Later GRESSITT (1955) listed *A. austrocaledonica* with a question mark in the synonyms of *A. quadrimaculata* (FABRICIUS). The problem seems to be unsolvable because the type specimens of *A. quadrimaculata* are both females. Collecting in the type locality of *A. quadrimaculata* is no option either, because it is unknown. FABRICIUS stated that these specimens have been obtained by Dr FORSTER at the Cape of Good Hope, which

is probably incorrect (MAULIK 1929). As long as the synonymy is not clear it seems most appropriate to treat *A. austrocaledonica* as a proper species. In the material at my disposal are two specimens of *A. austrocaledonica* from Efaté in Vanuatu (Vaté, 3 VI 1963, CIAC, RBCN).

***Aulacophora montrouzieri* n. sp.**

(figs. 3-7)

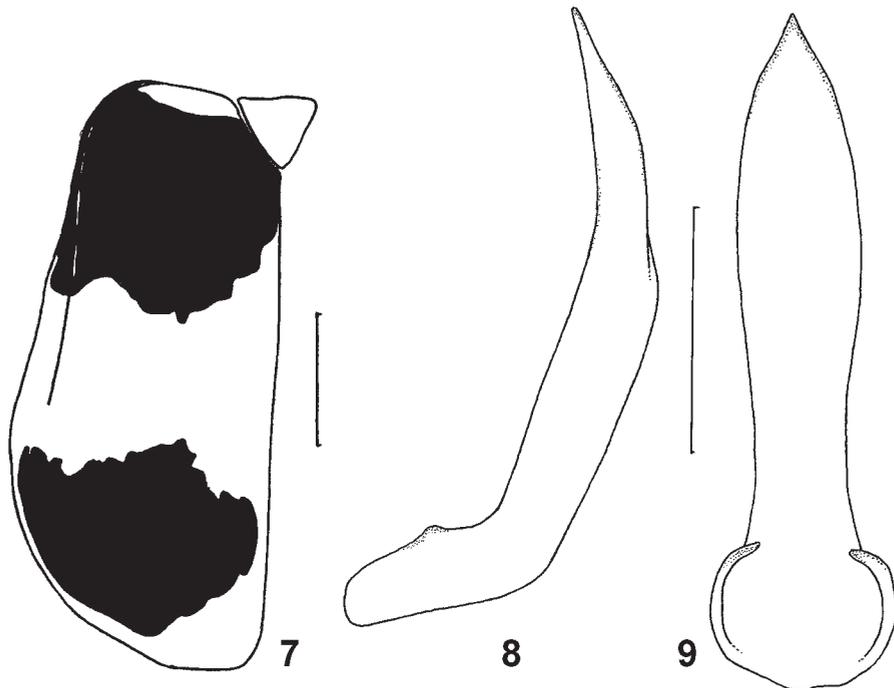
TYPE MATERIAL

Holotype ♂ : NEW CALEDONIA (Province Sud): Col d'Amieu, 6 ii – 13 iii 2006, malaise trap, COL/63/06 (MNHN).

DESCRIPTION

Length 5.50 mm. Greatest width across elytra 3.40 mm. Macropterous. General colour yellow. Pronotum orange-yellow. Vertex orange. Each elytron with two black spots (fig. 7).

Head: Greatest width of head across the eyes: 1.38 mm; dorsal surface impunctate, shining; frontal tubercles distinct, not swollen, rectangular and shiny. Antennae not modified (fig. 3). Labrum with a shallow emargination.



7. *Aulacophora montrouzieri* n. sp., left elytron; 8-9. *Aulacophora deplanchei*: 8 – aedeagus left lateral view, 9 – aedeagus ventral view. Scale bar = 1 mm

Pronotum: Length in middle 0.95 mm; greatest width 1.85 mm, with the broadest in apical third; sides slightly diverging in apical half, rounded in basal half; anterior border with small margin in middle; posterior border completely margined; anterior corners rounded; posterior corners obtuse; dorsal surface impunctate, shining; transverse sulcus behind middle of disc, straight and reaching sides.

Scutellum: Triangular, impunctate, yellow.

Elytra: Surface of elytra impunctate and shiny; humerus prominent and glabrous; epipleuron distinctly abbreviated before the middle.

Legs: All tibiae with apical spines; front legs with first segment of tarsus slightly widened; tarsal claws bifid.

Ventral surface: Yellow. Procoxal cavities open posteriorly.

Abdomen: Last abdominal sternite trilobed (fig. 4d); median lobe rectangular, with shallow impression.

Aedeagus: figs. 5, 6.

DIAGNOSIS

The new species differs from all previously known four spotted *Aulacophora* species from this region. *A. austrocaledonica* differs from the new species in the absence of black spots behind eyes and having black abdomen. *A. deplanchei* (PERROUD & MONTROUZIER) differs from the new species in the absence of black spots behind the eyes and having darkened antennae and tibiae, and black metasternum and abdomen. The new species is also similar to species from other regions (for example *A. hilaris* BOISDUVAL from Australia, *A. quadrinotata* CHAPUIS from the Philippines and *A. quadraria* (OLIVIER) from Malaysia and India). It differs by a combination of characters including the shiny elytra, the short incisions in male last abdominal sternite, male unmodified antennal segments and the shape of the aedeagus.

ETYMOLOGY

This species is dedicated to the New Caledonian entomologist Xavier MONTROUZIER (1820-1897).

DISTRIBUTION

New Caledonia: Province Sud.

ADDITIONAL REMARKS

This species is similar to a specimen from ISNB designated by FAUVEL as *Aulacophora decorata*. Since this name is regarded as a manuscript name, it has no taxonomic meaning. The specimen was labelled as: Coll. R. I. Sc. N. B. Nouvelle Calédonie. NII. Caledonie ? [h], ex coll. Fauvel. Coll. et det. A. Fauvel. *Aulacophora decorata* Fvl [h]. TYPE (ISNB). This specimen is similar to the holotype of *A. montrouzieri* n. sp., but differs in having the black markings on elytra form a small band at the outer margin.

***Aulacophora deplanchei* (PERROUD & MONTROUZIER, 1864)**

(figs. 8, 9)

Rhaphidopalpa deplanchei PERROUD & MONTROUZIER, 1864: 210.

The type series, consisting of four syntypes, was available for this study. Lectotype and paralectotypes have been designated. The description by PERROUD & MONTROUZIER (1864) is clear and there is no reason to make a redescription. The aedeagus has never been depicted. A drawing of the aedeagus is presented in figure 8 and 9. Its form is similar to that of *A. montrouzieri* n. sp. but much larger and in lateral view it is more curved with the apex straight. The apex of the aedeagus of *A. montrouzieri* is curved upward. The syntypes consist of three female specimens and one male specimen. Only one female specimen is complete, which is designated as lectotype. Furthermore, the male specimen had the last abdominal sternite damaged.

The length of the specimens (exclusive the protruding abdomen in some specimens) varied between 7.5 and 9.0 mm.

SPECIMENS EXAMINED

Lectotype, by present designation (ISNB): NEW CALEDONIA (Province Nord): Coll. R. I. Sc. N. B. Nouvelle Calédonie, Kanala [h] rec. Montrousier [h], ex. coll. Fauvel. Coll. A. Fauvel. *Aulacophora deplanchei* Perr. [h]. Syntype. LECTOTYPUS *Rhaphidopalpa deplanchei* PERROUD & MONTROUZIER, 1864, design. R. BEENEN 2007.

Paralectotypes, by present designation (ISNB): NEW CALEDONIA (Province Nord): Coll. R. I. Sc. N. B. Nouvelle Calédonie, Kanala [h] rec. Montrousier [h], ex. coll. Fauvel. Coll. A. Fauvel. *Aulacophora deplanchei* Perr. [h]. Syntype. PARALECTOTYPUS *Rhaphidopalpa deplanchei* PERROUD & MONTROUZIER, 1864, design. R. BEENEN 2007.

“Additional material (ISNB): NEW CALEDONIA: “Nouv. Calédonie. Collect. Duvivier. A (*Aulacophora deplanchei* Perroud”. Male specimen. NEW CALEDONIA (Province Nord): “Calédonie, Le Moul't vend.: A (*Aulacophora deplanchei* Perroud. R. Mus. Hist. Nat. / Belg. I. G. 12.595”. 3 female specimens

DESCRIPTION

Length 5.50 mm. Greatest width across elytra 3.40 mm. Macropterous. General colour yellow. Pronotum orange-yellow. Vertex orange. Each elytron with two black spots.

Head: Greatest width of head across eyes 1.38 mm; dorsal surface impunctate, shining; frontal tubercles distinct, not swollen, rectangular and shiny. Antennae not modified. Labrum with a shallow emargination.

Pronotum: Length in middle 0.95 mm; greatest width 1.85 mm, broadest in apical third; sides slightly diverging in posterior half, rounded in apical half; anterior border with small margin in middle; posterior border completely margined; anterior corners rounded; posterior corners obtuse; dorsal surface impunctate, shining; transverse sulcus behind middle of disc, straight and reaching sides.

Scutellum: Triangular, impunctate, yellow.

Elytra: Surface of elytra impunctate and shiny; humerus prominent and glabrous; epipleuron distinctly abbreviated before middle of elytron.

Ventral surface: Yellow. Procoxal cavities open posteriorly.

Legs: All tibiae with apical spines; first tarsal segment of front legs slightly widened; tarsal claws bifid.

Abdomen: Last abdominal sternite trilobed; median lobe rectangular with shallow impression.

Aedeagus: figs. 8, 9.

ADDITIONAL REMARKS

This species proved to be similar to two specimens from ISNB designated by FAUVEL as *Aulacophora femorata*. This name is to be regarded as a manuscript name and has no taxonomic meaning. These specimens are labelled: "Coll. R. I. Sc. N. B. Nouvelle Calédonie, Kanala [h], ex coll. Fauvel. Coll. et det. A. Fauvel. *Aulacophora femorata* Fvl [h]. Syntype" (ISNB) and "Coll. R. I. Sc. N. B. Nouvelle Calédonie, Noumea [h], ex coll. Fauvel. Coll. et det. A. Fauvel. *Aulacophora femorata* Fvl [h]. Syntype" (ISNB).

Both these specimens lack the black markings on the elytra. The aedeagus of the specimen from Kanala proved to be identical to that of *A. deplanchei*. Specimens of *A. deplanchei* that lack the black markings could be confused with *A. fauveli* n. sp. They both have dorsal surface yellow and abdomen and metathorax dark brown. *A. fauveli* nov. spec has legs black and *A. deplanchei* has legs yellow.

***Aulacophora fauveli* n. sp.**

(fig. 12)

Aulacophora similis was described by OLIVIER (1808) from the islands in the Indian Ocean. WILCOX (1971-1975) mentions it from South East Asia to Samoa and Fiji Islands. KIMOTO (1989) includes it in *Aulacophora indica* (GMELIN) a species originally described from India and according to WILCOX (1971-1975) occurring in India, Pakistan and Afghanistan. In the perception of KIMOTO *A. indica* is a widespread species occurring from India, South-East Asia to Siberia, Japan and the South Pacific. BARROGA & MOHAMEDSAID (2002) follow KIMOTO's view and treat *A. indica* as a widely spread species. After dissecting male specimens from New Caledonia it became clear that the aedeagus differed from the aedeagus of *Aulacophora indica* depicted by BARROGA & MOHAMEDSAID (2002) and from the aedeagus of specimens of *A. indica* from China, Japan, Indonesia, and Philippines in RBCN. The type of *Aulacophora similis*, species also reported from the South Pacific islands (MAULIK 1929 and GRESSITT 1955), was not available. However, since the type locality of *A. similis* is the Sunda region and the aedeagus of the New Caledonian specimens differ from the aedeagus from specimens from that region, the specimens from New Caledonia cannot be identical to *A. similis*. So, there seem to be no arguments to follow the perception of MAULIK (1929) and GRESSITT (1955) to treat specimens from the South Pacific as *A. similis*. The specimens from the South Pacific are here described as a new species.

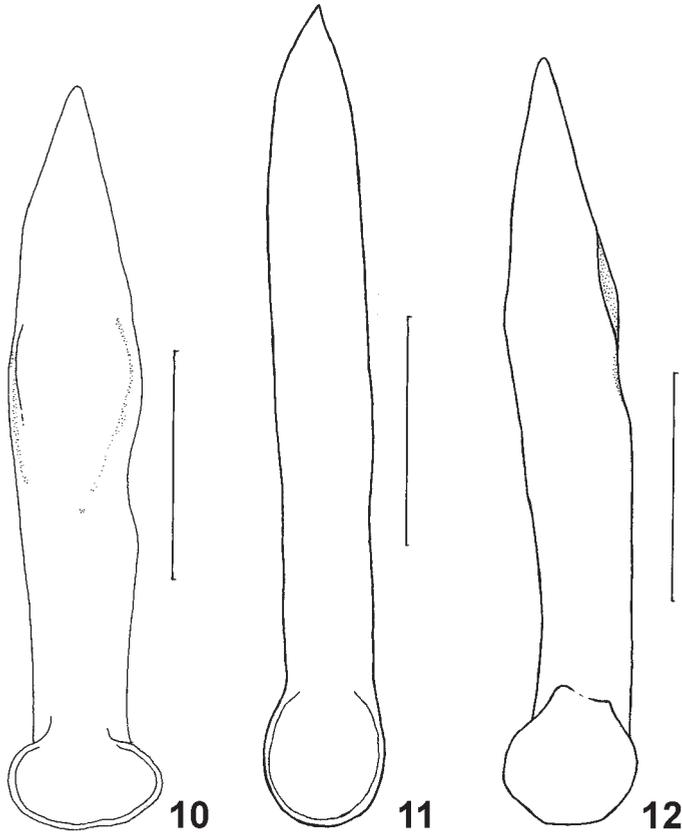
TYPE MATERIAL

Holotype ♂: NEW CALEDONIA (Province Sud): SW Bourail 21° 36 S 165° 28, 11 i 98, Cazeres Sylvie rec. (MNHN).

Paratypes:

NEW CALEDONIA (Province Sud): SW Bourail 21° 36 S 165° 28, 5 01 98, Cazeres Sylvie rec. 1 ♀ (MNHN). NEW CALEDONIA (Province Sud). Port Laguerre, fauchage prairie graminée, 3.3.77., réc. J. Chazeau. Nouvelle Calédonie. COL/72/06. 1 ♂, 2 ♀ (CIAC). NEW CALEDONIA (Province Sud). Nily La Foa, 19 ix 2005, on Citrus sp., COL/170/05. 1 ♂, 2 ♀ (RBCN), 2 ♀ (CIAC). NEW CALEDONIA (Province Sud). 22° 11' S / 166° 30' E, Koghi Mts., humid forest, 500-550 m., 21.01.2004, leg. M. Wanat. 1 ♂ (MNHW). NEW CALEDONIA (Province Nord). Houailou. Nouvelle Calédonie. COL/76/06. 2 ♀ (CIAC). NEW CALEDONIA (Province Nord). 21° 07' S / 164° 57' E, 30 m., Tiéa Forest (GIE Fab Nicoli), sclerophyllous forest, 30.01.2004, leg. M. Wanat. 1 ♂ (MNHW).

UVEA. Wallis [h]. COL/77/06. 3 ♀ (CIAC).



10-12. Aedeagi of *Aulacophora* with unicolorous, orange yellow dorsal surface and male humerus covered with hairs. 10 - *A. foveicollis*, 11 - *A. indica*, 12 - *A. fauvei* n. sp. Scale bar = 1 mm

DESCRIPTION

Length 7.10-9.00 mm (total); 6.50-7.85 (from anterior border of eyes to tip of elytra). Greatest width across elytra 3.70-4.10 mm. Macropterous. General colour yellow. Pronotum and head orange-yellow. Transverse depression on pronotum in some specimens orange. Metathorax, abdomen, middle and hind legs and labrum dark brown. Front tibia brown.

Head: Greatest width of head across both eyes: 1.60-1.70 mm; dorsal surface impunctate, shining; frontal tubercles distinct, not swollen, rectangular and shiny. Labrum with a shallow emargination.

Pronotum: Length 2.00-2.35 mm; greatest width 2.00-2.35 mm, broadest in apical third; sides slightly diverging in basal half, rounded in apical half; anterior border with small margin in middle; posterior border with complete, very fine margin; anterior corners rounded; posterior corners obtuse; dorsal surface impunctate; shining; transverse sulcus behind middle of disc, deep in central part and reaching sides.

Scutellum: Triangular, impunctate, yellow.

Elytra: Surface punctate and dull; humerus prominent; epipleuron distinctly abbreviated before the middle.

Legs: All tibiae with apical spines; tarsal claws bifid.

Ventral surface: Procoxal cavities open posteriorly.

In male: Antennae modified, with first segment ovally enlarged, with flat inner side. Last abdominal sternite trilobed; median lobe elongate and almost rectangular, with a deep impression. Elytral humeri with erect white hairs. Front legs with first tarsal segment distinctly widened.

Aedeagus: fig. 12.

DIAGNOSIS

This species is very similar to *A. indica* and *A. foveicollis* (LUCAS), but the aedeagi differ significantly. The aedeagi of the hitherto known *Aulacophora* species that have unicolorous, orange yellow on dorsal surface and the male humerus covered with hairs are depicted in figs. 10-12.

ETYMOLOGY

This species is dedicated to the French entomologist Charles Adolphe Albert FAUVEL (1840-1921), who named several New Caledonian Galerucinae, but did not publish the descriptions.

DISTRIBUTION

The type series contains specimens from New Caledonia and Isles Wallis (Uvea) suggesting a wide distribution in the South Pacific. Wallis is situated very near to Samoa, which makes it likely that the specimens identified as *A. similis* by MAULIK (1929), may prove to belong to *A. fauveli* n. sp.

Genus *Metrioidea* FAIRMAIRE, 1881

The genus *Metrioidea* includes four species from Fiji Islands, fourteen from the Nearctic and two from the Oriental Region (WILCOX 1971-1975 and MOHAMEDSAID 1994). WILCOX divided the species in two groups: the Oriental species and the species from Fiji in one group (“*signatipennis*-group”) and the Nearctic species in the other (“*varicornis*-group”). Our results show the species from Fiji and New Caledonia to be congeneric. Because *Metrioidea signatipennis* from Fiji is the type species of *Metrioidea* the species from New Caledonia and Fiji belong to *Metrioidea*. The generic attribution of the other species will not be treated here. They need to be classified in other genera.

With some hesitation *Metrioidea* had been treated as a subgenus of *Monolepta* by BRYANT & GRESSITT (1957). In that respect, it is necessary to see if these genera can be separated clearly. Since the revisional work of WAGNER (2003) and his students, the definition of *Monolepta* has been much clearer. The type specimen of *Monolepta* is the African *Monolepta bioculata* described by FABRICIUS (1781) as *Crioceris bioculata*. WAGNER (2003) refers to the relative length of the basal antennal segments, where the second and third segments are approximately of the same length, as an external character for *Monolepta* in addition to the open prothoracic coxal cavities and the long first segment of the metatarsus. In *Metrioidea* the third antennal segment is longer than second, despite the first segment of the metatarsus is longer than the remaining segments combined and the prothoracic coxal cavities open. Furthermore, *Metrioidea* species are dorsoventrally flattened.

However, the best characters to distinguish *Monolepta* from *Metrioidea* are found in the structure of the genitalia. The aedeagus of *Monolepta* is elongated, bilaterally symmetric and shows no incisions at the apex. The aedeagi of *Metrioidea* have the internal sac partly everted. The apex of the ventral lobe shows incisions, have horn shaped extrusions or shows teeth. In some species there also is a dorsal lobe. In these species the soft tissues of the internal sac are situated between the dorsal and ventral lobe. In most species, a pair of sclerites protrudes laterally. In species where these sclerites seem absent, they might be hidden between the internal structures and therefore not visible. It proved that in most specimens the aedeagi are rather weak.

***Metrioidea millei* n. sp.**

(figs. 13, 14)

TYPE MATERIAL

Holotype (♂): NEW CALEDONIA (Province Sud): Col d’Amieu, malaise trap, 1 xi 2005, COL/69/06 (MNHN).

Paratypes: NEW CALEDONIA (Province Sud): Col d’Amieu, malaise trap, 1 xi 2005, COL/69/06 : 2 specimens (1 CIAC, 1 RBCN). NEW CALEDONIA (Province Sud): La Foa, Col d’Amieu / 20 ii 2006, m 500 / M. Daccordi leg. (MDCT) : 2 specimens.

DESCRIPTION

Immaculate yellow species with ventral surface almost completely dark brown. Length 2.75-3.15 mm (total); 2.15-2.75 mm (from the anterior border of eyes to the tip of elytra). Greatest width across elytra: 1.15-1.35 mm.

Head: Greatest width across both eyes 0.55-0.60 mm; dorsal surface impunctate; vertex reticulate; frontal tubercles transverse very finely reticulate. Antennae with segments one to three yellow, four to six brown, and seven to eleven dark brown; segments three onwards pubescent and with large bristles.

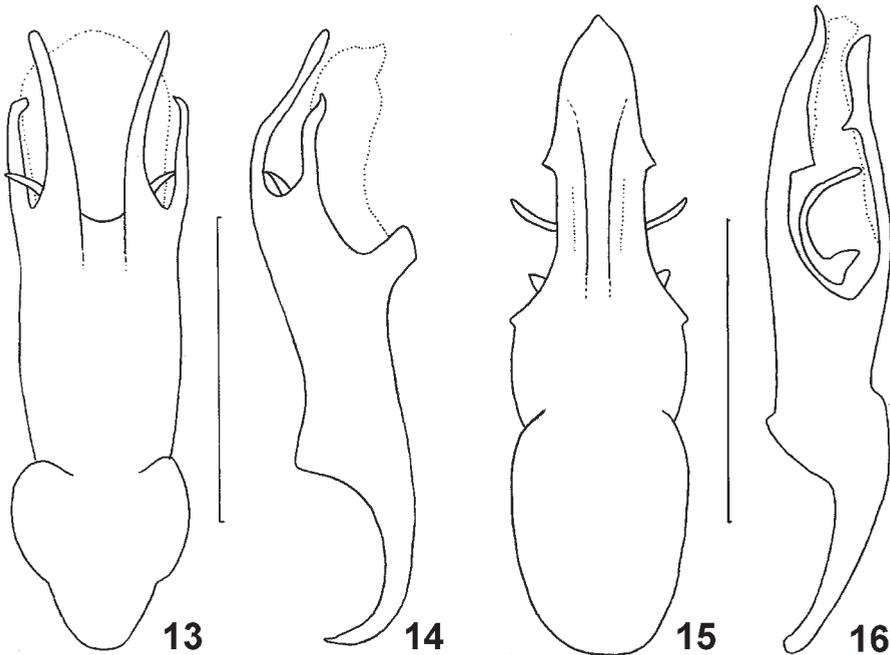
Pronotum: Length in the middle 0.40-0.50 mm; greatest width 0.65-0.70 mm, with the broadest in apical third; sides rounded; dorsal surface superficially punctate, dull due to reticulation between punctures; anterior border immarginate; lateral borders margined with small bead; posterior border with fine margin.

Scutellum: Triangular, yellow.

Elytra: At base much broader than thorax, broadest in apical fourth; humerus prominent; dorsal surface rugosely punctate; erect hairs sparsely distributed on elytral surface; epipleuron even, wider at base, slightly expanded near base of metasternum, then gradually narrowing toward apex.

Legs: yellow, long, slender; tibiae with apical spine; tarsal claws appendiculate.

Ventral side of thorax and abdomen dark brown. Aedeagus: figs. 13, 14.



13-16. Aedeagus: 13, 14 – *Metrioidea millei* n. sp., 15, 16 – *Metrioidea lateralimaculatus* n. sp., 13, 15 – ventral view, 14, 16 – left lateral view. Scale bar = 1 mm

Condition of the specimens: In the holotype the right intermediate tarsus and claws of right fore leg and left intermediate leg are missing. In all paratypes some parts are missing.

DIAGNOSIS

Metrioidea millei n. sp. is the only *Metrioidea* with dorsal surface yellow and ventral surface almost completely dark. Its dull dorsal surface makes the new species unique among the known *Metrioidea*.

ETYMOLOGY

This species is dedicated to Christian MILLE who encouraged me to study the New Caledonian Galerucinae.

DISTRIBUTION

New Caledonia: Province Sud. All specimens have been collected near Col d'Amieu.

Metrioidea lateralimaculatus n. sp.

(figs. 15-17)

TYPE MATERIAL

Holotype male: NEW CALEDONIA (Province Sud): Col d'Amieu, malaise trap, 28 ii – 13 iii 2006, COL/65/06 (MNHN)

Paratypes : NEW CALEDONIA (Province Sud): Col d'Amieu, malaise trap, 28 ii – 13 iii 2006, COL/65/06 : 8 specimens unsexed (1 MNHN, 3 CIAC, 3 RBCN). NEW CALEDONIA (Province Sud): 22°06'S-166°39'E 180m / Rivière Bleue P. (N) 1 km of scientists refuge, ad lucem / 27.01.2004 leg M. Wanat (MNHW). NEW CALEDONIA (Province Sud): 22°11'S-166°30'E Koghi Mts 450-600 m / track to Cascade forest / 21.01.2004 leg M. Wanat (MNHW). NEW CALEDONIA (Province Sud): Nouméa, Mt. Koghi, 9 x 1969 / No. PC-U.2. /leg. Dr. J. Balogh (HNHM).

DESCRIPTION

Yellow, with brown spots on elytra, and pronotum with longitudinal brown lines at both sides (fig. 17). Length 2.75-3.50 mm (total); 2.40-3.00 mm (from the anterior border of the eyes to the tip of the elytra). Greatest width across elytra: 1.35-1.75 mm.

Head: Greatest width across both eyes 0.60- 0.70 mm; dorsal surface impunctate; vertex reticulate; frontal tubercles transversely, very finely reticulate. Antennae yellow except segments 9 and 10 with apex black and 11 with apical half black; segments three onwards pubescent, and with large bristles.

Pronotum: Length in the middle 0.45- 0.55 mm; greatest width 0.80-0.93 mm, broadest in apical third; sides rounded; dorsal surface punctuate; space between punctures reticulate; anterior border immarginate; lateral borders margined with small bead; posterior border with fine margin.

Scutellum: Triangular, yellow brown.

Elytra: At base much broader than thorax, with greatest width in apical fourth; humerus prominent; dorsal surface punctate with intermediate spaces reticulate; erect hairs sparsely distributed on elytral surface; epipleuron even, wider at base, expanding a bit until base of metasternum, then gradually narrowing towards apex; coloration yellowish brown, with four dark brown markings (fig. 17), a humeral spot, two lateral spots and a vertical band near the apex and touching the suture, and the apex of the two lateral spots vague in some specimens or even missing.

Legs long, slender; all tibiae with apical spine. All tarsal claws appendiculate.

Ventral side: Yellowish brown. Margins of mesothoracic epimeron and episternum brown. Procoxal cavities open posteriorly.

No external sexual differences. Aedeagus: figs. 15, 16.

DIAGNOSIS

Maculate species with dorsal surface yellow and ventral surface yellowish brown. The pattern of maculae is characteristic for this species.

ETYMOLOGY

The species is named “lateralimaculatus” because of the maculae situated near margins of the elytra,

DISTRIBUTION

New Caledonia: Province Sud.

Metrioidea cornuphallus n. sp.

(figs. 18, 19)

TYPE MATERIAL

Holotype (♂): NEW CALEDONIA (Province Sud): Col d'Amieu, malaise trap, 28 ii – 13 iii 2006, COL / 65 / 06 (MNHN).

DESCRIPTION

Yellow, except metasternite and metepimeron brown. Length 2.55 mm (total); 2.20 mm (from the anterior border of the eyes to the tip of the elytra). Greatest width across elytra: 1.35 mm.

Head: Greatest width across both eyes 0.58 mm. Dorsal surface impunctate; vertex with fine reticulation. Frontal tubercles transverse, shiny. Antennae with segments three onwards pubescent, and with large bristles; segments 1 to 3 yellow; segments 4-11 dark brown.

Pronotum: Length in the middle 0.50 mm; greatest width 0.70 mm, broadest immediately behind front corners; sides rounded; dorsal surface punctate; spaces between punctures shiny; anterior border immarginate; lateral borders margined with small bead; posterior border with fine margin.

Scutellum: Triangular, yellowish brown.

Elytra: At base much broader than thorax, broadest in apical fourth; humerus prominent; dorsal surface punctate with intermediate spaces shiny; erect hairs sparsely

distributed on elytral surface; epipleuron even, wide at base, expanding a bit until base of metasternum, then gradually narrowing towards apex.; coloration yellow, except suture with thin brown margin.

Ventral surface: Yellowish brown, except metasternite and metepimeron brown. Procoxal cavities open posteriorly.

Legs: Long, slender; all tibiae with apical spine; all tarsal claws appendiculate. No external sexual differences. Aedeagus: figs. 18, 19.

DIAGNOSIS

Among unicolorous species, *Metrioidea cornuphallus* n. sp. is the only one with yellow ventral surface in combination with brown metasternite and metepimeron.

ETYMOLOGY

This species is named 'cornuphallus' because of the horn shaped apex of the aedeagus.

DISTRIBUTION

New Caledonia: Province Sud. Only known from the type locality: Col d'Amieu.

***Metrioidea petrae* n. sp.**

(figs. 20-22)

TYPE MATERIAL

Holotype male: NEW CALEDONIA (Province Nord): 20°33'S-164°46'E / Mt Panié 1200-1300m / humid montane forest / 3.02.2004 leg M. Wanat (MNHN).

Paratypes: NEW CALEDONIA (Province Nord): 20°33'S-164°46'E / Mt Panié 1200-1300m / humid montane forest / 3.02.2004 leg M. Wanat: 11 specimens unsexed (2 MNHN, 5 MNHW, 4 RBCN). New Caledonia (N) / 20°33'S-164°46'E / Mt Panié 500-1000m / E track, humid forest / 3.02.2004 leg M. Wanat (MNHW). NEW CALEDONIA (Province Nord): 20°33'S-164°46'E 1300m / Mt Panié humid forest / night beating near refuge hut / 2.02.2004 leg M. Wanat (MNHW). NEW CALEDONIA (Province Sud): 22°05'S-166°38'E 280-330m / Haute Rivière Bleue: / La tranchée-Sentier des Kaoris humid forest / 26.01.2004 leg M. Wanat (MNHW). NEW CALEDONIA (Province Sud): 1330 m / M. Humboldt for. Mousse / 15 ii 2006 / P. M. Giachino leg. (MDCT).

DESCRIPTION

Yellowish brown, with sides of pronotum brown and vague band along each elytron stained brown (fig. 22). Macropterous. Length 2.65-3.20 mm (total); 2.50-3.00 mm (from the anterior border of the eyes to the tip of the elytra). Broadest width across elytra: 1.45-1.50 mm.

Head: Greatest width across both eyes 0.58-0.65 mm; dorsal surface impunctate; vertex reticulate; frontal tubercles transverse very finely articulate. Antennae with segments 1 to 5 yellowish brown, 6 to 7 dark brown, 8 to 11 black; segments from the anterior half of segment three onwards pubescent, and with large bristles.

Pronotum: Length in the middle 0.45-0.55 mm; greatest width 0.68-0.80 mm, broadest in apical third; sides rounded; dorsal surface rugosely punctuate; anterior border immarginate; lateral borders margined with small bead; posterior border with fine margin.

Scutellum: Triangular, yellowish brown.

Elytra (figure 10): At base much broader than thorax, broadest in apical fourth; humerus prominent; dorsal surface rugosely punctuate; erect hairs sparsely distributed on elytral surface; epipleuron even, wider at base, expanding a bit until base of metasternum, then gradually narrowing towards apex. Coloration yellowish brown, with the inner margin in apical fourth dark brown.

Legs: Long, slender; all tibiae with apical spine; all tarsal claws appendiculate.

Ventral surface: Yellowish brown. Procoxal cavities open posteriorly.

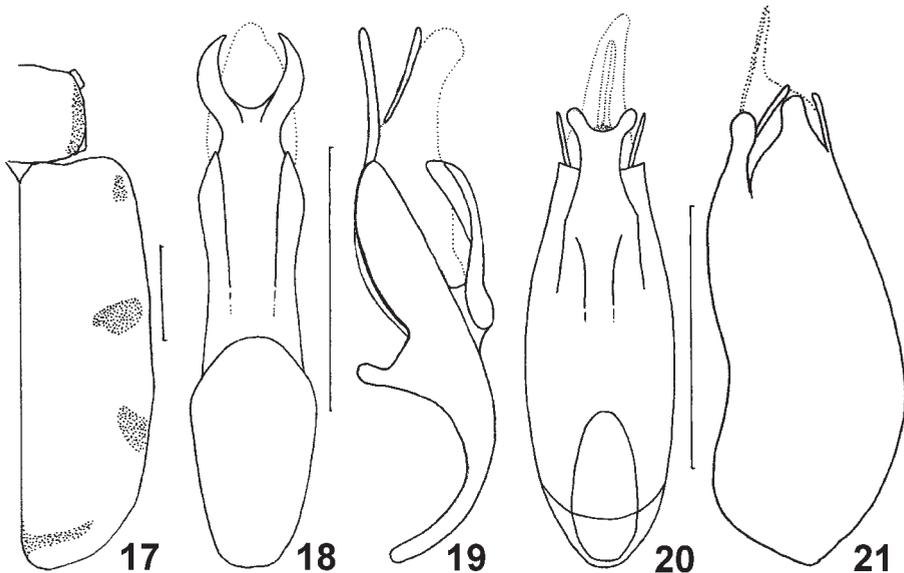
No external sexual differences. Aedeagus: figs. 20, 21.

DIAGNOSIS

This species is the only yellow brown *Metrioidea* showing a scattered brown band along elytra. The compact aedeagus is very characteristic.

ADDITIONAL REMARKS

All specimens are from Grand Terre, New Caledonia, both from the North as from the South of this large island.



17. *Metrioidea lateralimaculatus* n. sp.: right elytron; 18-21. Aedeagus: 18, 19 – *Metrioidea cornuphallus* n. sp., 20, 21 – *Metrioidea petrae* n. sp., 18, 20 – ventral view, 19, 21 – left lateral view. Scale bar = 1 mm

ETYMOLOGY

This beautiful species is dedicated to my dear wife Petra, for her patience and support during my leaf beetle surveys.

DISTRIBUTION

New Caledonia: Province Nord and Province Sud.

Metrioidea schoelleri n. sp.

(figs. 23, 24)

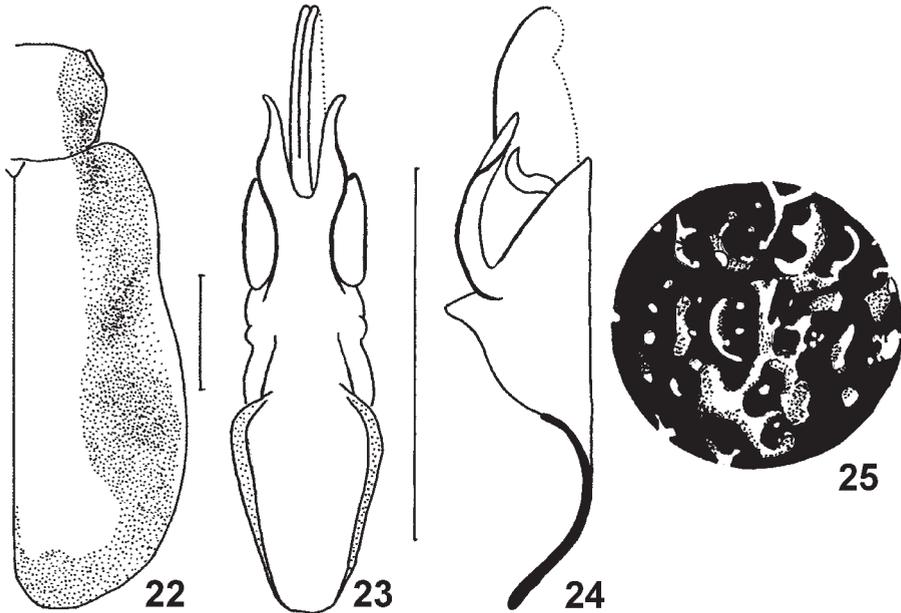
TYPE MATERIAL

Holotype male: NEW CALEDONIA (Province Sud): Comm. De l'Ile-des-Pins / Ilôt Brosse, 29 iii 1994, 22°70'S 167,4°E, leg. M. Schöller (ZMHB).

Paratypes : NEW CALEDONIA (Province Sud): Comm. De l'Ile-des-Pins / Ilôt Brosse, 29 iii 1994, 22°70'S 167,4°E, leg. M. Schöller: 6 ex. (2 ZMHB, 2 MESC, 2 RBCN). NEW CALEDONIA (Province Sud): Comm. De l'Ile-des-Pins / Ilôt Bayonnaise, 26 iii 1994, 22°40'S 167,2°E, leg. M. Schöller: 5 ex. (3 MESC, 2 RBCN).

DESCRIPTION

Yellow species with lateral margins of the pronotum brown and metathorax dark brown.



22. Right elytron of *Metrioidea petrae* n. sp.; 23, 24. Aedaeagus of *Metrioidea schoelleri* n. sp.: 23 – ventral view, 24 – left lateral view; 25. *Metrioidea bimaculatus*, detail of the elytral structure; the interrupted circle on the left elytron in 26 indicates the location of figure 2. Scale bar = 1 mm

Length 2.25-2.70 mm (total); 2.05-2.35 mm (from the anterior border of the eyes to the tip of the elytra). Greatest width across both elytra: 1.00-1.15 mm.

Head: Greatest width across eyes 0.55 mm; dorsal surface impunctate; vertex reticulate; frontal tubercles transverse, impunctate. Antennae yellow; segments 8 to 10, with apical half brown; segments 11 entirely brown; apical half of segment three onwards pubescent, and with large bristles.

Pronotum: Length in the middle 0.40–0.45 mm; greatest width 0.60 mm, broadest in apical third; sides rounded; dorsal surface reticulate, with very shallow punctures; anterior border unmarginated; lateral borders margined with small bead; posterior border with fine margin.

Scutellum: Triangular, yellow.

Elytra: At base much broader than thorax, broadest in apical fourth; humerus prominent; dorsal surface with rugosities and shallow punctures; erect hairs sparsely distributed on elytral surface; epipleuron even, wider at base, expanding a bit until base of metasternum, then gradually narrowing towards apex; coloration yellow.

Ventral surface: Yellow, except for dark brown metathorax. Procoxal cavities open posteriorly.

Legs: Long, slender; all tibiae with apical spine; all tarsal claws appendiculate.

No external sexual differences. Aedeagus: figs 23, 24.

DIAGNOSIS

M. schoelleri n. sp. shows similarities with *M. millei* n. sp. *M. schoelleri* n. sp. is smaller and has dorsal surface more shining. Furthermore *M. schoelleri* n. sp. is characterized by a yellow ventral surface, with metathorax brown.

ETYMOLOGY

This species is dedicated to my friend and colleague Matthias SCHÖLLER, who collected the type specimens at Île des Pins.

DISTRIBUTION

NEW CALEDONIA (Province Sud). Only known from Île des Pins.

***Metrioidea bimaculatus* (PERROUD & MONTROUZIER) comb. nov.**

(figs. 25-28)

Luperus bimaculatus PERROUD & MONTROUZIER, 1864: 213

Luperus bimaculatus: WEISE, 1924: 117

Monolepta bimaculatus: WILCOX, 1971-1975: 573

The holotype was available for this study. The description by PERROUD & MONTROUZIER (1864) is clear and there is no reason to make a redescription. This species has originally been classified in *Luperus* and was transferred to *Monolepta* by WILCOX (1971-1975). In the present study it became clear that this classification was not satisfactory. The elongated habitus of this species (fig. 26) is unlike the more oval form of

Monolepta. Furthermore, the structure of its aedeagus is different from the *Monolepta*, but similar to the *Metrioidea*. In several species of *Metrioidea*, the aedeagus shows lateral sclerites. This species fits perfectly with all other morphological characters of *Metrioidea*. We therefore transfer *Luperus bimaculatus* to the genus *Metrioidea*.

Metrioidea bimaculatus is a larger species, 5.75–7.80 mm. Its elytra show a typical structure which is depicted in fig. 25. Some of the specimens studied have additional light spots on the elytra which are evenly spread. Aedeagus: figure 27 and 28.

TYPE MATERIAL EXAMINED

HOLOTYPE : NEW CALEDONIA (Province Nord): Kanala type [h] rec. Montrousier [h] Fauvel // Coll. A. Fauvel, *Luperus bimaculatus* Perr. [h] // Type (ISNB).

ADDITIONAL MATERIAL EXAMINED

NEW CALEDONIA (Province Nord): Nordküste (Bâ) // 16 iii 1994, leg. M. Schöller (MESC: 2, RBCN: 1). NEW CALEDONIA (Province Nord): 20°33'S / 164°48'E, 20-50 m., Cascade de Tao, humid forest along stream, 1 ii 2004, leg. M. Wanat (MNHW). NEW CALEDONIA (Province Nord): Ouégoa/Mandjéla, Lat. S 20.39683 Long. E 164.53218, Alt. 787 m. // Collecté sur: par battage, Le 07 et 08/02/05, par S. Cazerès & C. Mille (CIAC). NEW CALEDONIA (Province Sud): Col d'Amieu 32, Lat. S 21.62157 Long. E 165.80792, Alt. 402 m. // Collecté sur: Divers par battage, Le 06/01/05, par S. Cazerès (RBCN).

DISTRIBUTION

New Caledonia: Province Nord and Province Sud.

***Metrioidea wanati* n. sp.**

(fig. 29, 30)

TYPE MATERIAL

HOLOTYPE: ♂. NEW CALEDONIA (Province Sud): 22°05'S / 166° 38' E, 280–330 m., Haute Rivière Bleue: La Tranchee-Sentier des Kaoris, humid forest, 28.01.2004, leg. M. Wanat (MNHN).

PARATYPE: ♀. NEW CALEDONIA (Province Sud): 22°05'S / 166° 27' E, 700 m., Mt Dzumac Road (7th km), 9.02.2004, maquis, ex. *Hibbertia lucens*. leg. M. Wanat (MNHW).

DESCRIPTION

Flat, unicolorous red-brown species. Macropterous. Length 6.10–6.50 mm (total); 5.40–6.10 mm (from the anterior border of the eyes to the tip of the elytra). Greatest width across elytra: 2.35–2.65 mm.

Head: Greatest width across both eyes 1.20–1.25 mm. Dorsal surface impunctate; vertex reticulate and dull. Frontal tubercles transverse, shiny. Antennal segments from segment three onwards pubescent. All segments with large bristles.

Pronotum: Length in the middle 0.88-1.00 mm; greatest width 1.35-1.50 mm, with the broadest in middle; sides slightly rounded; dorsal surface with punctures that conflate; anterior border immarginate; lateral borders margined with small bead; posterior border with fine margin.

Scutellum: Triangular.

Elytra: At base much broader than thorax, broadest in apical fourth, flat; humerus less prominent; dorsal surface punctate, shiny; erect hairs sparsely distributed on elytral surface; epipleuron even, wider at base, expanding a bit until base of metasternum, then gradually narrowing towards apex.

Ventral surface: Procoxal cavities open posteriorly.

Legs: Long, slender; all tibiae with apical spine; all tarsal claws appendiculate.

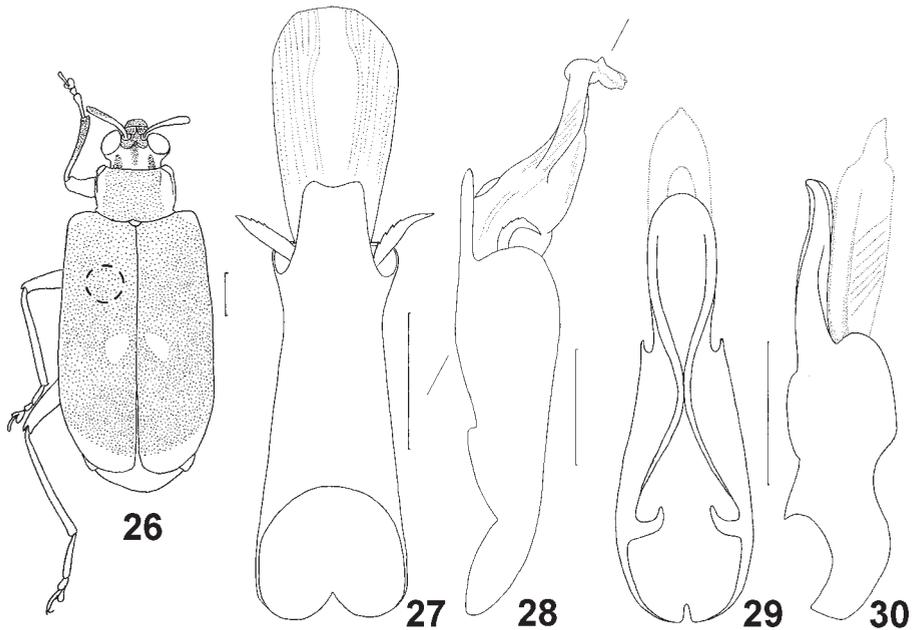
No external sexual differences. Aedeagus: figs. 29, 30.

DIAGNOSIS

Metrioidea wanati n. sp. and *M. bimaculatus* are both large and flat *Metrioidea* species. *M. wanati* n. sp. is smaller and has no confluent punctures on the elytra as in *M. bimaculatus* (fig. 25).

ETYMOLOGY

This species is dedicated to Marek WANAT, who discovered so many interesting Galerucinae in New Caledonia.



26-28. *Metrioidea bimaculatus*. 26 – schematic drawing of dorsal part; dotted areas are dark brown, 27, 28 – aedeagus with partially everted internal sac: 27 – ventral view, 28 – left lateral view. 29, 30. Aedeagus of *Metrioidea wanati* n. sp.: 29 – ventral view, 30 – left lateral view. Scale bar = 1 mm

DISTRIBUTION

New Caledonia, Province Sud.

ADDITIONAL REMARKS

The paratype shows some shades of brown on the central part of the pronotum and on both elytra besides the scutellum.

DISCUSSION

The results until now show unexpected large numbers of species from a few genera of the Galerucinae from New Caledonia. WILSON (1992) writes on New Caledonia as his favourite island: 'far enough off the coast of Australia to spawn a unique fauna and flora, large enough to accommodate large numbers of animals and plants and close enough to the Melanesian archipelagos to the north to have received elements from that different biogeographical realm'. The present results in the New Caledonian species from the genus *Metrioidea* fit these lines perfectly. In a next contribution to the knowledge of New Caledonian Galerucinae further species in *Metrioidea* and other genera will be treated. Finally, a key to the New Caledonian Galerucinae will be published.

ACKNOWLEDGEMENTS

Pierre JOLIVET (Paris) and Christian MILLE (CIAC) have stimulated me to start studying the interesting Galerucinae of New Caledonia. They kindly provided me with specimens they collected or curate. Matthias SCHÖLLER (Berlin), Mauro DACCORDI, (Torino), Patrick GROOTAERT (ISNB), Ottó MERKL (HNHM) and Marek WANAT (MNHM) made their material available. Finally, Mohamed MOHAMEDSAID (Malaysia) critically read a previous version of this article. I gratefully acknowledge all of them for their cooperation.

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