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Inclusive phylogenetic concept of *Thasycles* Chapuis, 1874 with synonymisation of *Atrichatus* Sharp, 1886 (Coleoptera Chrysomelidae) from New Zealand and description of new species from New Caledonia

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ABSTRACT The discovery of an evolutionary lineage of New Caledonian Eumolpinae (Coleoptera Chrysomelidae) with intermediate characteristics between the New Caledonia endemic *Thasycles* Chapuis, 1874 and the New Zealand endemic *Atrichatus* Sharp, 1886, and monophyletic with both genera in an mtDNA phylogeny, is used as an argument to propose the synonymy of both genera, *Thasycles* Chapuis, 1874 = *Atrichatus* Sharp, 1886 syn. nov. Moreover, the morphological and genetic diversity within this new lineage allows distinguishing three new species of New Caledonian Eumolpinae in the genus *Thasycles*, which are described in this work: *T. modestus* n. sp., *T. purpureus* n. sp. and *T. quadraticulus* n. sp. The last two species, particularly *T. quadraticulus,* only found above 400 m in Aoupinié, have to be considered narrow endemics at present. A pragmatic key for the identification of these species and the diagnosis of all genera of South Pacific Eumolpinae with hairy dorsum is presented.

KEY WORDS Eumolpinae; mtDNA; phylogeny; South Pacific; taxonomy.

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INTRODUCTION

The subfamily Eumolpinae Hope, 1840 (Coleoptera Chrysomelidae) is highly diverse in the South Pacific and the chain of islands reaching from Solomon to Samoa, with most species found in New Caledonia but also in Fiji, and well represented in New Zealand and the small Lord Howe and Norfolk islands (Gressitt, 1957; Bryant & Gressitt, 1957; Jolivet et al., 2006; Papadopoulou et al., 2013; Gómez-Zurita, 2019, 2020). These faunas have been studied independently from each other, although their close relationship is somewhat implicit (Jolivet et al., 2007a; Gómez-Zurita & Pàmies-Harder, 2022) and in some cases this is reflected by taxonomy. For example, the genus *Dematochroma* Baly, 1864 from Lord Howe is considered to be also present in New Caledonia and Vanuatu (Jolivet et al., 2007b, 2009; but see Gómez-Zurita & Pàmies-Harder, 2022), other genera originally considered endemic from New Caledonia have been reported from Vanuatu (Jolivet et al., 2009), the genus *Peniticus* Sharp, 1876 from New Zealand is also found in Kermadec (Gómez-Zurita, 2020), and the genus *Eucolaspis* Sharp, 1886, also from New Zealand has been reported from Fiji (Bryant & Gressitt, 1957; Gómez-Zurita, 2019). Morever, available phylogenetic evidence

unequivocally shows that at least *Dematochroma* and the New Zealand endemic genus *Atrichatus* Sharp, 1886 are nested within the main diversification of New Caledonian Eumolpinae (Gómez-Zurita & Pàmies-Harder, 2022; Platania et al., submitted). Specifically, the latter is closely related to the genus *Thasycles* Chapuis, 1874, with which it shares some unusual traits, including the presence of dorsal setae on pronotum and elytra, albeit much reduced in *Atrichatus*. However, *Atrichatus* lacks the trait that is currently considered apomorphic for *Thasycles*, namely the trichobothria and anterior angles of pronotum in interstitial position on the anterior border of pronotum, with anterior angles thus flat (Chapuis, 1874). This important departure from the character that allows an easy recognition of *Thasycles* was used as the argument to keep both genera separated, which also retained the disjunct endemic status of both genera, *Atrichatus* in New Zealand and *Thasycles* in New Caledonia (Gómez-Zurita & Pàmies-Harder, 2022).

In the course of our work to define and revise natural groups of New Caledonian Eumolpinae, we encountered a group of specimens representing closely related species, phylogenetically close and sharing some traits with both *Thasycles* and *Atrichatus*. In this work, the study of mitochondrial DNA (mtDNA) sequences and the interpretation of morphological traits will be used to argument the close relationship of these genera, together with this new lineage of New Caledonian species despite their general appearance presenting some differences. These species will be described and assigned to *Thasycles*, based on their monophyly, thus expanding the range of the genus from New Caledonia to New Zealand.

MATERIAL AND METHODS

Samples for molecular analysis

A selection of specimens originally recognized as three morphospecies presenting similarities with *Thasycles* and *Atrichatus* were used for molecular analyses (Table 1). Samples were processed as in our most recent studies using non-destructive DNA extraction protocols of dry collection specimens (e.g., Gómez-Zurita, 2018, 2022; Platania et al., 2020; Gómez-Zurita & Pàmies-Harder, 2022) with the DNeasy Blood & Tissue kit (Qiagen Iberia, Madrid). Genomic DNA extractions were used to PCR-amplify two short fragments of the cytochrome c oxidase subunit 1 (*cox1*) and the small ribosomal subunit (*rrnS*) of the mtDNA genome as in the studies mentioned. Longer fragments of protein-coding genes were not available from these dry

Species	Code	Locality	cox1	rrnS
Thasycles modestus n. sp.	5057*	trail to Dogny	PP057716	PP057700
	5060	Tiéa Forest	PP057717	PP057701
Thasycles purpureus n. sp.	5082*	P. Grandes Fougères	PP057718	-
	5083	P. Grandes Fougères	PP057719	PP057702
	5084	P. Grandes Fougères	PP057720	-
	5085	Col d'Amieu	PP057721	-
Thasycles quadraticulus n. sp.	5078*	Aoupinié	PP057722	PP057703
	5079	Aoupinié	PP057723	PP057704
	5080	Aoupinié	PP057724	PP057705
	5081	Aoupinié	PP057725	PP057706

Table 1. Specimens newly sequenced to be used for molecular analysis of *Thasycles* together with data from Gómez-Zurita (2022) and Gómez-Zurita & Pàmies-Harder (2022). * Holotype specimens.

collection samples (Platania & Gómez-Zurita, 2022). Successfully amplified PCR products were sequenced in both directions using BigDye terminator 3.1 technology on a 3730xl DNA Analyzer (Applied Biosystems, Foster City CA).

DNA sequence analysis

Sequences were assembled and edited with Geneious Prime 2023.1.2 (Biomatters Ltd., Auckland) and data for each locus were aligned using the G-INS-i algorithm in MAFFT 7.49 (Katoh & Standley, 2013) together with a selection of homologous data from *Thasycles* and *Dematotrichus* and other taxa available from previous studies (see Fig. 1). The new sequences generated for this study were deposited in GenBank under accession numbers PP057700-PP057706 (*rrnS*) and PP057716-PP057725 (*cox1*). The *cox1* and *rrnS* individual alignments were subsequently concatenated for phylogenetic analysis. The matrix was analyzed both under maximum likelihood (ML) with RAxML 8.2.11 (Stamatakis, 2014) and Bayesian inference (BI) with MrBayes 3.2.6 (Ronquist & Huelsenbeck, 2003). ML tree inference used unlinked GTR+I+G models for the combination of first and second codon positions in *cox1*, third codon positions in the same gene and the *rrnS* fragment, and 500 random starting trees for a thorough search (-f a) of the best tree as well as a measure of branch support based on 500 bootstrap (BS) pseudoreplicates. Unconstrained branch length tree BI was based on a GTR+I+G model and four chains of 5M generations, subsampling trees and parameters every 10K generations, discarding 10% of initial generations prior to tree computation based on maximum clade credibility consensus, including branch posterior probabilities (PP) as measure of support.

Examination of morphology

Specimens representing three different and closely related morphospecies were obtained from the beetle collection from the Museum of Natural History of the University of Wrocław (MNHW, Wrocław, Poland). Dry mounted specimens were examined using a Leica M80 stereomicroscope, including a calibrated eyepiece for measurements and pictures were obtained using a Leica DFC420 digital camera. Drawings of male genitalia and spermathecae were based on pictures of real dissected organs. The species descriptions used a similar style as in our previous taxonomic works on this same group (e.g., Gómez-Zurita & Pàmies-Harder, 2022) with nomenclature based on Lindroth (1957), Lawrence et al. (2010), and Wagner (2007).

Distribution maps

Georeferenced localities of the study area were plotted on the cartography of New Caledonia using ggplot2 3.3.5 (Wickham, 2016), elevatr 0.4.2 (Hollister et al., 2022) and Natural Earth resources (https://www.naturalearthdata.com/) in R 4.1.2 (R Core Team, 2021).

RESULTS AND DISCUSSION

Molecular data and generic allocation

The age of the New Caledonian radiation of Eumolpinae was originally dated using mtDNA information around a mean of 35–38 Ma (Papadopoulou et al., 2013), corroborated but for a slightly younger time interval in a broader phylogenetic study based on additional molecular data and larger sampling of the tribe Eumolpini (21–39 Ma; Platania et al., submitted). In this system, mtDNA data alone has shown limitations to resolve and support relationships older than 20–25 Ma using maximum likelihood tree inference, but our markers of choice in the study of New Caledonian Eumolpini can give support to clades around 15–20 Ma and younger, which usually correspond to linages that can be readily recognized and classified as genera (Papadopoulou et al., 2013; Platania & Gómez-Zurita, 2023).

The maximum likelihood and Bayesian trees of a selection of pubescent Eumolpini from New Caledonia, together with *Dematochroma picea* Baly, 1864 from Lord Howe Island and *Atrichatus ochraceus* (Broun, 1880) from New Zealand recovered with high support (BS = 93%; PP = 1.0) and within a generally unresolved backbone a clade including the species of *Thasycles* and *Atrichatus*, consistent with a previous study (Gómez-Zurita & Pàmies-Harder, 2022), together with the sequences newly generated for this study (Fig. 1). The strong support of a close, albeit non-resolved relationship among *Thasycles* from New Caledonia, *Atrichatus*

from New Zealand and a new monophyletic assemblage of species from New Caledonia could justify four different subjective taxonomic treatments (Fig. 2): (1) the three lineages could be embedded in a single genus, *Thasycles* based on priority; (2) the definition of *Thasycles* could be expanded to accommodate the new lineage, with which it shares more similarities, but not *Atrichatus*, preserving their geographic distinctiveness as well; (3) the lack of the main apomorphy of *Thasycles* (Chapuis, 1874; Gómez-Zurita & Pàmies-Harder, 2022), i.e., flat anterior angles of pronotum, in some of the

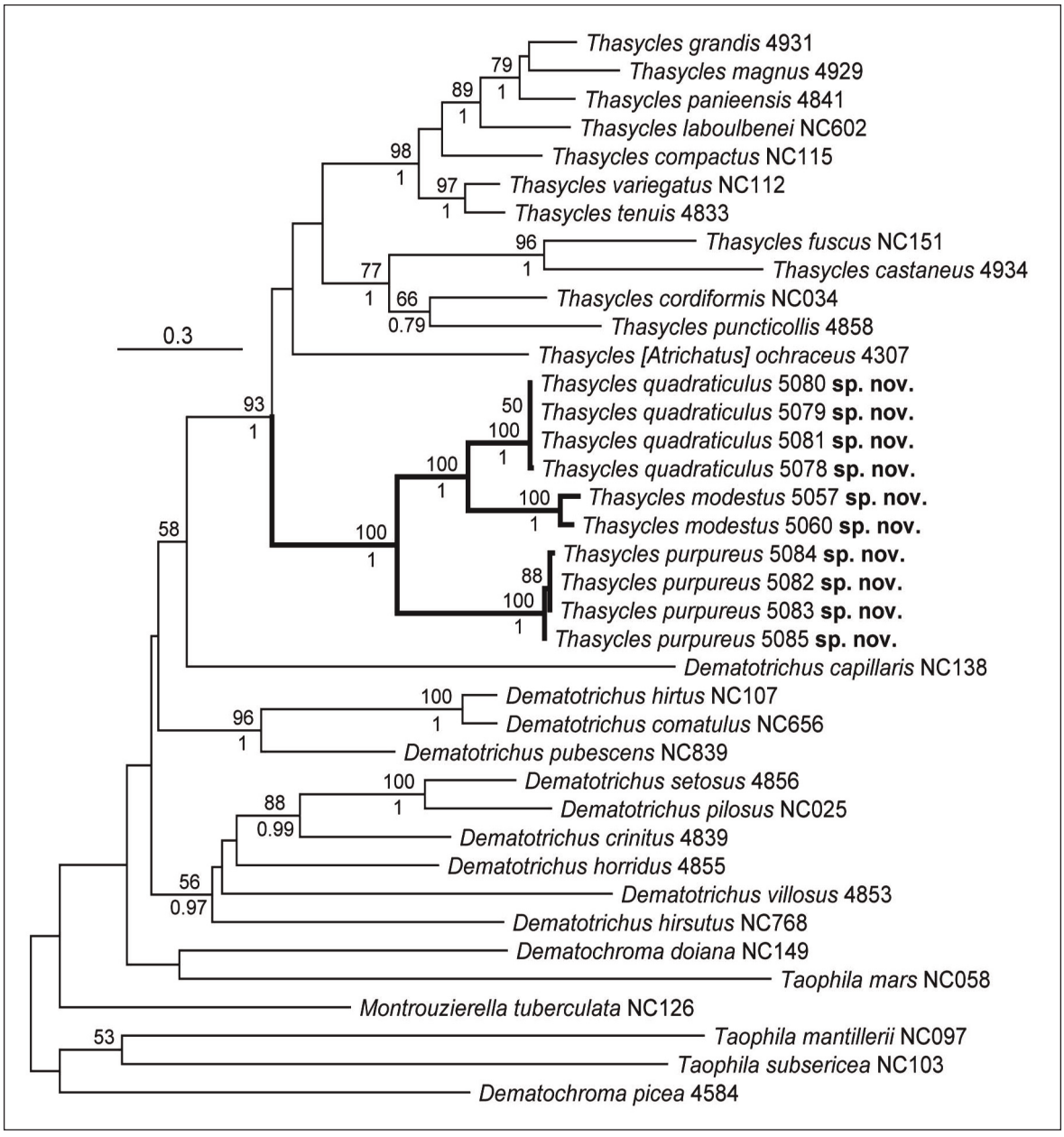


Figure 1. Maximum likelihood tree (likelihood score = -11126.665836) based on *cox1* and *rrnS* data for a selection of *Atrichatus* Sharp, *Dematotrichus* Gómez-Zurita et *Thasycles* Chapuis species, together with outgroups and sequences obtained from a group of closely related species described in this work (thick branches on the tree). Bootstrap branch support (> 50%) is shown above branches and posterior probabilities (> 0.75) of Bayesian tree inference (mean likelihood ~ 11587.14) shown below branches.

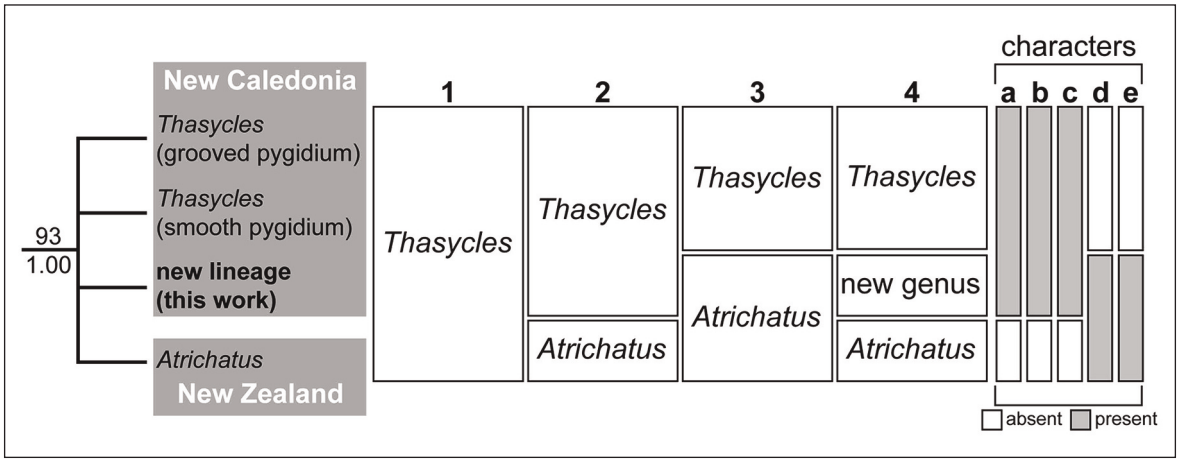


Figure 2. Possible generic allocations in a monophyletic group of closely related species with taxa ascribed to two genera, *Thasycles* Chapuis, 1874 and *Atrichatus* Sharp, 1886, with indication of some relevant taxonomic characters shared with one or the other (a–e). All species can be treated in a single genus, *Thasycles*, based on priority (1). The two original genera can be preserved, including a new lineage sharing traits with both in one or the other (2, 3). Or this new lineage can be assigned a new generic name to preserve the original genera (4). In this work, the first option is endorsed. Characters considered: (a) explanate margin of pronotum; (b) flat anterior angles of pronotum; (c) general dorsal pubescence; (d) deeply excavated metatibiae; and (e) broad intercoxal distances.

species of this new group and one important similarity of the new lineage with *Atrichatus*, namely the conformation of metatibiae, could advice ranking these species together with those from New Zealand; or (4) the new lineage, which shows conspicuous diagnostic differences with both *Thasycles* and *Atrichatus*, could be given generic rank, justifying the description of a new genus. Here, we will try to defend the first alternative, taking into account that there is one taxon available to accommodate newly discovered diversity, thus avoiding the proposition of new names; also the possibility to diagnose the resulting group based on morphological characteristics by relaxing the definition of apomorphic traits; and finally the information about the timing of separation of New Zealand *Atrichatus* from its sister *Thasycles,* dated at 10.3–20.9 Ma (Platania et al., submitted), and in the age range of genera already defined in this group, considering that treating any subsequent split with generic rank would yield a very recent age for resulting genera in comparative terms. As it will be discussed in the next section, the species in the newly discovered lineage sibling to *Thasycles* and *Atrichatus*, present traits shared with one or the other, thus blurring the limits of these genera based on morphological differences. Gómez-Zurita & Pàmies-Harder (2022) already found the close relationship of *Thasycles* with *Atrichatus*, but were cautious to propose their synonymy based on their sister group relationship, since at that moment the lineage of intermediate characteristics was not known, and also because of their distant allopatry, with each genus in a different archipelago. The new data however, together with unpublished results using more phylogenetic markers and a broader sampling (Platania et al., submitted), provide a new perspective on this issue and therefore better arguments for the synonymy: *Thasycles* Chapuis, 1874 = *Atrichatus* Sharp, 1886 n. syn. This proposition should only be reversed if new data become available, e.g. single-copy nuclear gene sequences, allowing placing the new lineage of New Caledonian Eumolpinae with confidence either as sister of *Thasycles* or of *Atrichatus*.

The new sequences appear as a clade with maximum support and three lineages that correspond well with the observed morphological diversity in the group and their mostly allopatric distributions. Specifically, the morphospecies from Aoupinié is sister to a morphospecies represented by two individuals from distant localities in the north half of Grande Terre, and these two branches are in turn sister to one species localized in the area of Sarraméa and Col d'Amieu. The three morphospecies are new and will be described below.

Diagnosis of **Thasycles** *in a broad sense*

Atrichatus, Thasycles and the new lineage belong to a polyphyletic group of evolutionary lineages of Eumolpini from the South Pacific with conspicuous dorsal pubescence on head, pronotum and elytra, with few exceptions (in *Thasycles*, the species *T. grandis* Gómez-Zurita and *T. magnus* Gómez-Zurita have glabrous pronotum). Apart from the mentioned genera, this pragmatic group includes the genera *Pilacolaspis* Sharp, *Tyrannomolpus* Nadein & Leschen, *Taophila* Heller (the subgenus *Jolivetiana* Gómez-Zurita & Cardoso having glabrous elytra), *Tricholapita* Gómez-Zurita & Cardoso, *Dematotrichus* Gómez-Zurita, and species currently classified as *Dematochroma doiana* Jolivet, Verma et Mille, 2007 and *Samuelsonia pilosa* Jolivet, Verma et Mille, 2007 together with several of their undescribed relatives (Gómez-Zurita & Pàmies-Harder, 2022). All other evolutionary lineages identified in the South Pacific are either completely glabrous dorsally or have few setae on frons near the eyes and/or apically on elytra.

The original description of *Atrichatus* or of any of its species were succinct and without providing much information in comparative terms, except with the New Zealand genus *Eucolaspis.* Sharp (1886) mainly focused on relative distances between pairs of coxae, but he also mentioned a relevant character that can be used for diagnostic purposes, together with other traits, namely the deep external excavation of tibiae. This feature refers more specifically to the characteristic shape of metatibiae of these species, which have two dorsal carinae expanded apically as relatively sharp teeth flanking a deep concave excavation dorsal to tarsal insertion. This trait, which is shared with the lineage newly discovered here, is not present however in the species currently in *Thasycles*, which have the inner carina of metatibiae only slightly enlarged apically, but not forming a sharp tooth (Gómez-Zurita & Pàmies-Harder, 2022). Another trait in *Atrichatus*, which could assist to separate it from any other pubescent species of Eumolpini in these islands, is the shape of pronotum. The pronotum of *Atrichatus* is moderately transverse, sloping anteriorly at sides and with anterior angles obtuse, since the sides of pronotum are strongly bent apically and aligned with the anterior border of pronotum. In the lineage from New Zealand, this feature is not so marked as in *Thasycles*, but it approaches both groups. However, in current *Atrichatus*, the pronotum is not as transverse as in *Thasycles*, it lacks the wide explanate lateral margins typical of *Thasycles,* and trichobothria are placed on small mucronate projections, not flattened as in *Thasycles* (Gómez-Zurita & Pàmies-Harder, 2022). Interestingly, one of the species of the new lineage from New Caledonia studied here has the pronotum indistinguishable from *Thasycles*. As already mentioned, Sharp (1886) considered intercoxal distances and shape of intercoxal processes to help delimiting his new genus. Thus, in the species currently in *Atrichatus*, the prosternal process is nearly as wide or as wide as procoxae, the mesoventral process is transverse, nearly as wide as mesocoxae, and the anterior process of the first abdominal ventrite is broader than the mesoventral process. These characteristics are shared with the species of the new lineage discovered here, however the prosternal process in the species of *Thasycles* is typically narrow, half as wide as procoxae or slightly wider, and the mesoventral process is also narrow. Finally, *Atrichatus* has a longitudinally grooved pygidium, as the species in the newly discovered lineage, contrary to what is seen in some *Thasycles* (and the genera *Pilacolaspis* and *Tricholapita*; Platania et al., 2020; Gómez-Zurita, 2020).

In summary, by incorporating the morphological diversity of *Atrichatus* and of the closely related lineage discovered in this work, the genus *Thasycles* would require a broader definition considering slightly different shapes of pronotum and much reduced dorsal pubescence (for the species in New Zealand), but it can be still recognized from other dorsally pubescent genera in the region. The following section provides this diagnosis in the form of a dichotomous key, expanded to include the identification of the species newly described in this work.

Pragmatic key for the separation of genera with pubescent dorsum

1. Pubescence on frons, pronotum and elytra, even if sparse and very localized. Present in New Caledonia and New Zealand. 2
-. Body glabrous dorsally or with few scattered setae near eyes or apex of elytra. Present in islands of the South Pacific. ..... *Cazeresia, Dematochroma, Dumbea, Eucolaspis, Kumatoeides, Montrouzierella, Peniticus, Samuelsonia*

2. Pygidium smooth dorsally. 3
-. Pygidium with dorsal groove. 5

3. Sides of pronotum strongly bent anteriorly appearing as anterior angles, with trichobothria thus interior, along anterior border. Endemic to New Caledonia. ..... *Thasycles* [s. str.] (pars)
-. Anterior angles of pronotum more or less acute, with trichobothria at angle. 4

4. Sides of pronotum with two or three teeth. Endemic to New Caledonia. .....*Tricholapita*
-. Sides of pronotum more or less angulate but without teeth. Endemic to South Island of New Zealand. ..... *Pilacolaspis*

5. Pronotum much narrower than elytra, which have prominent humeri. 6
-. Pronotum transverse, nearly as wide at base as base of elytra. 8

6. Pronotum longer than wide, usually devoid of lateral margin; frons depressed before clypeus. Endemic to New Caledonia. 7
-. Pronotum transverse, with fine lateral margin; frontoclypeus flat. Endemic to Three Kings Island (New Zealand). ..... *Tyrannomolpus*

7. Pubescent elytra; third antennomere slightly longer than second. Endemic to New Caledonia. ..... *Taophila* s. str.
-. Glabrous elytra; third antennomere three times longer than second. Endemic to New Caledonia. ..... *Taophila* (*Jolivetiana*)

8. Anterior angles of pronotum more or less acute, with trichobothria at angle. 9
-. Sides of pronotum strongly bent anteriorly appearing as anterior angles, with trichobothria thus interior, along anterior border. 11

9. Tibiae straight, weakly expanded apically. .....*Samuelsonia pilosa* [and undescribed relatives]
-. Metatibiae with dorsal carinae expanded apically as sharp teeth, and mesotibiae with relatively sharp external tooth. 10

10. Prosternal process at least 1/3 as wide as transverse diameter of procoxae, usually much wider; sides of pronotum strongly curved, much wider than anterior and posterior borders. Endemic to New Caledonia. ..... *Dematotrichus*
-. Prosternal process less than 1/3 as wide as transverse diameter of procoxae; sides of pronotum weakly convex. Endemic to New Caledonia. .... *Dematochroma doiana* [and undescribed relatives]

11. Metatibiae with two dorsal carinae expanded apically as more or less acute teeth, with deeply excavate metatarsal insertion. 12
-. Metatibiae with inner carinae not markedly expanded apically, thus without a deep excavation before tarsal insertion. Present in New Caledonia. ..... *Thasycles* [s. str.] (pars)

12. Pronotum without explanate margin and with very sparse and short pubescence on anterior angles only. Present in New Zealand..... ..... *Thasycles* [*Atrichatus* Sharp]
-. Pronotum with wide, explanate, gutter-like margin; pronotum with denser and longer pubescence, also on disc. Present in New Caledonia. 13

13. Disc of elytra pubescent. Males without conspicuous dorsal metallic tinge and regularly round apex of elytra. Females without lateral longitudinal rows of dense setae basally on elytra..... ..... *Thasycles modestus* n. sp.
-. Disc of elytra glabrous. Males typically with purplish blue metallic colour dorsally and flattened apex of elytra. Females with three short longitudinal posthumeral rows of dense setae on lateral intervals of elytra. 14

14. Callous apex of penultimate interval of elytra aligned posteriorly with flattened apex of elytra in males and projected posteriorly reaching behind sutural angle in females. .... *Thasycles quadraticulus* n. sp.
-. In males, penultimate interval of elytra without developed callus and elytra attenuated posteriorly and slightly flattened at apex; in females, penultimate interval callous and prominent, aligned with sutural angle. ..... *Thasycles purpureus* n. sp.

Description of new species

Thasycles modestus n. sp.
https://www.zoobank.org/07CDFF76-FB3A-44B2-88B5-7D16C47DA711

TYPE MATERIAL. Holotype male (Fig. 3), JGZC-5057, New Caledonia (S), Sarramea, trail to Dogny, -21.6229 165.8684, 300–560 m, 9.XI.2010, M. Wanat and R. Ruta legit (MNHW). Paratype female (Fig. 3d), JGZC–5060, New Caledonia (N), Tiéa Forest (GIE Fab Nicoli), 21º07'S 164º57'E, 30 m, sclerophyllous forest, 31.I.2004, M. Wanat legit (MNHW)

DESCRIPTION OF THE HOLOTYPE MALE. Body elongate elliptical, uniformly dark brown with faint dark purplish blue iridescence behind humeri and last interval of elytra, and diffuse darker areas on pronotum and thoracic ventrites; mandibles, tarsomeres 1–2 and antennomeres 5–11 darker; labrum, palpi and antennomeres 1–4 testaceous. Length = 5.1 mm; width = 2.7 mm.

Head subhypognathous, broad, weakly convex on vertex and frontoclypeus flat. Frons broad, transversally flat between eyes, much wider than longer diameter of eye, weakly impressed longitudinally at middle, with surface slightly irregular, with dense, rather uniform fine punctation, nearly as wide as intervals, and fine dishevelled translucent setae, sparser at sides of median line; clypeus subtriangular, slightly shorter than wide at apex, deflexed in anterior half, with moderate anterior emargination, glossier and smoother than frons, punctured like frons at base, and more sparsely punctured with smaller punctures anteriorly, with scattered fine whitish setae basally and at sides; supraantennal calli slightly elevated, more conspicuously at inner angles, punctured and glabrous. Labrum slightly transverse, with broadly round anterior angles, deflexed and weakly emarginate anteriorly, finely microreticulate with two large setigerous punctures anteriorly on disc, before deflexed anterior margin. Eyes large, elongate dorsoventrally, slightly emarginate at inner border, convex. Genae short, unpunctured, with scattered fine translucent setae. Antennae long, slender, reaching past middle of elytra, widely separated by frons; scape elongate, weakly curved posteriorly at middle, with scattered long fine yellowish setae dorsally; pedicel short, ovate, slightly longer than wide, less than 0.4x as long as scape; antennomeres 3–7 progressively longer, 1.7x, 2.2x, 2.4x, 2.6x and 2.9x as long as pedicel, antennomeres 8–9 subequal and 2.8x as long as pedicel, antennomere 10 slightly shorter than ninth.

Pronotum transverse, 1.75x as wide at point of maximum width as long at middle, 1.25x as wide between posterior as between anterior angles; anterior border straight, slightly advanced near anterior angles, finely margined; anterior angles flat, indicated by position of large, weakly convex trichobothrium; posterior border regularly convex, with relatively thick margin and impressed border, with laterally protruding posterior angles with trichobothrium at apex; sides very shortly sinuous at base, round basally, widest in posterior third, weakly convex medially, slightly converging anteriorly before round apical curvature towards anterior angles, aligned with anterior border at apex, margins wide, explanate, gutter-like; surface weakly convex in sagittal plane, convex transversally but anterior angles not strongly deflexed, smooth, glossy, with dense small punctures, similar than on frons, as big or slightly smaller than intervals, and long fine whitish, recumbent setae mostly at sides of disc, along lateral margins and transverse patches on disc. Hypomera strongly microreticulate, unpunctured, glabrous. Prosternum short, with anterior border concave, finely margined, shortly separated from anterior border of procoxae, surface slightly irregular with sparse long dishevelled translucent setae; prosternal process as wide as transverse diameter of procoxae, widened posteriorly, finely shagreened, with small punctures and recumbent long translucent setae. Mesepimera and mesanepisterna finely microreticulate, mesepimera with sparse short, fine appressed setae. Mesoventrite short, as long as prosternum, transverse with process nearly as wide as prosternal process, with posterior border convex, anterior to basal border of mesocoxae, smooth, unpunctured, with few scattered whitish long setae. Metanepisterna elongate and gradually narrowed posteriorly, finely shagreened, with small punctures and relatively dense appressed short whitish setae, longer anteriorly. Metaventrite short, slightly longer than prosternum at middle, with posterior border between metacoxae at wide obtuse angle, slightly notched medially; surface finely shagreened, with fine punctures and uniformly covered with sparse fine, nearly appressed translucent setae except posteriorly on disc medially; discrimen finely impressed.

Scutellum about as long as wide basally, with sides subparallel and arched apically, smooth, shiny, with few small punctures and tiny translucent setae on disc. Elytra elongate, 0.65x as long as body, with humeral angles obtuse, round and marked humeri,

sides feebly convex, with maximum width around middle, gradually tapering in posterior half to regular apical curvature; surface smooth, glossy, with large, confused, occasionally confluent punctures on disc, more or less aligned in last two intervals, and with smaller and regularly aligned in punctures apical half near suture, inner intervals slightly convex apically and outer intervals weakly costate from humeri to apex, with third outer interval joining third inner interval at sutural angle as relatively large callus, surface with small transverse rugosities mainly anteriorly on disc; entire surface with scattered short, translucent setae only visible under certain angles, except on last interval, easier to see on posterior half of penultimate interval and apically on elytra, denser, longer, and whitish. Epipleura slanted in humeral and apical areas, broad in humeral angle, gradually narrowed to basal third, narrow and subparallel throughout and strongly narrowed at apex, surface alutaceous with scattered fine translucent pubescence, denser behind middle. Legs relatively long and robust, with femora enlarged medially; protibiae longer than profemora, relatively straight, narrow, subcylindrical in basal third, markedly enlarged internally and gradually widened to apex, with two complete external keels, external expanded as acute tooth at apex; mesotibiae as long as mesofemora, weakly curved ventrally, gradually enlarged apically from basal third, with dorsal keel complete and ventral keel with long preapical emargination; hind tibiae nearly straight, about as long as metafemora, weakly sinuous, gradually enlarged apically, furrowed dorsally with keels expanded apically as large teeth flanking deep apical excavation; basitarsomeres shorter than next two tarsomeres combined, enlarged in pro- and mesotarsi, third tarsomeres small, shorter than second, particularly small in metatarsi, onychium feebly clavate, curved ventrally, with large appendiculate divaricate claws.

First abdominal ventrite longer than metaventrite at middle and nearly as long as ventrites 2–4 combined, with anterior intercoxal apodeme nearly half as long as ventrite, arched, wider than mesoventrite; last ventrite as long as second, widely emarginate at apex and impressed medially; all ventrites uniformly punctate, with small punctures bearing posteriorly recumbent long, fine whitish setae. Penis (Fig. 9) long, slender, strongly curved and enlarged prebasally and gradually narrowing towards apex in lateral view, weakly curved ventrally with curvature slightly increased at apex; in ventral view, narrower in middle part, gradually enlarged in apical third, long lanceolate and slightly mucronate at apex, with short, transverse projection round at sides; gonopore elongate elliptical, narrower at base, with elongate, narrow dorsal flap basally.

Females. The female is larger than male (length = 6.6 mm; width = 3.5 mm), with proportionally longer and wider elytra and abdomen, more slender and proportionally shorter antennae, more slender pro- and mesotarsi, particularly basitarsomeres, with proportionally larger third tarsomeres compared to males, and with denser, more conspicuous pubescence on head, pronotum and elytra; elytral punctation subgeminate on disc, striate apically and laterally, with transverse wrinkles also apparent apically on elytra, and preapical callus of penultimate interval very prominent giving subtrapezoidal appearance to apex of elytra as seen from above; prosternal and mesoventral processes transverse, much wider than transverse diameter of respective coxae, and first abdominal ventrite comparatively larger, nearly as long as meso- and metaventrites together. The colour is also uniformly brown, but slightly paler, particularly on ventral surfaces, without traces of purplish or bluish metallic shine. Spermatheca (Fig. 14) U-shaped, with slightly longer and thicker cornu, relative to nodulus, bulbous at apex; nodulus cylindrical, regularly round at base, gradually narrowing towards spermathecal duct basally, with spermathecal duct poorly sclerotized, fine and curved opposite to cornu; ramus small, prominent, at right angle prebasally on nodulus, opposite to cornu.

Distribution (Fig. 15). This species is known from two specimens only found in two distant localities, some 110 km apart in the middle third of Grande Terre, in relatively dry areas.

Etymology. The male holotype of this species is less shiny than the other species in this group, hence the adjective *modestus* (m.), with the meaning of discreet, modest.

Remarks. This species can be recognized from its closest relatives by the presence of sparse setae on disc of elytra both in males and females. The male lacks the conspicuous purple or blue tinge so obvious in the other species (unless they are teneral), and the apex of elytra are regularly round, without preapical enlargement like *T. quadraticulus*

n. sp. or slightly flattened like *T. purpureus* n. sp. The female, as in all the species in the group, has callous expansions of the penultimate elytral interval apically, but anterior to sutural angle (at level with angle in *T. purpureus* n. sp., and posterior to angle in *T. quadraticulus* n. sp.).

Thasycles purpureus n. sp.
https://www.zoobank.org/D3ACF271-3FB9-43A2-A097-09A9F9867C6B

TYPE MATERIAL. Holotype male (Fig. 4), JGZC-5082, New Caledonia (S), Parc des Grandes Fougères, N of Pic Vincent, -21.5918 165.7745, 600–680 m, 6.xi.2010, M. Wanat and R. Ruta legit, Holotypus *Thasycles purpureus* n. sp. Gómez-Zurita det. 2022 [red label] (MNHW). Paratypes (all with red label: Paratypus *Thasycles purpureus* n. sp. Gómez-Zurita det. 2022): 1 male, JGZC–5083, Farino, Parc des Grandes Fougères, Pic Vincent track, -21.60948 165.77459, 600–670 m, 17.XI.2008, M. Wanat legit (JGZC); 5 males and 1 female, Farino, Parc des Grandes Fougères, Pic Vincent track, -21.60948 165.77459, 600–670 m, 17.XI.2008, M. Wanat legit (MNHW); 4 males (one with: JGZC–5058) and 4 females (one with: JGZC–5084), Farino, Parc des Grandes Fougères, track and forest N of Pic Vincent, -21.59929 165.77519, 670 m, 17.XI.2008, M. Wanat legit (MNHW); 1 female, Farino, Parc des Grandes Fougères, Camp de la Houe, -21.61176 165.75406, 400 m, 13.XI.2008, M. Wanat legit (MNHW); 1 male, Parc des Grandes Fougères, N of Pic Vincent, -21.6108 165.7753, 550–600 m, 6.XI.2010, night beating, M. Wanat and R. Ruta legit (MNHW); 2 males and 5 females, Parc des Grandes Fougères, N of Pic Vincent, -21.5918 165.7745, 600–680 m, 6.XI.2010, M. Wanat and R. Ruta legit (MNHW); 1 female, JGZC-5059, Parc des Grandes Fougères, N of Pic Vincent, -21.5918 165.7745, 600–680 m, 6.XI.2010, M. Wanat and R. Ruta legit (JGZC); 2 males, Parc des Grandes Fougères, N of Aire des *Carpolepis*, -21.6095 165.7747, 550–600 m, 7.XI.2010, M. Wanat & R. Ruta legit (MNHW); 1 male, Parc des Grandes Fougères, N of Aire des *Carpolepis*, -21.6108 165.7753, 600 m, 7.XI.2010, fogging *Beccariella*, M. Wanat and R. Ruta legit (MNHW); 1 female, JGZC–5085, Col d'Amieu, 2.5 km to gate, -21.58383 165.79667, 450 m, 16.XI.2008, M. Wanat legit (MNHW).

OTHER MATERIAL EXAMINED. Kanala, Coll. et det. A. Fauvel, *Dematochroma coeruleus* Fvl., R.I.Sc.N.B. 17.479, [small pale blue square], *Dematochroma* n. sp. det. P. H. Jolivet 2008 (RBINS).

DESCRIPTION OF THE HOLOTYPE MALE. Body elongate elliptical, dark purplish brown with slight blue metallic shine dorsally, more distinctly on elytra, and unnoticeable in thoracic and abdominal ventrites; two large diffuse spots on frons, three basal antennomeres (dorsum of scape darkened), apical palpomeres, apex of onychium and claws testaceous; labrum and basal palpomeres ochre; mandibles, antennomeres 4–11, legs and abdominal ventrites dark brown. Length = 5.5 mm; width = 2.8 mm (male paratypes: length range = 4.0–5.9 mm; width range = 2.1–3.1 mm).

Head subhypognathous, broad, convex on vertex and rather flat on frontoclypeus. Frontoclypeus with frons broad, transversally flat between eyes, much wider than longer diameter of eye, very weakly impressed medially, smooth, glossy, rather densely punctured with fine punctures, smaller and sparser posteriorly, smaller than intervals, and larger, tighter, about as large as intervals anteriorly, and fine translucent pubescence denser along midline, near eyes and anteriorly; clypeus small, short, subtriangular, narrow in transition to frons between slightly elevated, smooth, unpunctured supraantennal calli, deflexed in anterior half, with moderate anterior emargination, smooth, glossy, strongly punctured at base, with punctures larger than intervals and sparsely punctured anteriorly, with fine whitish setae basally. Labrum transverse, with broadly round anterior angles, deflexed and weakly emarginate anteriorly, microreticulate with two large setigerous punctures anteriorly on disc. Eyes large, elongate dorsoventrally, slightly emarginate at inner border, convex. Genae short, unpunctured, with scattered fine translucent setae. Antennae long, slender, reaching past middle of elytra, widely separated by frons; scape elongate, clavate, bent posteriorly at apical third, rather pubescent dorsally; pedicel ovate, slightly longer than wide, about 0.4x as long as scape; antennomeres 3–7 progressively longer, 1.6x, 1.8x, 2.4x, 2.4x and 2.7x as long as pedicel, antennomeres 8–9 subequal and 2.6x as long as pedicel, antennomere 10 slightly shorter than ninth and antennomere 11 nearly 1.1x longer than seventh.

Pronotum transverse, subcordiform, 1.6x as wide at point of maximum width as long at middle, 1.3x wider between posterior than anterior angles; anterior border straight, slightly advanced near anterior angles, finely margined; anterior angles flat, indicated by position of large, anteriorly protruding trichobothrium; posterior border convex, shortly lobed medially, with thick margin and slightly depressed premarginally, with thickened, laterally protruding posterior angles with large trichobothrium at apex; sides shortly sinuate at base, strongly widened basally, widest behind middle, more gradually converging anteriorly before strong apical curvature towards anterior angles, aligned with anterior border at apex, margins wide, explanate, gutter-like; surface weakly convex in sagittal plane, increasingly convex transversally towards anterior angles, smooth, glossy, with dense small punctures, smaller than on frons, as big or slightly smaller than intervals, and dense, patchy pubescence, mostly at sides, sparser on disc, with long pale yellowish recumbent setae oriented anteriorly except anteriorly at sides, recumbent posteriorly, and along posterior premarginal depression, oriented diagonally. Hypomera strongly microreticulate, unpunctured, glabrous. Prosternum short, with anterior border concave, very finely margined; prosternal process as wide as transverse diameter of procoxae, slightly widened posteriorly, finely shagreened, with small punctures and dense semierect long translucent setae. Mesepimera and mesanepisterna finely microreticulate, with sparse short, fine appressed setae. Mesoventrite short, transverse with process as wide as prosternal process, smooth, unpunctured, with few scattered whitish long setae. Metanepisterna relatively wide, gradually narrowed posteriorly, finely shagreened, with small punctures and appressed whitish setae, longer anteriorly. Metaventrite short, slightly longer than prosternum at middle, with posterior border between metacoxae at wide obtuse angle, slightly notched medially; surface finely shagreened, with fine punctures and nearly entirely covered with sparse fine, nearly appressed translucent setae.

Scutellum about 1.1x as long as wide basally, with sides weakly convergent posteriorly and arched apically, smooth, shiny, with few small punctures and tiny translucent setae. Elytra elongate, 0.75x as long as body, with humeral angles at obtuse angle and relatively prominent humeri, sides slightly divergent posteriorly with maximum width around middle, gradually tapering in posterior half to slightly acute apical curvature; surface smooth glossy, with large, slightly confused subgeminate, occasionally confluent punctures in basal 2/3, smaller and forming regular striae towards apex, and intervals weakly convex, except penultimate interval slightly callously enlarged apically, and slight transverse rugosities mostly on disc; surface with white recumbent long white setae along last interval, with few scattered finer setae near base of elytra, also in posterior half of penultimate interval, extending towards first interval in sutural angle and expanded anteriorly in first and second intervals in apical declivity; apical pubescence denser than laterally. Epipleura slanted in basal 2/3, nearly vertical apically, reaching sutural angle, broad in humeral angle, gradually narrowed to basal third, subparallel throughout and narrowed at apex, surface finely rugose with small puntures and scattered fine translucent pubescence. Legs relatively long and robust, with femora enlarged medially; protibiae longer than profemora, relatively straight, narrow, subcylindrical in basal third, markedly enlarged internally and gradually widened to apex, with two complete external keels and a short anterior finer keel in basal half; mesotibiae as long as mesofemora, weakly curved ventrally, gradually enlarged apically from basal third, with posterior external keel complete and anterior keel with large, long preapical emargination; hind tibiae nearly straight, about as long as metafemora, weakly sinuous, gradually enlarged apically with external keels markedly expanded at apex as large teeth flanking deep apical excavation; basitarsomeres shorter than next two tarsomeres combined, enlarged in pro- and mesotarsi, third tarsomere shorter than second, particularly small in metatarsi, and onychium feebly clavate, curved ventrally, with large appendiculate divaricate claws.

First abdominal ventrite longer than metaventrite and slightly longer than ventrites 2–4 combined, with anterior intercoxal apodeme nearly half as long as ventrite, arched, and last ventrite slightly longer than fourth, widely emarginate at apex and weakly impressed medially; all ventrites covered by rather dense posteriorly recumbent long, fine whitish setae. Penis (Fig. 10) long, slender, strongly curved and enlarged prebasally and gradually narrowing towards apex in lateral view, weakly curved ventrally with curvature slightly increased at apex; in ventral view, narrower in middle part, gradually

enlarged in apical third, long lanceolate and slightly mucronate at apex; gonopore elongate elliptical with short trapezoidal dorsal flap basally.

Females (Fig. 7). Females larger than males (length = 5.7–6.9 mm; width = 2.9–3.6 mm), also with proportionally longer and wider elytra and abdomen, dark testaceous brown with faint dark greenish metallic reflections on disc of elytra, and darkened areas on head, pronotum and elytra. Antennae proportionally shorter, reaching middle of elytra at most; basitarsomeres in pro- and mesotarsi slender, and third tarsomeres not significantly reduced; body pubescence similar to males but with three short parallel rows of relatively dense setae behind humeri, reaching at least middle of elytra; humeri extended apically as sharp plica on interval reaching slightly behind middle of elytron and previous interval relatively flat in basal half of elytron, raising as sharp plica in posterior half, extending and enlarging towards apex as blunt callosity giving a characteristic subtrapezoidal profile to apex of elytra in dorsal view, with calli aligned with sutural angle; prosternal and mesoventral processes transverse, prosternal much wider than transverse diameter of respective coxae and mesoventral as wide or slightly wider. Spermatheca (Fig. 13) U-shaped, with slightly longer and thicker cornu, relative to nodulus, enlarged and bulbous at apex; nodulus cylindrical, gradually narrowing towards spermathecal duct basally, with spermathecal duct fine and irregularly coiled; ramus small but prominent, prebasal to nodulus, opposite to cornu.

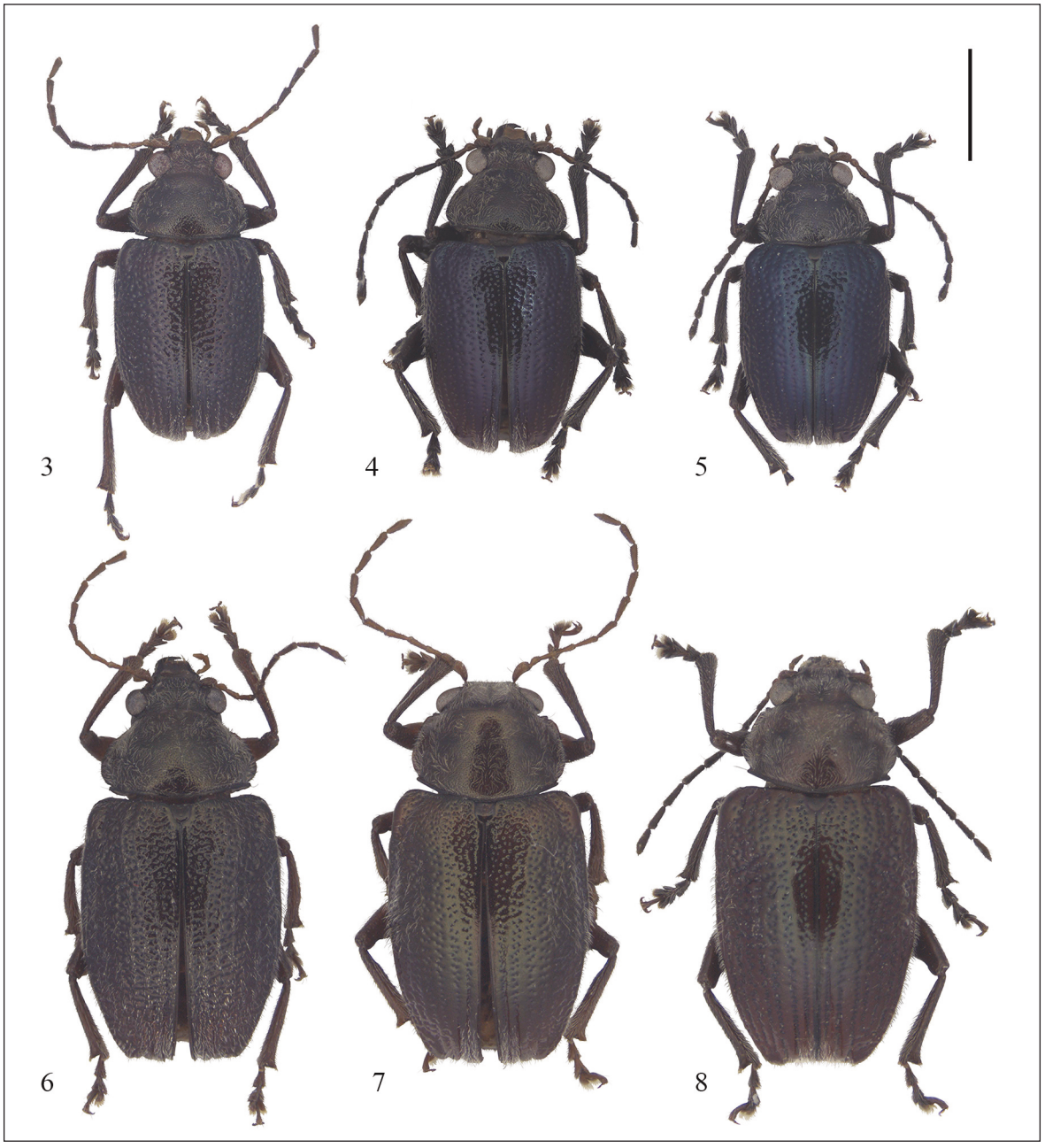
DISTRIBUTION (Fig. 15). *Thasycles purpureus* n. sp. was found in numbers in several localities in the Réserve du Col d'Amieu. A single specimen from Canala, less than 25 km away from those localities, has been classified as belonging to this species.

ETYMOLOGY. The species name is the Latin adjective *purpureus* (m.) in reference to the purplish blue colour of males.

REMARKS. The males of *T. purpureus* n. sp. can be distinguished from those of *T. modestus* n. sp. by the conspicuous blue or purplish metallic hue of dorsal surfaces and the lack of pubescence on disc of elytra; from those of *T. quadraticulus* n. sp. the main difference is in the shape of the apical profile of elytra, attenuated and slightly compressed in *T. purpureus*, but without prominent preapical callosities. The females of *T. purpureus* apart from lacking pubescence on disc of elytra, which distinguishes them from *T. modestus*, are most similar to those of *T. quadraticulus*, but the preapical callosities of elytra are not projecting backwards behind sutural angle.

Thasycles quadraticulus n. sp.
https://www.zoobank.org/F5D96A23-E6A9-4DC7-9A89-520A3946B031

TYPE MATERIAL. Holotype male (Fig. 5), JGZC–5078, New Caledonia (N), Aoupinié, -21.18027 165.30005, 800–830 m, 20.XI.2010, ex *Pycnandra benthami*, M. Wanat and R. Ruta legit (MNHW). Paratypes: 1 male, Aoupinié, sawmill, 21º09'S 165º19'E, 530 m, at light, 6.II.2004, M. Wanat legit (MNHW); 5 males and 1 female, Aoupinié, 21º11.0'S 165º17.6'E, 700–900 m, forest, 18.I.2007, M. Wanat and R. Dobosz legit (MNHW); 1 male, Aoupinié, 21º11.0'S 165º17.5'E, 850–900 m, forest, 18.I.2007, M. Wanat and R. Dobosz legit (MNHW); 1 male, Aoupinié (refuge), 21º08.9'S 165º19.4'E, 420 m, at light, 18.I.2007, M. Wanat and R. Dobosz legit (MNHW); 1 female, JGZC–5081, Aoupinié, 21º10.8'S 165º18.1'E, 650 m, night beating, 18.I.2007, M. Wanat legit (JGZC); 8 males and 3 females, Aoupinié, 21º11.0'S 165º17.6'E, 650–800 m, forest, 19.I.2007, M. Wanat legit (MNHW); 5 males and 1 female, Aoupinié, 21º11.0'S 165º17.5'E, 800–850 m, forest, 19.I.2007, ex *Pycnandra benthamii*, M. Wanat legit (MNHW); 7 males and 1 female, Aoupinié, 21º11.0'S 165º17.6'E, 700–850 m, forest, 20.I.2007, M. Wanat legit (MNHW); 2 males and 1 female, Aoupinié, up of gravelpit, -21.17539 165.30952, 700 m, 27.XI.2008, M. Wanat legit (MNHW); 1 male, Aoupinié, Goipin road junction, -21.17947 165.30182, 730 m, 27.XI.2008, M. Wanat legit (MNHW); 7 males and 5 females, Aoupinié, -21.18151 165.30048, 790–830 m, 27.XI.2008, M. Wanat legit (MNHW); 1 female, JGZC–5080, Aoupinié, -21.18151 165.30048, 790–830 m, 27.XI.2008, M. Wanat legit (JGZC); 1 male, Aoupinié, gate, -21.18144 165.28785, 900 m, 27.XI.2008, M. Wanat legit (MNHW); 2 males and 1 female, Aoupinié, down Goipin road junction, -21.17947 165.30182, 700–730 m, 28.XI.2008, M. Wanat legit (MNHW); 4 males, Aoupinié, -21.18151 165.30048, 790–830 m, 28.XI.2008, M. Wanat legit (MNHW); 7 males and 3 females,



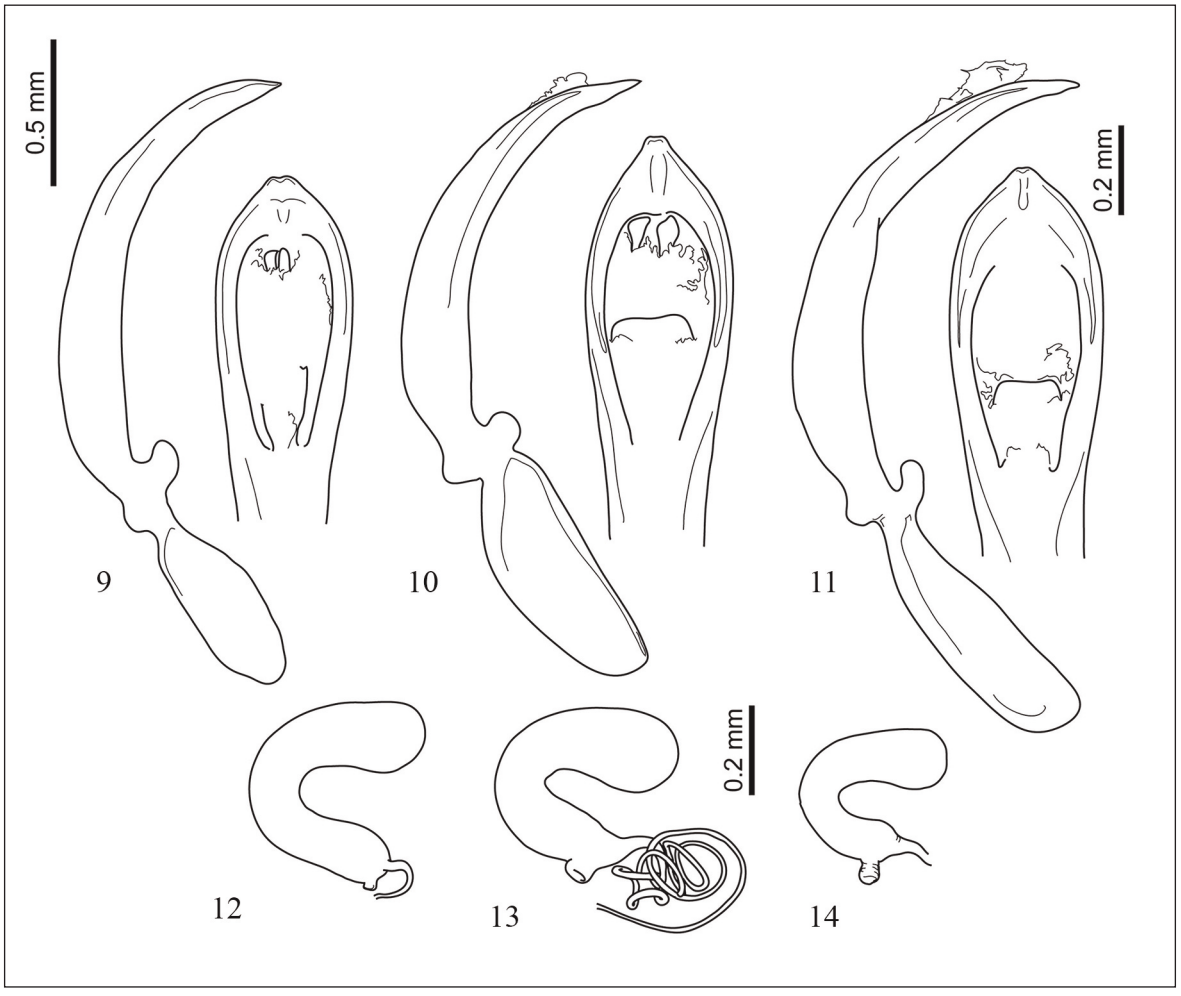
Figures 3-8. Dorsal views of male holotypes (Figs. 3-5) and female paratypes (Figs. 6-8) of *Thasycles modestus* n. sp. (Figs. 3, 6), *T. purpureus* n. sp. (Figs. 4, 7) and *T. quadraticulus* n. sp. (Figs. 5, 8).

Aoupinié, -21.18151 165.30048, 790–830 m, 29.XI.2008, M. Wanat legit (MNHW); 1 male, JGZC–5079, Aoupinié, -21.18151 165.30048, 790–830 m, 29.XI.2008, M. Wanat legit (JGZC); 13 males and 7 females, Aoupinié, -21.18027 165.30005, 800–830 m, 20.XI.2010, ex *Pycnandra benthami*, M. Wanat & R. Ruta legit (MNHW); 1 female, JGZC–5056, Aoupinié, -21.18027 165.30005, 800–830 m, 20.XI.2010, ex *Pycnandra benthami*, M. Wanat and R. Ruta legit (MNHW); 2 males and 3 females, Aoupinié, -21.18027 165.30005, 800–830 m, 21.XI.2010, ex *Pycnandra benthami*, M. Wanat and R. Ruta legit (MNHW); 3 males, Aoupinié, Goipin rd jct to gate, -21.1814

165.2879, 700–900 m, 20.XI.2010, R. Ruta and M. Wanat legit (MNHW); 1 male, JGZC–5055, Aoupinié, Goipin rd jct to gate, -21.1814 165.2879, 700–900 m, 20.XI.2010, R. Ruta and M. Wanat legit (JGZC).

DESCRIPTION OF THE HOLOTYPE MALE. Body elongate elliptical, flattened posteriorly, with blue metallic shine on elytra and purplish iridescence laterally, and rest of body blackish with slight dark blue metallic shine on dorsal surfaces; four basal antennomeres, base of tibiae, parts of coxae and apex of onychium and claws testaceous; labrum and basal palpomeres ochre. Length = 5.1 mm; width = 2.7 mm (male paratypes: length range = 4.4–6.2 mm; width range = 2.4–3.2 mm).

Head subhypognathous, broad, weakly convex on vertex with frontoclypeus nearly flat; frons broad, transversally flat, wider than longer diameter of eye, very weakly impressed medially, smooth, glossy, rather densely punctured with fine punctures, smaller posteriorly, not much smaller than intervals, punctures tighter, about as large as intervals anteriorly, and fine translucent scattered pubescence over vertex and frons, radial at middle of frons; clypeus slightly shorter than wide at apex, with transition to frons about as wide as width of scape, delimited basally at sides by weakly raised, smooth and unpunctured supraantennal calli, deflexed in anterior half, with weak anterior emargination, smooth, glossy, with relatively strong punctures in basal half and sparsely punc-



Figures 10-14. Lateral and apical dorsal view of penis of *Thasycles modestus* n. sp. (Fig. 9), *T. purpureus* n. sp. (Fig. 10) and *T. quadraticulus* n. sp. (Fig. 11), and the spermathecae of *T. quadraticulus* n. sp. (Fig. 12), *T. purpureus* n. sp. (Fig. 13) and *T. modestus* n. sp. (Fig. 14).

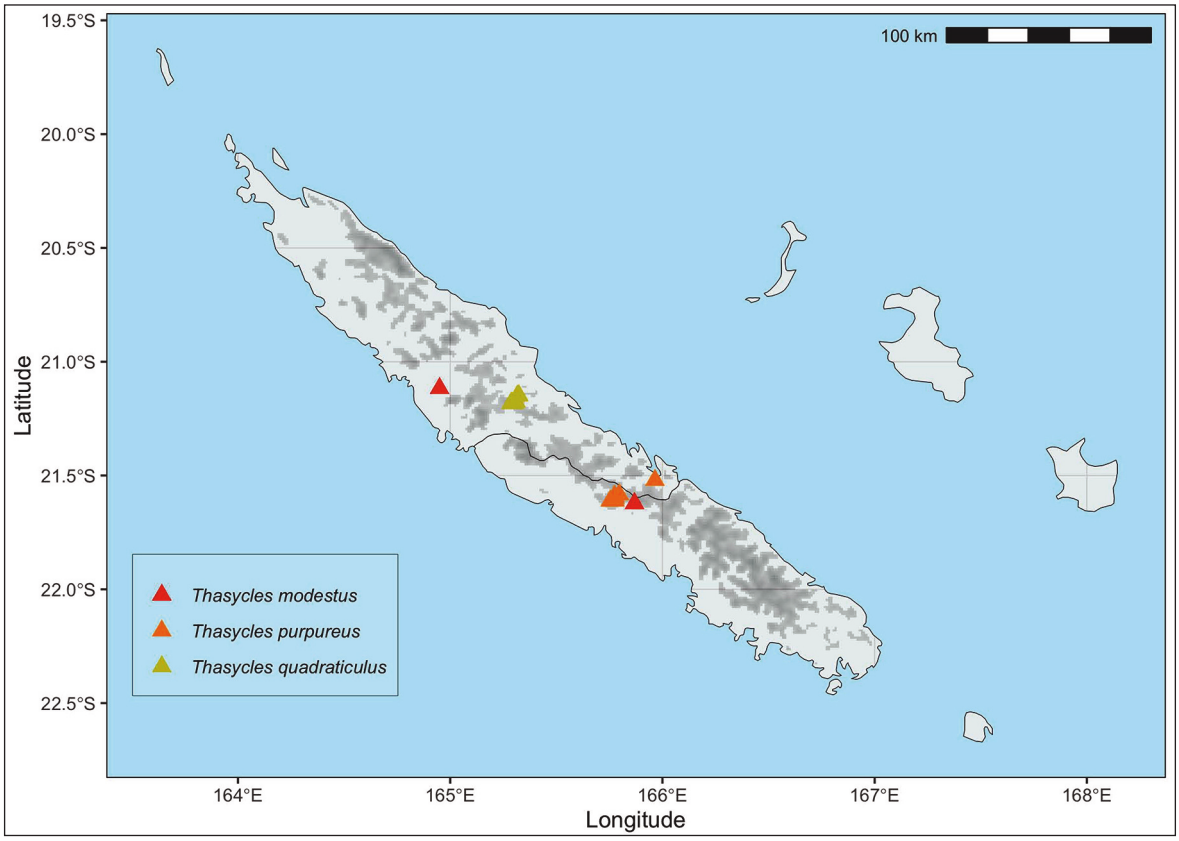


Figure 15. Distribution map of the species of *Thasycles* described in this work from New Caledonia.

tured anteriorly with much finer punctures, all punctures bearing fine, translucent appressed setae. Labrum subquadrate, with broadly round anterior angles, deflexed and weakly emarginate anteriorly, microreticulate with four large setigerous punctures forming square on disc. Eyes large, elongate dorsoventrally, slightly emarginate at inner border, convex. Genae short, unpunctured, with scattered fine translucent setae. Antennae long, slender, reaching past middle of elytra, widely separated by frons; scape elongate, bent posteriorly at obtuse angle medially and wider in apical half, with sparse long setae dorsally; pedicel ovate, slightly longer than wide, about 0.4x as long as scape; antennomeres 3–7 progressively longer, 1.7x, 2.2x, 2.4x, 2.7x and 3.2x as long as pedicel, antennomeres 8–9 subequal and 3.1x as long as pedicel, antennomere 10 slightly shorter than ninth and antennomere 11 about as long as seventh.

Pronotum transverse, subcordiform, 1.7x as wide at point of maximum width as long at middle, 1.3x wider between posterior than anterior angles; anterior border straight, finely margined; anterior angles flat, with large, anteriorly protruding trichobothrium; posterior border convex, very shortly lobed medially, thickly margined and slightly depressed premarginally with tight bead of small punctures along depression, and thickened, laterally protruding posterior angles with large trichobothrium apically; sides shortly sinuate at base and strongly widened basally, widest behind middle and gradually converging anteriorly before strong apical curvature towards anterior angles, margins wide, explanate, gutter-like; surface weakly convex in sagittal plane and increasingly convex transversally towards anterior angles, glossy, with dense small punctures, as big as on frons, slightly smaller than intervals on disc and denser, with intervals as big or smaller than punctures at sides, and relatively dense, recumbent whitish pubescence, sparser on disc. Hypomera finely alutaceous anteriorly and markedly sha-

greened at base, unpunctured, glabrous. Prosternum short, with anterior border concave, finely margined, very close to anterior border of procoxae, surface slightly irregular with sparse long fine translucent setae; prosternal process short, as wide as transverse diameter of procoxae, widened posteriorly, finely shagreened, with small punctures and semierect long translucent setae. Mesepimera and mesanepisterna alutaceous, with sparse tiny appressed setae. Mesoventrite short, as long as prosternum, with process as wide as prosternal process medially, transversally expanded apically, with posterior border at obtuse angle, anterior to posterior border of mesocoxae, smooth, very finely punctured, with few scattered whitish long setae. Metanepisterna slender and gradually narrowed posteriorly, finely shagreened, with small punctures and dense appressed pale yellow setae. Metaventrite short, slightly longer than prosternum at middle, with posterior border between metacoxae slightly concave, notched medially; surface finely shagreened, with fine punctures and nearly entirely covered with sparse fine, nearly appressed translucent setae, except posteriorly at middle.

Scutellum about 1.1x as long as wide basally, with sides parallel and arched apically, smooth, shiny, with few small punctures and tiny translucent setae. Elytra elongate, 0.7x as long as body, round at humeral angles and with prominent humeri; sides weakly convex, widest about middle, and gradually tapering in posterior half to slightly acute apical curvature; surface smooth glossy, with large, relatively aligned punctures, subgeminate and more confused on inner series basally, smaller and forming regular striae towards apex and laterally, with weak transverse rugosities anteriorly and mostly on lateral declivities; intervals weakly convex at apex and laterally, except penultimate interval, enlarged and blunt apically, protruding and giving characteristic subtrapezoidal shape to apical profile of elytra; surface mostly glabrous, except at sutural angle and extending briefly anteriorly over sutural and first intervals, and along outer interval and apically on preapical callus on elytra. Epipleura slanted, visible in lateral view except shortly at middle, reaching sutural angle, broad in humeral angle, gradually narrowed to basal third, subparallel throughout and narrow in apical third, surface finely rugose with small puntures and fine translucent pubescence. Fully functional posterior wings. Legs relatively long and robust, with femora enlarged medially; protibiae longer than profemora, straight, narrow, subcylindrical in basal third and gradually widened to apex, with two nearly complete external keels; mesotibiae as long as mesofemora, weakly curved ventrally, gradually enlarged apically from basal third, with two external keels, and anterior keel with large, long preapical emargination; hind tibiae nearly straight, about as long as metafemora, straight, gradually enlarged towards apex, deeply furrowed dorsally with external keels markedly expanded at apex, especially outer keel, as large blunt teeth flanking deep apical excavation; basitarsomeres shorter than next two tarsomeres combined, enlarged in pro- and mesotarsi, third tarsomeres conspicuously reduced, shorter than second, and onychium feebly clavate, curved ventrally, with large appendiculate divaricate claws.

First abdominal ventrite longer than metaventrite and slightly longer than ventrites 2–4 combined, with anterior intercoxal apodeme about half as long as ventrite, arched, wider anteriorly than mesoventral process; last ventrite about as long as second, widely emarginate at apex and weakly impressed medially; ventrites with rather dense small punctures and posteriorly recumbent long, fine whitish setae. Penis (Fig. 11) long, slender, strongly curved prebasally and gradually narrowing towards apex in lateral view, weakly curved ventrally with curvature slightly increased close to apex; in ventral view, narrower in middle part, gradually enlarged in apical third, towards long lanceolate tip, slightly mucronate at apex; gonopore elongate elliptical, narrower basally, with elongate, mostly membranous dorsal flap.

Females (Fig. 8). Larger than males (length = 5.6–8.3 mm; width = 3.0–4.2 mm), proportionally longer and broader, most clearly on elytra and abdomen, and can be rather uniformly testaceous brown or darker brown with slight blue or purplish metallic iridescence on pronotum and/or elytra, and diffuse darker areas on head and pronotum. Antennae are more slender and proportionally shorter than in males, without reaching middle of elytra; basitarsomeres in pro- and mesotarsi are not enlarged, and third tarsomeres are not reduced; preapical calli of penultimate intervals more prominent than in males and projected posteriorly, reaching

behind sutural angle, giving characteristic bilobate dorsal profile apically on elytra; prosternal and mesoventral processes transverse, much wider than transverse diameter of respective coxae, and first abdominal ventrite comparatively broader and longer, longer than abdominal ventrites 2–4 together. Spermatheca (Fig. 12) U-shaped, with longer and thicker cornu relative to nodulus, slightly and gradually towards round apex; nodulus cylindrical, regularly convex basally, with fine poorly sclerotized spermathecal duct close to proximal end; ramus prebasal, small, short and cylindrical, opposite to cornu.

Distribution (Fig. 15). At present, this species has to be considered a narrow endemic of rainforest in the Réserve de Faune de l'Aoupinié.

Etymology. The name is an adjective derived from the Latin *quădrātus* (adj., m.), meaning squared, and *cūlus* (n., m.), meaning buttocks, thus describing the angular posterior end of the beetles.

Remarks. The males of this species are shiny purplish blue, like those of *T. purpureus* n. sp., but they have subtrapezoidal apex of elytra like in the females of the species in this group and unlike the males of the other two known species. In the females of this species, the preapical callosities of elytra are directed backwards reaching behind sutural angle, unlike the females of the other species where these preapical lobes are anterior or aligned with sutural angle.

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