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DYTISCIDAE: Copelatinae

(Coleoptera)

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Abstract

A taxonomic revision of the subfamily Copelatinae (Coleoptera: Dytiscidae) of New Caledonia is presented based on morphological characters and DNA sequence data. Two genera, *Copelatus* ERICHSON, 1832, and *Exocelina* BROUN, 1886, occur in New Caledonia. We here report 36 species of *Exocelina* and one species of *Copelatus* from New Caledonia.

Lectotypes are designated for *Agabus interruptus* PERROUD & MONTROUSIER, 1864, *Copelatus aubei* MONTROUZIER, 1860, *Colymbetes bimaculatus* PERROUD & MONTROUSIER, 1864, *Copelatus commatifer* HELLER, 1916, *C. interruptus* SHARP, 1882, *C. marginatus* SHARP, 1882, *C. perfectus* SHARP, 1882 and *C. subjectus* SHARP, 1882. A neotype is designated for *Copelatus novaecaledoniae* BALFOUR-BROWNE, 1939 (described under the preoccupied name *C. hydroporoides* SHARP, 1882). Twenty-six new species of *Exocelina* are described: *E. allerbergeri* sp.n., *E. barbarae* sp.n., *E. brunoi* sp.n., *E. burwelli* sp.n., *E. charlottae* sp.n., *E. creuxorum* sp.n., *E. feryi* sp.n., *E. flammi* sp.n., *E. gaulorum* sp.n., *E. gelima* sp.n., *E. inexspectata* sp.n., *E. jeannae* sp.n., *E. koghis* sp.n., *E. kolleri* sp.n., *E. leae* sp.n., *E. lilianae* sp.n., *E. monteithi* sp.n., *E. nielsi* sp.n., *E. niklasi* sp.n., *E. ouin* sp.n., *E. poellabauerae* sp.n., *E. remyi* sp.n., *E. rotteri* sp.n., *E. schoelleri* sp.n., *E. simoni* sp.n., and *E. staneki* sp.n. *Exocelina subjecta* (SHARP, 1882) is resurrected from synonymy.

All New Caledonian species of *Exocelina* are endemic, whereas *Copelatus marginatus* SHARP, 1882 is wide-spread in the Australian/Pacific Region. Important diagnostic characters such as the median and lateral lobes of the aedeagus and the color patterns of the dorsum are illustrated. A key to the *Exocelina* species of New Caledonia is provided. The known distribution and habitat preference of each species is briefly outlined.

Key words: Coleoptera, Dytiscidae, Copelatinae, faunistics, new species, lectotypes, neotype, new records, habitats.

Introduction

Ten species of Copelatinae were so far recognized from New Caledonia (see NILSSON 2001, NILSSON & FERY 2006): *Copelatus marginatus* SHARP, 1882, *Exocelina atripennis* (BALFOUR-BROWNE, 1939), *E. aubei* (MONTROUZIER, 1860), *E. bimaculata* (PERROUD & MONTROUSIER, 1864), *E. brownei* (GUIGNOT, 1942), *E. commatifera* (HELLER, 1916), *E. interrupta* (PERROUD & MONTROUSIER, 1864), *E. maculata* (SHARP, 1882), *E. novaecaledoniae* (BALFOUR-BROWNE, 1939), *E. perfecta* (SHARP, 1882).

Field work by numerous entomologists, especially in the last two decades, surprisingly yielded a total of 26 new species of New Caledonian *Exocelina* BROUN, 1886, which are described below.

Adults of *Exocelina* usually inhabit small pools and shallow water holes at the margins of forest streams and springs. Occasionally, they are found under stones of dried out stream beds.

For all taxa important characters such as median lobe, lateral lobes and color patterns are illustrated and a key to all species of *Exocelina* from New Caledonia is provided. The known distribution and habitat of each species are briefly outlined. *Exocelina subjecta* (SHARP, 1882) is resurrected from synonymy.

With 36 species now recognized, *Exocelina* is the most speciose dytiscid genus in New Caledonia.

We also present data from the 3' end of the mitochondrial cytochrome *c* oxidase I gene (CO1 or *cox1*) as an additional character to delineate species, evaluate the power of this gene and mitochondrial DNA in general for species identification and to understand genetic diversity within species and within the New Caledonian *Exocelina* fauna.

Finally, we summarize molecular phylogenetic information on *Exocelina* presented in previous papers (BALKE et al. 2004a, 2007) and outline the biogeographic history of the New Caledonian species.

Material and methods

We studied about 2,080 specimens, which are deposited in the following institutions and private collections:

CGW	Collection Günther Wewalka, Vienna, Austria
CLH	Collection Lars Hendrich, München, Germany (property of NMW)
CSR	Collection Saverio Rocchi, Firenze, Italy
CTT	Collection Thomas Théry, Fleury les Aubrais, France
IAC	Institut Agronomique Néo-Calédonien, Pocquereux, New Caledonia; S. Cazères, C. Mille
IRSNB	Institut royal des Sciences naturelles de Belgique, Brussels, Belgium; P. Limbourg
MNHN	Muséum national d'Histoire naturelle, Paris, France; H. Perrin
MNHW	Museum of Natural History, Wrocław University, Poland; M. Wanat
MTD	Museum für Tierkunde, Dresden, Germany; O. Jäger, K. Klass
NHML	The Natural History Museum, London, U.K. (formerly British Museum of Natural History); C. Taylor
NMP	Národní muzeum v Praze, Czech Republic; J. Hájek
NMW	Naturhistorisches Museum Wien, Vienna, Austria; M.A. Jäch
QMB	Queensland Museum, Brisbane, Australia; G. Monteith
ZSM	Zoologische Staatssammlung, München, Germany; M. Balke

According to Thomas Théry (e-mail to M. Balke, 25.III.2010), some specimens will be moved from CTT to IAC.

Abbreviations: TL (total body length of beetle), TL-h (total body length without head), and MW (maximum width of beetle); NC (New Caledonia). Label data are cited in quotation marks and our comments are given in square brackets.

The beetles were studied with a Wild M3 dissecting microscope at 6–40 ×. Male genitalia were studied in dry condition and drawn with the help of a drawing tube, Wild # 308700. The terminology to denote the orientation of the genitalia follows MILLER & NILSSON (2003). Thus, the median lobe in lateral view provided here shows the left side of the lobe; and the lateral lobe figured here is the left lateral lobe, external surface.

We preserved a part of our collections in pure ethanol in the field and later extracted DNA for sequencing following the methods outlined in BALKE et al. (2004a). Specifically, we sequenced the 3' end of the mitochondrial cytochrome *c* oxidase I gene (CO1 or *cox1*) using the oligonucleotide primers Pat and Jerry (see BALKE et al. 2005). The species tree presented here was

derived with the maximum likelihood analysis program GARLI, running the default parameter settings and the GTR+I+G model (ZWICKL 2006).

Individuals from which we extracted and sequenced DNA all bear a green cardboard label that indicates the DNA extraction number of M. Balke (e.g. DNA M. Balke 295). This number links the DNA sample, the mounted voucher specimen and GenBank entries (www.ncbi.nlm.nih.gov).

List of Localities
(**Locs. 2001/NC**: leg. Balke & Wewalka, **Locs. 2009/NC**: leg. Jäch)

Loc. 2001/NC 1a: Mt. Koghi, 500 m a.s.l., 2.XI.2001. Stream bed, rocky and gravelly ground, few sandy spots, almost dry when visited, on steep forested slope. Sampled by G. Wewalka only.

Loc. 2001/NC 1: Dumbéa, 50 m a.s.l., near road to Mt. Koghi, 3.XI.2001. Slowly flowing stream (max. 2 m wide), shaded, forming larger pools (max. 70 cm deep), edge with leaf packs and roots, ground sandy and gravelly with few larger stones.

Loc. 2001/NC 4, 4a (JÄCH & BALKE 2010: Fig. 8): Dumbéa, 50 m a.s.l., swamp at road to upper course of River Dumbéa, 4.XI.2001 (NC 4) and 21.XI.2001 (NC 4a). Swampy area and inundated forest, larger shaded pools on red clay, with thick leaf layers, some reeds.

Loc. 2001/NC 5 (JÄCH & BALKE 2010: Fig. 9): Dumbéa, 150 m a.s.l., upper course of River Dumbéa, 4.XI.2001. Large river, 10–20 m wide and max. 3–4 m deep, slowly flowing, sun exposed, beetles taken from water holes on gravel banks and a ditch on dirt road close to the river.

Loc. 2001/NC 6: 5 km east of Pouembout, 20 m a.s.l., 6.XI.2001. Lowlands, dirt road inland to Forêt Plate, partly shaded pool (2 m², max. 50 cm deep) in otherwise dry stream bed on red clay, edges of pool with some leaves, grass and roots; water eutrophicated by cattle; surrounding area dry shrubland.

Loc. 2001/NC 7 (JÄCH & BALKE 2010: Fig. 11): 10 km east of Pouembout, 50 m a.s.l., 6.XI.2001. Lowlands, dirt road 10 km inland to Forêt Plate, small stream, slowly flowing, more or less shaded, collected from small back-flows and bays at the edge, with leaves and pine needles; and larger, slowly flowing shallow stream nearby.

Loc. 2001/NC 10: 1 km SW Camp Minier, 20 m a.s.l., 7.XI.2001. Coastal lowland, with low shrubs and eucalypts, small stream (in ca. 50 cm deep gully), rocky/gravelly, fully sun exposed, slowly flowing and partly interrupted, max. 2 m wide.

Loc. 2001/NC 12 (JÄCH & BALKE 2010: Fig. 12): 13 km north of Koumac, 50 m a.s.l., 7.XI.2001. Between Koumac and Ouégoa, ca. 13 km from Koumac, stream on coral gravel besides road, partly shaded, slowly flowing, richly vegetated, on one side of bridge forming larger pool max. 1 m deep.

Loc. 2001/NC 13: Mt. Panié, 550 m a.s.l., 8.XI.2001. Small stream, underneath of stones, in forest.

Loc. 2001/NC 14: Mt. Panié, 1200 m a.s.l., 8.XI.2001. Water hole on path, 20 × 20 × 20 cm, on red clay, in forest.

Loc. 2001/NC 15: Mt. Panié, 1200 m a.s.l., 8.XI.2001. Small stream, underneath of stones, in forest.

Loc. 2001/NC 16 (JÄCH & BALKE 2010: Figs. 13, 14, 17): Mt. Panié, 1350 m a.s.l., 8.–9.XI.2001. Slowly flowing stream close to alpinist hut, stream pools as well as dry but moist stream bed feeding into the pools, underneath of stones, in forest.

Loc. 2001/NC 18: Mt. Panié, 750 m a.s.l., 9.XI.2001. Water hole in otherwise dry stream bed, in forest.

Loc. 2001/NC 18a: Mt. Panié, 1100 m a.s.l., 9.XI.2001. Water hole in otherwise dry stream bed, in forest.

Loc. 2001/NC 19: Mt. Panié, 1400 m a.s.l., 9.XI.2001. Water hole in otherwise dry stream bed, in forest.

Loc. 2001/NC 20 (JÄCH & BALKE 2010: Fig. 18): 3 km north Pouébo, 10 m a.s.l., 10.XI.2001. Swampy meadow at roadside, large ditch with fouling water, grassy edges, bottom muddy, sun exposed.

Loc. 2001/NC 21 (JÄCH & BALKE 2010: Fig. 15): 10 km north Pouébo, 10 m a.s.l., 10.XI.2001. Small stream, water stagnant, sun exposed, max. 1 m deep.

Loc. 2001/NC 23: 9 km SSW Ouégoa, near road to Bondé, 50 m a.s.l., 11.XI.2001. Stream, partly shaded.

Loc. 2001/NC 25 (JÄCH & BALKE 2010: Fig. 19): 8 km south of Ouégoa, road to Mandjélia, 50 m a.s.l., 11.XI.2001. Water hole, sun exposed, open area, but two sides of hole partly shaded, water turbid, ground clay, max. 1 m deep, water at bottom cool.

Loc. 2001/NC 25a: 8 km south of Ouégoa, 2 km on the road to Mandjélia, 50 m a.s.l., 11.XI.2001. Stream pool in cultivated land.

Loc. 2001/NC 26: 10 km SE Ouégoa, road to Mandjélia, 560 m a.s.l., 11.XI.2001. Small stream in gully, water nearly stagnant, montane forest, shaded.

Loc. 2001/NC 27: 9 km SSE Ouégoa, road to Mandjélia, 100 m a.s.l., 12.XI.2001. Small stream in cultivated area.

Loc. 2001/NC 29: 20–30 km west of Poindimié, ca. 350 m a.s.l., 13.XI.2001. Small stream, water almost stagnant, turbid, max. 1 m deep, ground slightly muddy, edges sandy, with clay and with thick mats of vegetation.

Loc. 2001/NC 33: Aoupinié, 15 km SW Ponérihouen, 500–700 m a.s.l., 14.XI.2001. Stream bed in montane forest, slope very steep and rocky; water almost stagnant but clear, small residual pools with leaves and root mats.

Loc. 2001/NC 34 (JÄCH & BALKE 2010: Fig. 16): Aoupinié, 25 km SW Ponérihouen, 700 m a.s.l., 14.XI.2001. Western slopes of the range, stream bed, almost dry, only two small puddles left, bottom with leaves, sandy/rocky; shaded.

Loc. 2001/NC 35: Me Maoya Area, 4 km south of Nérin, 600 m a.s.l., 14.XI.2001. Wide, hardly shaded stream bed, sandy/gravelly/rocky, with some large boulders; with stream pools ca. 2 × 3 m wide, max. 1 m deep.

Loc. 2001/NC 37: Mt. Canala, 15–20 km south of Canala, 600 m a.s.l., 15.XI.2001. Puddle in otherwise dry stream bed, montane forest, shaded, stream bed comparably level but with some cascades up to 2 m high.

Loc. 2001/NC 38 (JÄCH & BALKE 2010: Fig. 25): road Canala – Koindé – La Foa, southern slope of pass near Koindé, 620 m a.s.l., 16.XI.2001. Small shaded stream, slowly flowing, puddles with leaves. (Note: this locality is in the border region North / South Province, and most likely situated in the South Province).

Loc. 2001/NC 40: 16 km west of Thio, 350 m a.s.l., 16.–17.XI.2001. Pool (2 × 1 m wide and more than 50 cm deep) in stream bed formed by concrete ford; unshaded, bottom sandy, with clay, grassy edge, water slightly turbid.

Loc. 2001/NC 42 (JÄCH & BALKE 2010: Fig. 20): 6 km south of Thio, 50 m a.s.l., 17.XI.2001. Swampy area around a fishpond, close to agricultural school, edge with grass and emergent plants.

Loc. 2001/NC 43: 18 km north of Bouloupari, 100 m a.s.l., 17.XI.2001. Stream in open land.

Loc. 2001/NC 44 (JÄCH & BALKE 2010: Fig. 22): Mt. Koghi, 500 m a.s.l., 19.XI.2001. Stream bed in montane forest, steep slope, almost dry, bed rocky, some gravel and sand in the more level parts of slope. Beetles in rock pools (max. 30 × 30 cm) on large boulders/bedrock, water full of fouling leaves. Upper part of stream with some flowing water, beetles collected from small water holes at edge, or minute backflows.

Loc. 2001/NC 45: 6 km east of Plum, 100 m a.s.l., 19.XI.2001. Rivière des Pirogues, near La Forestière. Small river, slightly flowing, unshaded, bottom red soil with rocks; open, rather flat country with gentle hills.

Loc. 2001/NC 46: 18 km east of Plum, 150 m a.s.l., 19.XI.2001. Path to La Capture, water hole on rocks.

Loc. 2001/NC 48: Rivière Bleue Provincial Park, 3 km from entrance, 150 m a.s.l., 20.XI.2001. Rainwater puddle on road, red soil, lowland forest.

Locs. 2001/NC 49/50 (JÄCH & BALKE 2010: Fig. 24): Rivière Bleue Provincial Park, 500–600 m a.s.l., 20.XI.2001. Hiking trail 7c. NC 49 = rainwater holes in red soil on trail, steep slope, montane forest. NC 50 = small stream, bed deeply cut into ground, shaded, beetles collected from water holes in bedrock at stream edge; water with leaves, in part fouling.

Loc. 2001/NC 51: Mt. Humboldt, 800–900 m a.s.l., 22.XI.2001. Trail starting in mining area, rainwater holes on trail, sun exposed, red soil.

Loc. 2001/NC 52: Mt. Mou, near Sanatorium, 400 m a.s.l., 23.XI.2001. Small stream, shaded, backflows with leaf packs and ditch at road, created by backflow, ground sandy/gravelly, shaded.

Loc. 2001/NC 53: Île des Pins, Grotte Reine Hortense, entrance, 50 m a.s.l., 24.XI.2001. Stream flowing from cave, shaded, in moist, cool valley with flat bottom, ground peaty, red soil. Backflows with leaf packs.

Loc. 2001/NC 54: Île des Pins, Kwanyi, 50 m a.s.l., 24.XI.2001. Secondary forest, dry stream bed, 1 m wide, cut into ground (ca. 50 cm), rest water puddle, 1.5 m long and max. 15 cm deep, ground with leaves; partly shaded.

Loc. 2009/NC 4 (JÄCH & BALKE 2010: Fig. 27): ca. 11 km NE Tontouta, ca. 40 m a.s.l., 21°56'14"S/166°17'21"E, 23.XI.2009. River Tontouta, restwater pools, hardly flowing shallow branch at margin of wide gravel bank, partly shaded by trees and bushes.

Loc. 2009/NC 5 (JÄCH & BALKE 2010: Fig. 28): Mt. Mou, ca. 13 km SE Tontouta, ca. 380 m a.s.l., 22°04'23.2"S/166°19'47.6"E, 23.XI.2009. Small stream, ca. 1–2 m wide, flowing through dense rainforest.

Loc. 2009/NC 6 (JÄCH & BALKE 2010: Fig. 31): ca. 10 km NNE Nouméa, ca. 70 m a.s.l., 22°08'02"S/166°30'47"E, 23.XI.2009. River Dumbéa (south branch), ca. 30 m wide, flowing through wide unshaded gravel bed; restwater pools; sandy margins; seepages.

Loc. 2009/NC 7: ca. 10 km NNE Nouméa, ca. 80 m a.s.l., 22°07'55.5"S/166°30'43.5"E, 23.XI.2009. Small stream (right tributary of River Dumbéa), ca. 1 m wide, flowing between bushes in gully (ca. 2 m deep).

Loc. 2009/NC 9 (JÄCH & BALKE 2010: Fig. 33): road Nouméa – Yaté, ca. 20 km NE Nouméa, ca. 220 m a.s.l., 22°12'24"S/166°40'45.6"E, 24.XI.2009. Two small streams, ca. 1–2 m wide, flowing through isolated patch of rainforest.

Loc. 2009/NC 11 (JÄCH & BALKE 2010: Fig. 34): Mt. Koghi, ca. 5 km N Nouméa, ca. 500–550 m a.s.l., 22°10'33.4"S/166°30'22.7"E, 25.XI.2009. Small streams (1–3 m wide), flowing through forest.

Loc. 2009/NC 12: ca. 10 km NW Nouméa, ca. 2 m a.s.l., 22°09'50.4"S/166°25'33.8"E, 25.XI.2009. Swamp in River Dumbéa flood plain.

Loc. 2009/NC 14 (JÄCH & BALKE 2010: Fig. 36): Rivière Bleue Provincial Park, between Pont Germain and Refuge Tristaniopsis, ca. 30 km NE Nouméa, ca. 160–180 m a.s.l., 22°06'03.7"S/166°39'27.8"E, 26.–27.XI.2009. River

(Rivière Bleue), ca. 10 m wide, and several left tributaries, ca. 2–5 m wide, all flowing through forest. A few specimens also collected by M. Madl.

Loc. 2009/NC 15 (JÄCH & BALKE 2010: Fig. 39): ca. 8 km NNW Nouméa, ca. 10 m a.s.l., 22°09'20.7"S/166°27'23.7"E, 28.XI.2009. Pools and backwaters of River Dumbéa flood plain.

Loc. 2009/NC 16 (JÄCH & BALKE 2010: Fig. 35): Col d'Amieu, ca. 10 km NNW La Foa, ca. 490 m a.s.l., 21°36'39"S/165°48'38"E and ca. 430 m a.s.l., 21°36'52"S/165°48'49.6"E, 28.XI.2009. Small streams (1–3 m wide), flowing through forest.

Loc. 2009/NC 18 (JÄCH & BALKE 2010: Fig. 37): ca. 2 km NNE Farino, Refuge de Farino – Petite Cascade, ca. 270–340 m a.s.l., 21°38'55"S/165°46'53"E (coordinates taken at Refuge de Farino), 29.XI.2009. Rock pools and residual pools of two very small, almost dry streams (right tributaries of River Farino), flowing through degraded forest.

Loc. 2009/NC 18a: Refuge de Farino, at light (29.–30.XI.2009, 3.XII.2009).

Loc. 2009/NC 21 (JÄCH & BALKE 2010: Fig. 38): ca. 7 km SE La Foa, ca. 20 m a.s.l., 21°44'04"S/165°53'23"E, 30.XI.2009. River Pocquereux, epipotamal, ca. 5–10 m wide, flowing through forest.

Loc. 2009/NC 22 (JÄCH & BALKE 2010: Fig. 41): ca. 2 km NE Sarraméa, near La Cuve, ca. 160 m a.s.l., 21°38'13"S/165°51'53"E, 30.XI.2009. Stream, 5–7 m wide, with large boulders, slowly flowing through forest.

Loc. 2009/NC 27 (JÄCH & BALKE 2010: Fig. 46): ca. 8 km NNE Bouloupari, ca. 120 m a.s.l., 21°48'08"S/166°04'12"E, 3.XII.2009. Stream (La Wamuttu), hardly flowing, mostly over bare rock and between big boulders, with numerous rock pools, through degraded forest.

Loc. 2009/NC 29 (JÄCH & BALKE 2010: Fig. 47): ca. 12 km NE Poya, ca. 120 m a.s.l., 21°16'21"S/165°14'46"E, 4.XII.2009. Small stream, ca. 1–2 m wide, flowing through degraded forest and pastures.

Loc. 2009/NC 30 (JÄCH & BALKE 2010: Fig. 51): ca. 4 km SW Népoui, ca. 140 m a.s.l., 21°12'48"S/165°06'06"E, 4.XII.2009. Small stream (left tributary of River Népoui), ca. 1–2 m wide, pools and waterfalls, flowing through degraded forest.

Loc. 2009/NC 31 (JÄCH & BALKE 2010: Fig. 48): ca. 17 km NE Népoui, ca. 110 m a.s.l., 21°13'30"S/165°05'30"E (and about 2 km upstream), 4.XII.2009. River Népoui, ca. 10–20 m wide, flowing through degraded forest and cultivated land.

Loc. 2009/NC 33: Mt. Koghi, ca. 5 km N Nouméa, 325 m a.s.l., 22°10'30"S/166°30'05"E, 5.XII.2009. Stream, ca. 2–10 m wide, cascades and pools in deep gorge, flowing through forest.

Checklist of New Caledonian Copelatinae

Numbers between square brackets refer to arrangement of species in the systematic account below.
Abbreviations: NC = New Caledonia, NP = North Province, SP = South Province.

Copelatus marginatus (SHARP, 1882)	Australian/Pacific Region, NC (SP)
Exocelina allerbergeri sp.n. [10]	NC (NP)
Exocelina atripennis (BALFOUR-BROWNE, 1939) [12]	NC (NP)
Exocelina aubei (MONTROUZIER, 1860) [1]	NC (NP, SP), incl. Belep Isl. and Île des Pins
Exocelina barbarae sp.n. [28]	NC (NP)
Exocelina bimaculata (PERROUD & MONTROUSIER, 1864) [18]	NC (NP)
Exocelina brownei (GUIGNOT, 1942) [30]	NC (NP, SP)
Exocelina brunoi sp.n. [17]	NC (NP, SP)
Exocelina burwelli sp.n. [8]	NC (NP, SP)
Exocelina charlottae sp.n. [26]	NC (SP)
Exocelina commatifera (HELLER, 1916) [5]	NC (NP)
Exocelina creuxorum sp.n. [21]	NC (NP)
Exocelina feryi sp.n. [20]	NC (SP, ? NP)
Exocelina flammi sp.n. [34]	NC (NP)
Exocelina gaulorum sp.n. [6]	NC (NP)
Exocelina gelima sp.n. [29]	NC (SP)
Exocelina inexspectata sp.n. [3]	NC (NP)
Exocelina interrupta (PERROUD & MONTROUSIER, 1864) [25]	NC (NP, SP)
Exocelina jeannae sp.n. [31]	NC (SP)
Exocelina koghis sp.n. [24]	NC (SP)

Exocelina kolleri sp.n. [2]	NC (SP)
Exocelina leae sp.n. [19]	NC (NP)
Exocelina lilianae sp.n. [16]	NC (SP)
Exocelina maculata (SHARP, 1882) [4]	NC (SP)
Exocelina monteithi sp.n. [14]	NC (NP)
Exocelina nielsi sp.n. [36]	NC (NP, SP)
Exocelina niklasi sp.n. [9]	NC (NP)
Exocelina novaecaledoniae (BALFOUR-BROWNE, 1939) [22]	NC (SP)
Exocelina ouin sp.n. [23]	NC (SP)
Exocelina perfecta (SHARP, 1882) [33]	NC (NP, SP)
Exocelina poellabauerae sp.n. [27]	NC (NP)
Exocelina remyi sp.n. [35]	NC (SP, ? NP)
Exocelina rotteri sp.n. [11]	NC (NP, SP)
Exocelina schoelleri sp.n. [32]	NC (SP, ? NP)
Exocelina simoni sp.n. [7]	NC (NP, SP)
Exocelina staneki sp.n. [13]	NC (SP)
Exocelina subjecta (SHARP, 1882) [15]	NC (NP, SP)

Genus *Copelatus* ERICHSON, 1832

Only one species of the genus *Copelatus* has been recorded from New Caledonia so far.

Copelatus marginatus SHARP, 1882

Copelatus marginatus SHARP 1882: 579; BRANDEN 1885: 85; ZIMMERMANN 1920: 141; GUÉORGUIEV 1968: 21; WATTS 1978: 124; NILSSON 2001: 70.

TYPE LOCALITY: Australia, Queensland, Rockhampton.

TYPE MATERIAL: **Lectotype** (designated by WATTS 1978) ♂ (NHML): "Rockhampton" [Queensland], "Sharp Coll. 1905-313" [printed label], "Lectotype Copelatus marginatus Sharp Det C. Watts 1979" [handwritten label white label].

Paralectotypes: 1 ♂, 3 ♀♀ (NHML): "Rockhampton", "Sharp Coll. 1905-313" [printed label], "Paralectotype Copelatus marginatus Sharp Det C. Watts 1979" [handwritten white label]; 1 ♀ (NHML): "Port Denison" [Bowen, Queensland], "Sharp Coll. 1905-313" [printed label], "Paralectotype Copelatus marginatus Sharp Det C. Watts 1979" [handwritten white label].

ADDITIONAL MATERIAL EXAMINED:

A U S T R A L I A: 5 ♂♂, 5 ♀♀ (CLH): "Australia, Northern Queensland, 20 km E Normanton, II. 1996, at light, S. Lamond leg."; 15 exs. (CGW, CLH): "Australien, QL (7) Rollingstone, 20 m, 40 km NW Townsville, 17.I. 1993, leg. Wewalka".

N E W C A L E D O N I A:

SOUTH PROVINCE: 1 ♂♂, 2 ♀♀ (CTT, NMP): "NEW CALEDONIA, Prov. Sud, La Foa (S.R.F. de Pocquereux) 21°44.243S 165°53.848E, 32 m, (light trap) 03.xii.2007, T. Théry leg."; 1 ex. (MNHW): "NEW CALEDONIA (S), 21°44.2'S 165°53.8'E, Pocquereux (IAC station), 3.01.2007, 30 m, at light, leg. M. Wanat & R. Dobosz"; 1 ♂ (IAC): "Nouvelle Calédonie, La Foa/Nily, Lat. S 21.70408 Long. E 165.81785, Alt. 34 m", "Collecté sur: Lumière, mars-07, Par C. Mille"; 2 ♂♂, 3 ♀♀ (CGW, IAC): "Nouvelle Calédonie, La Foa/SRFP, Lat. S 21.73205 Long. E 165.89936, Alt. 32 m", "Collecté sur: Ampoule vapeur mercur [mercury vapour lamp], Le 09/03 & 11/03/07, Par N. Degallier"; 11 exs. (ZSM): "New Caledonia, South Province, Pocquereux, La station de recherches fruitières, 21°73'331"S 165°85'868"E, 7.-9.III.2008, J. Gomez-Zurita"; 1 ♀ (IRSNB): "Nouvelle Calédonie", "Nouméa N. Calédonie Delaune", "ex coll. Fauvel", "Coll. et det. A. Fauvel", "Copelatus n.sp. prope marginatus Sharp".

S A M O A: 1 ♀ (CGW): "Savaii, Samoa, [leg.] Rechinger '05".

DESCRIPTION: Habitus (Fig. 83a): Body regularly broad-oval, broadest anterior of middle; dorsoventrally convex; pronotum and head relatively broad; lateral margins of pronotum regularly and moderately curved.

Measurements: TL 5.8–6.2 mm; TL-h 5.4–5.7 mm; TW 2.7–3.0 mm.

Color: Head dark-brown, labrum, clypeus and anterior part reddish-brown. Pronotum dark-brown, lateral margins broadly reddish-brown. Elytron dark-brown, lateral margin narrowly reddish-brown. Epipleura reddish-brown, rest of ventral surface dark-brown. Antennae and legs reddish-brown.

Surface sculpture: Head with distinct, regular and dense microreticulation; with distinct and regular punctation, stronger posteriorly. Pronotum with dense and regular microreticulation and fine, sparse regular punctation; with additional strong punctures along anterior margin, lateral margins and along posterior margin except on middle. Elytron with dense and regular microreticulation, with distinct and regular punctation; with six regular moderately impressed elytral striae progressively closer towards lateral sides and a submarginal stria; stria 1 abridged anteriorly, reduced to a short stria in apical quarter; striae 2, 3 and 5 slightly shorter basally (Fig. 58).

Structures: Pronotum with fine lateral rim almost complete; posterior corners of pronotum rectangular, slightly truncate.

Male: Pro- and mesotarsomeres I–III distinctly dilated; protarsomere IV without antero-lateral hook; protarsal claws simple; protibia expanded in apical half, narrow in basal half. Aedeagus: median lobe as in Fig. 37a–b; lateral lobe broadly triangular, setation sparse and short (Fig. 37c).

Female: Color as in male; elytron with numerous short striae; lateral sides of pronotum with some very small striae.

AFFINITIES: *Copelatus marginatus* belongs to the *Copelatus irinus* group and is the only *Copelatus* species recorded from New Caledonia so far.

HABITAT: In northeastern Australia this species was collected in temporary watercourses during the wet season. Specimens from Normanton, Queensland were obtained at light at the edge of the flood zone and inundating wetlands of the Normanton River (S. Lamond, personal communication). In New Caledonia, the species was also collected at light.

DISTRIBUTION (Fig. 108): Australia, New Guinea (according to GUÉORGUIEV 1968), New Caledonia (South Province), Fiji, Tonga, Samoa.

Genus *Exocelina* BROUN, 1886

In a revision of the running water *Copelatus* species of New Guinea, BALKE (1998) described the subgenus *Papuadytes*, designating *Copelatus* (subgen. *Papuadytes*) *rivulus* BALKE, 1998 as its type species. More species belonging to this subgenus were later described, e.g. from China and Australia (BALKE & BERGSTEN 2003, BALKE et al. 2004b). Based on an analysis of mitochondrial DNA sequence data, *Papuadytes* was raised to generic rank (BALKE et al. 2004a), which was confirmed by more extensive analyses of DNA sequence data (BALKE et al. 2007). NILSSON & FERY (2006) transferred many additional species from *Copelatus* to *Papuadytes* including most *Copelatus* described from New Caledonia. Among the Australian species transferred to *Papuadytes* was *Copelatus australis* (CLARK, 1863). One of the junior synonyms of this species, *Exocelina advena* BROUN, 1886, is the type species of the genus *Exocelina* BROUN, 1886, synonymized with *Copelatus* by ZIMMERMANN (1920). *Copelatus rivulus* BALKE, 1998, and *Exocelina advena* BROUN, 1886 (= *Celina australis* CLARK, 1863), are thus

congeneric as suggested by NILSSON (2007). It followed that *Exocelina* is the valid name of the genus, and *Papuadytes* being a junior synonym.

Morphologically, *Exocelina* can be separated from *Copelatus* by the presence of a stout, hook-shaped seta on the anterior ventral angle of the 4th male protarsal segment (BALKE 1998). This character is slightly reduced in few New Guinean species, but their closely related species do, however, all show the hook-shaped seta. Otherwise, members of the two genera are morphologically very similar to each other. *Exocelina* usually have smooth elytra, or elytra with strioles or striae-like punctures, while *Copelatus* usually have conspicuous long elytral striae. However, *Exocelina aubei* for example has the elytral striae more strongly developed than many *Copelatus*, while some *Copelatus* in turn have smooth elytra (e.g. numerous undescribed Fijian species). The median lobe of the aedeagus is usually more simply structured in *Exocelina* than in *Copelatus*, but there is no general diagnostic difference evident. Females can not reliably be assigned to either genus based on morphological characters. Yet, *Exocelina* and *Copelatus* are well delineated based on DNA sequence data (BALKE et al. 2004a) which can unambiguously assign specimens to one of the two genera.

Key to species of *Exocelina* of New Caledonia

1 Elytra predominantly black or blackish-brown without brown band along base; TL: 5.3–7.6 mm 2

– Elytra predominantly blackish-brown with brown band along base or predominantly reddish-brown or brownish-yellow; TL: 3.3–6.5 mm 9

2 Elytron with 12 regular striae and a submarginal stria (Fig. 83b); TL: 5.3–6.1 mm ..... [1] ***aubei***

– Elytron without regular striae; TL: 5.3–7.6 mm 3

3 Elytron with a distinct brownish-yellow apical spot (Fig. 86); TL: 6.2–6.8 mm ..... [4] ***maculata***

– Elytron without a distinct brownish-yellow apical spot; TL: 5.3–7.6 mm 4

4 Punctation on elytra comparably strong and irregular; TL: 5.5–6.1 mm 5

– Punctation on elytra very fine to moderately fine and regular; TL: 5.3–7.6 mm 6

5 Body oblong-oval, almost parallel-sided (Fig. 84); TL: 6.0–6.1 mm ..... [2] ***kolleri***

– Body regularly oblong-oval (Fig. 85); TL: 5.5 mm ..... [3] ***inexspectata***

6 Rows of punctures on elytra consisting of deeply impressed elongate punctures or strioles (Figs. 40, 41); TL: 6.1–7.5 mm 7

– Rows of punctures on elytra consisting of less impressed, not distinctly elongate punctures (Fig. 89); TL: 5.3–7.6 mm 8

7 Rows of punctures on elytra consisting of more elongate punctures (Figs. 40, 87); elytra totally black, surface matt; TL: 6.1–7.5 mm ..... [5] ***commatifera***

– Rows of punctures on elytra consisting of less elongate punctures (Figs. 41, 88); elytra brownish-black along suture, lateral sides and apex; surface shiny; TL: 6.1–7.2 mm .. [6] ***gaulorum***

8 TL: 6.1–7.6 mm; habitus as in Fig. 89. The following six large species can reliably be identified only by the male genitalia and by the TL (additional minor differences are mentioned in the descriptions):

Aedeagus: Fig. 8a–c; TL: 7.3–7.4 mm ..... [8] ***burwelli***

Aedeagus: Fig. 7a–c; TL: 6.3–7.2 mm ..... [7] ***simoni***

Aedeagus: Fig. 9a–c; TL: 6.4–7.6 mm ..... [9] ***niklasi***

Aedeagus: Fig. 10a–c; TL: 6.3–6.6 m. ..... [10] ***allerbergeri***

Aedeagus: Fig. 11a–c; TL: 6.3–6.6 mm ..... [11] ***rotteri***

Aedeagus: Fig. 12a–c; TL: 6.1–6.7 mm ..... [12] ***atripennis***

– TL: 5.3–5.8 mm; habitus as in Fig. 90 ..... [13] ***staneki***

9 Pronotum broad and long, posterior angles distinctly drawn backwards (Fig. 91); TL: 5.3–5.6 mm ..... [14] ***monteithi***

– Pronotum shorter, posterior angles not drawn backwards; TL: 3.3–6.5 mm 10

10 Elytron predominantly blackish-brown to brown with a reddish-brown to yellowish-brown band along base; TL: 3.9–7.1 mm 11

– Elytron predominantly reddish-brown or brownish-yellow without a lighter band along base; TL: 3.3–6.0 mm 17

11 TL: 5.7–7.1 mm 12

– TL: 3.9–5.8 mm 14

12 Rows of punctures on elytra consisting of elongate punctures (Figs. 43, 44); TL: 5.7–7.1 mm 13

– Rows of punctures on elytra consisting of not distinctly elongate punctures (Fig. 92); TL: 5.7–6.8 mm ..... [15] ***subjecta***

13 Rows of punctures on elytra consisting of deeply impressed more frequent elongate punctures (Figs. 43, 93); TL: 5.7–6.5 mm ..... [16] ***lilianae***

– Rows of punctures on elytra consisting of less impressed less frequent elongate punctures (Figs. 44, 94); TL: 6.5–7.1 mm ..... [17] ***brunoi***

14 Body regularly oblong-oval, punctation on elytra very fine; TL: 3.9–4.8 mm 15

– Body oblong-oval, almost parallel-sided; punctation on elytra comparably strong; TL: 4.6–5.8 mm 16

15 TL: 4.1–4.8 mm (Fig. 95) ..... [18] ***bimaculata***

– TL: 3.9–4.1 mm (very similar to Fig. 95) ..... [19] ***leae***

16 TL: 5.0–5.8 mm; head and pronotum largely dark-brown (Fig. 97) ..... [22] ***novaecaledoniae***

– TL: 4.6–5.0 mm; head and pronotum largely reddish-brown (Fig. 99) ..... [23] ***ouin***

17 Elytra without striae or striae-like punctures, rows of punctures on elytra not blackish; TL: 3.4–5.3 mm 18

– Elytra with blackish regular striae, interrupted striae or striae-like punctures; TL: 3.3–6.0 mm 20

18 TL: 5.1–5.3 mm; elytra reddish-brown, blackish along suture (Fig. 98) ..... [24] ***koghis***

– TL: 3.3–4.0 mm; elytra brownish-yellow, blackish along suture and sometimes shadows of few vague dark-brown longitudinal lines 19

19 Regular punctation on head, pronotum and elytra very fine and hardly visible (Figs. 45, 96); TL: 3.4–4.0 mm ..... [20] ***feryi***

– Regular punctation on head, pronotum and elytra distinct; TL: 3.3–3.6 mm ..... [21] ***creuxorum***

20 TL: 5.8–6.3 mm; elytron with 12 deeply impressed, more or less interrupted striae (Figs. 46, 47) 21

– TL: 3.3–5.3 mm; elytron with fewer regular striae or lines of striae-like punctures 22

21 Pronotum with fine, sparse punctures and strong punctures along anterior and posterior margin; TL: 5.8–6.0 mm ..... [25] ***interrupta***

– Pronotum with striae-like punctures (Fig. 59) despite strong punctures along anterior and posterior margin; 6.3 mm ..... [26] ***charlottae***

22 Elytron with lines of more or less long striae-like punctures; TL: 3.3–5.3 mm (Figs. 48–53) 23

– Elytron with 10 or 11 regular striae and a submarginal stria; TL: 3.3–4.6 mm (Figs. 54–57) 25

23 TL: 4.3–5.3 mm; rows of punctures on elytra consisting of elongate striae-like punctures often forming two continuous lines and additional broadly interrupted lines (Figs. 48–50, 101–102).

The following species can be surely differentiated only by male genitalia; minor additional differences are mentioned in the descriptions:
Aedeagus: Fig. 27a–b; TL: 4.3–5.3 mm ..... [27] ***poellabauerae***
Aedeagus: Fig. 28a–b; TL: 4.4–4.9 mm ..... [28] ***barbarae***
Aedeagus: Fig. 29a–b; TL: 4.6–5.0 mm ..... [29] ***gelima***

– TL: 3.3–4.3 mm; broken striae on elytron forming about 10 irregular lines (Figs. 51–53, 103–104) 24

24 Striae on elytra appear as lines of elongated (not confluent) punctures (Figs. 53, 104); TL: 3.3–3.5 mm ..... [32] ***schoelleri***

– Striae on elytra appear as linear series of elongated comma-like punctures often confluent (Fig. 51, 53, 103). The following species can be differentiated only by male genitalia; minor other differences are mentioned in the descriptions:
Aedeagus: Fig. 30a–b; TL: 3.7–4.0 mm ..... [30] ***brownei***
Aedeagus: Fig. 31a–b; TL: 4.0–4.3 mm ..... [31] ***jeannae***

25 Elytron with 10 regular striae and a submarginal stria (Figs. 57, 107); TL: 3.3–3.7 mm…… ..... [36] ***nielsi***

– Elytron with 11 regular striae and a submarginal stria (Figs. 54–56, 105–106); TL: 3.9–4.6 mm. The following species can be surely differentiated only by the male genitalia; minor other differences are mentioned in the descriptions:
Aedeagus: Fig. 33a–c; TL: 4.1–4.6 mm ..... [33] ***perfecta***
Aedeagus: Fig. 34a–c; TL: 4.1–4.5 mm ..... [34] ***flammi***
Aedeagus: Fig. 35a–c; TL: 3.9–4.5 mm ..... [35] ***remyi***

1. *Exocelina aubei* (MONTROUZIER, 1860)

Copelatus aubei MONTROUZIER 1860: 244; SHARP 1882: 595; FAUVEL 1868: 176, 1903: 249; BRANDEN 1885: 82; HELLER 1916: 239; ZIMMERMANN 1920: 137; GUÉORGUIEV 1968: 8; NILSSON 2001: 74.
Papuadytes aubei (MONTROUZIER): NILSSON & FERY 2006: 56.
Exocelina aubei (MONTROUZIER): NILSSON 2007: 33.

TYPE LOCALITY: New Caledonia, North Province, Belep Islands, Île Art.

TYPE MATERIAL: **Lectotype** (by present designation) ♂ (IRSNB): "Coll. I. R. Sc. N. B. Nouvelle Caledonie Île Art 1853–1857 rec. Montrouzier Le Moult vendit", "Montrouzier det. 1860 Copelatus aubei (m) art", "TYPE", "Lectotype Wewalka & Balke 2007" [red printed label].

Paralectotype ♀ (IRSNB): same data as lectotype, "Paralectotype Wewalka & Balke 2007" [red printed label].

ADDITIONAL MATERIAL EXAMINED:

4 ♂♂, 4 ♀♀ (NHML): "New Caledonia, Sharp Coll. 1905-313, Type 679, Copelatus aubei, New Caledonia", "12 striae on each elytron"; 3 exs. (ZSM): "New Caledonia"; 1 ♀ (IRSNB): "Nouvelle Calédonie, Coll. Séverin, Regimbart det., 1891: Copelatus (s.str.) aubei Montrouz."; 1 ♂ (IRSNB): "Nouvelle Calédonie, E.D. Fleutiaux 1893, Regimbart det., 1901: Copelatus aubei Montr.".

NORTH PROVINCE: 1 ♂ (QMB): "NEW CALEDONIA 12286, 20°25'S X 164°13'E, Nehoue campground, 29 Apr 2005, 10m G.B. Monteith, MV light."; 29 exs. (MNHW, ZSM): "NEW CALEDONIA (N), 20°25.2'S 164°13.3'E, Nehoue river, 15 m, 8.01.2007, public camp site, night coll. (lamp & beating), leg. M. Wanat & R. Dobosz"; 3 ♀♀ (NHML): "N. New Caledonia: Puebo. Coast, 1.500 ft., x. 1949. L.E. Cheesman. B.M.1950-I."; 7 exs. (NMW): "Neukaledonien: Umg. Grotte le Cresson [60 m], 18.9.1965, Österr. Neukaledonien-Expedit.", "R. Mouchamps det. 70, Copelatus aube Montr."; 3 exs. (MNHW): "NEW CALEDONIA (N), 20°28.6'S 164°15.6'E, road Bonde-Mandjélia Mt 250 m, Niaouli forest, 9.01.2007, at light, leg. M. Wanat & R. Dobosz"; 1 ex. (MNHW): "NEW CALEDONIA (N), 20°45'S/164°53'E, Tiendanite, 50 m, ad lucem, 4.02.2004 leg. M. Wanat"; 1 ♂ (QMB): "NEW CALEDONIA 12274 20°57'S x 165°17'E, Pic d'Amoa, N slope 2 May 2005, GB. Monteith berlesate, 500 m"; 1 ex. (MNHW): "NEW CALEDONIA (N), 21°00.3'S 165°14.9'E, Tchamba (Wâo Uni), 15.01.2007, refuge, 400 m, night coll. (lamp & beating), leg. M. Wanat & R. Dobosz"; 5 exs. (MNHW, ZSM): "NEW CALEDONIA (N), 21°07'S/164°57'E, 30 m, Tiéa Forest (GIE Fab Nicoli) [private sclerophyll forest reserve owned by Fab Nicoli] sclerophyllous forest, 30.01.2004, ad lucem, leg. M. Wanat"; 1 ♀: "NEW CALEDONIA 12282 21°09'S x 165°19'E, 550 m Aoupinie, sawmill, Monteith 2 May 2005, berlesate" (QMB); 1

ex. (NMW): Koniambo, 110 m, 29.XII.2004, leg. C. Pöllabauer; 1 ♀ (IRSNB): "Nouvelle Calédonie, Canala, rec. Coste, ex coll. Fauvel, Coll. et det. A. Fauvel, Copelatus aubei Montr., R.I.Sc.N.B. 17.479".

1 ♂, 7 ♀♀ (CGW, NMW): Loc. 2001/NC 7 (1 ♀: 3 DNA M. Balke); 1 ♀ (CGW): Loc. 2001/NC 10; 3 ♂♂, 1 ♀ (CGW, NMW): Loc. 2001/NC 12 (1 ♂: "DNA M. Balke 3022" and 1 ♀: "5 DNA M. Balke"); 4 ♀♀ (CGW): Loc. 2001/NC 20; 1 ♀ (CGW): Loc. 2001/NC 21; 1 ♂, 2 ♀ (CGW): Loc. 2001/NC 23; 7 ♂♂, 6 ♀♀ (CGW, NMW): Loc. 2001/NC 25 (2 ♂♂: "DNA M. Balke 3017" and "DNA M. Balke 3018"); 3 ♂♂, 2 ♀♀ (CGW): Loc. 2001/NC 27; 3 ♂♂, 2 ♀♀ (NMW): Loc. 2001/NC 29.

1 ♂ (NMW): Loc. 2009/NC 29; 1 ♂ (NMW): Loc. 2009/NC 30; 2 ♀♀ (NMW): Loc. 2009/NC 31.

SOUTH PROVINCE (Grande Terre): 10 exs. (CLH): "New Caledonia, S. P. Paita, 20. 3. 1999, S. Bilý leg."; 1 ♂ (CGW): "New Caledonia, Conception, 11.XI.1944, leg. west of. Crabb"; 4 exs. (CLH): "New Caledonia, 50 m Bourail, 30. 12. 1990-5. 1.1991, leg. Wiesner und Worm"; 3 ♂♂ (QMB): "New Caledonia 11835 22°19'S x 166°55'E Foret Nord site 2, 200 m 2 Dec 2004, QM Party mv lamp, rainforest"; 2 ♂♂ (NMP): "New Caledonia, S. P. Parc Nat. Thy, 21. III. 1999, S. Bilý leg."; 3 exs. (MNHW, ZSM): "NEW CALEDONIA (S), 21°35.2'S 165°46.4'E, Col d'Amieu 450-470 m, (6.5-7.0 km from gate), 5.01.2007 (loc 6), at light, leg. M. Wanat & R. Dobosz"; 37 exs. (CLH, CTT, NMP, ZSM): "NEW CALEDONIA, Prov. Sud, La Foa (S.R.F. de Pocquereux) 21°44.243S 165°53.848E, 32 m, (light trap) 03.xii.2007, T. Théry leg."; 10 exs. (IAC): "N. Calédonie, La Foa, 21°42'S 165°E, 12.XII.2003, Ch. Mille rec."; 5 exs. (NMP): "NEW CALEDONIA, Prov. Sud, SARRAMEA, 27.xii.2006-25.i.2007, I. Jenis leg."; 1 ex. (NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m, (flight intercept trap) T. Théry leg., 25.i.-8.ii.2008"; 1 ex. (IAC): "Nouvelle-Calédonie, Sarraméa, Col d'Amieu, Lat. S 21°34.694 Long. E 165°46.278, Alt. 489 m, Collecté sur: Malaise alcool, Le 08/02/06, Par S. Cazères"; 1 ♂ (IRSNB): "Nouvelle Calédonie, YAHOUÉ, rec. Savés, ex coll. Fauvel, Coll. et det. A. Fauvel, Copelatus aubei Montrouz., R.I.Sc.N.B. 17.479"; 1 ♂, 1 ♀ (NHML): "Nr. Dumbea, 139 New Caledonia, 29. I. 1914, P.D. Montague. 1918-87"; 1 ♂ (IRSNB): "Nouvelle Calédonie, Anse Vata, ex coll. Fauvel, Coll. et det. A. Fauvel, Copelatus aubei Montrouz., R. I .Sc. N. B. 17.479"; 1 ♀ (CLH): "Neukaledonien, Riviére Bleue, 19. 3. 1994, M. Schöller leg."; 1 ex. (NMP): "New Caledonia, S. P., Plaine de lacs, Chutes de la Madeleine, 27.-30. III. 1999, S. Bilý leg.".

48 ♂♂, 61 ♀♀ (CGW, CSR, NMW): Loc. 2001/NC 1 (1 ♀: "2 DNA M. Balke"); 26 ♂♂, 16 ♀♀ (CGW, NMW): Locs. 2001/NC 4/4a (1 ♂: "DNA M. Balke 3029"); 26 ♂♂, 28 ♀♀ (CGW, CSR, NMW): Loc. 2001/NC 5; 3 ♂♂ (CGW): Loc. 2001/NC 43; 9 ♂♂, 9 ♀♀ (CGW, NMW): Loc. 2001/NC 52 (1 ♂: "131 DNA M. Balke").

1 ♀ (NMW): Loc. 2009/NC 4; 1 ♀ (NMW): Loc. 2009/NC 5; 3 ♂♂, 2 ♀♀ (NMW): Loc. 2009/NC 6; 1 ♂, 1 ♀ (NMW): Loc. 2009/NC 7; 1 ♂, 2 ♀♀ (NMW): Loc. 2009/NC 12; 7 ♂♂, 4 ♀♀ (NMW): Loc. 2009/NC 15; 4 ♀♀ (NMW): Loc. 2009/NC 16; 5 ♂♂, 2 ♀♀ (NMW): Loc. 2009/NC 18; 1 ♀ (NMW): Loc. 2009/NC 18a; 5 ♂♂, 9 ♀♀ (NMW): Loc. 2009/NC 21; 9 ♂♂, 2 ♀♀ (NMW): Loc. 2009/NC 22; 4 ♂♂, 6 ♀♀ (NMW): Loc. 2009/NC 27; 1 ♂, 4 ♀♀ (NMW): Loc. 2009/NC 33.

SOUTH PROVINCE (Île des Pins): 1 ♂ (CGW): "New Caledonia, Ile des Pins, Grotte d'Oumagne, 15 m, 3.X.1972, leg. J.G. Peters".

3 ♂♂, 8 ♀♀ (NMW): Loc. 2001/NC 53; 2 ♂♂, 3 ♀♀ (CGW): Loc. 2001/NC 54.

DESCRIPTION: Habitus (Fig. 83b): Body regularly oblong-oval, broadest in middle; moderately convex; pronotum and head relatively narrow; pronotum broadest between posterior angles, lateral margins distinctly curved; base of elytra as broad as pronotal base; lateral margins of elytra moderately and regularly curved.

Measurements: TL 5.3–6.1 mm; TL-h 4.8–5.6 mm; TW 2.6–2.9 mm.

Color: Head dark-brown to reddish-brown, often darker between eyes. Pronotum dark-brown to reddish-brown, distinctly lighter along lateral margins and sometimes also along anterior and posterior margin. Elytra blackish-brown, sometimes lighter along base. Epipleura dark-brown, rest of ventral surface black to dark-brown. Antennae and legs reddish-brown.

Surface sculpture: Head with regular microreticulation, with fine, regular, comparably sparse punctation and with some strong, short, irregular longitudinal striae between eyes. Pronotum with microreticulation and fine punctation very similar to that on head; with comparably dense and strong, short or moderately long, irregular longitudinal striae, missing or less frequent only centrally and at all sides. Elytron with very fine microreticulation and with fine, sparse punctation; with twelve strong regular striae and one submarginal stria; striae 3, 9, 11, 12

reduced apically; sometimes few striae interrupted. Ventral side: metacoxae with many deep longitudinal striae (Fig. 64); strong longitudinal striae on ventrites 1–3; few oblique striae on ventrites 4; ventrites 5 and 6 without striae.

Structures: Pronotum with fine lateral rim, missing only on anterior corners; with moderate impressions along lateral margins; posterior corners of pronotum rectangular, slightly truncate. Prosternal process convex (or raised medially) but not keeled.

Male: Pro- and mesotarsomeres I–IV moderately dilated; protarsomere IV with long antero-lateral hook. Aedeagus: median lobe in ventral and lateral view with blunt, rectangular tip (Fig. 1a–b); lateral lobe narrow, with short and sparse setation (Fig. 1c).

Female: Color and surface sculpture as in male.

AFFINITIES: *Exocelina aubei* can be distinguished from all other known *Exocelina* species by possession of twelve strong and regular striae and one submarginal stria on elytron in combination with blackish-brown color.

HABITAT: Swamps and streams at low to mid altitude; see JÄCH & BALKE (2010: Figs. 8, 9, 11, 12, 18, 19, 31, 35, 37–39, 41, 46–48, 51). Collected together with *E. bimaculata*, *E. brunoi*, *E. interrupta*, *E. jeannae*, *E. kolleri*, *E. nielsi*, *E. perfecta*, *E. remyi* and *E. subjecta*. In flight intercept traps collected together with *E. brunoi*, *E. jeannae*, *E. simoni* and *E. subjecta*.

DISTRIBUTION (Fig. 108): New Caledonia (Grande Terre, Belep Islands and Île des Pins).

2. *Exocelina kolleri* sp.n.

TYPE LOCALITY: New Caledonia, Grande Terre, North Province, Mt. Canala, 600 m a.s.l. (Loc. 2001/NC 37).

TYPE MATERIAL: **Holotype** ♂ (NMW): "New Caledonia, North Prov., Mt. Canala, 15-20 km S Canala, 600 m, 15. XI. 2001, leg. Balke & Wewalka (NC 37)", "HOLOTYPUS Exocelina kolleri sp.n. Wewalka et al. 2007" [red printed label].

Paratypes: 3 exs. (CTT, MNHN, NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (com. de Sarraméa) 21°34.407S, 165°45.674E, 412 m, (flight intercept trap) T. Théry leg., 19.xii.2007-11.i.2008".

1 ♀ (CGW): Loc. 2001/NC 37.

All paratypes are provided with a red printed paratype label.

DESCRIPTION: Habitus (Fig. 84): Body oblong-oval, almost parallel-sided, broadest shortly behind middle, moderately convex. Head relatively broad; clypeus truncate. Pronotum relatively long, broadest between posterior angles, lateral margins moderately curved. Base of elytra as broad as pronotal base; lateral margins of elytra scarcely curved in anterior third.

Measurements: TL 6.0–6.1 mm; TL-h 5.4–5.5 mm; TW 2.6–2.7 mm.

Color: Head black to dark-brown. Pronotum black to dark-brown, vaguely lighter along anterior and lateral margin. Elytra black to dark-brown, sometimes vaguely lighter along suture. Epipleura and rest of ventral surface black to dark-brown. Antennae and legs reddish-brown.

Surface sculpture: Head with regular and strong microreticulation, with relatively strong and dense punctation, stronger and denser between eyes; with few additional strong punctures between eyes. Pronotum with fine and regular microreticulation, with fine, moderately dense punctation, additional very strong punctures along anterior margin and along posterior margin except on the middle. Elytron with microreticulation similar to that on pronotum but more deeply impressed, especially on lateral sides and on apical third where surface is slightly matt; with punctation of two kinds consisting of very fine and much stronger irregular punctures; additional

much stronger punctures forming three irregular rows (Fig. 38); between rows with similar additional punctures. Ventral side: metaventrite with deep longitudinal and oblique wrinkles; metacoxae with few fine transverse wrinkles and few fine longitudinal striae, strong wrinkles and long hair between very pronounced metacoxal lines (Fig. 65); moderately fine longitudinal striae on ventrites 1 and 2, fine striae on 3; few wrinkles on ventrite 4 and deep punctures on lateral side of ventrite 5; ventrite 6 with many deep punctures laterally.

Structures: Pronotum with comparably strong lateral rim, missing only on anterior corners; with strong impressions along lateral margins; posterior corners of pronotum rounded. Prosternum and prosternal process with distinct keel.

Male: Pro- and mesotarsomeres I–IV distinctly dilated; protarsomere IV with fine antero-lateral hook. Protarsal claws slightly thickened. Aedeagus: median lobe as in Fig. 2a–b, tip in lateral view thin, needle shaped; lateral lobe with broad base, setation moderately dense and long (Fig. 2c).

Female: Color and surface sculpture as in male.

AFFINITIES: *Exocelina kolleri* has in common with *E. inexspectata* the strong elytral punctation but can be separated by the parallel-sided habitus, the deeply impressed elytral microreticulation and male genitalia. *Exocelina kolleri* can be separated from *E. allerbergeri*, *E. atripennis*, *E. burwelli*, *E. niklasi*, *E. rotteri* and *E. simoni* by the oblong-oval, almost parallel-sided body, the strong elytral punctures and the male genitalia.

HABITAT: Pools of small shaded and partly dry forest streams around 600 m altitude. Collected together with *E. brunoi*, *E. burwelli*, *E. simoni* and *E. subjecta*. In a flight intercept trap at 412 m collected together with *E. aubei*, *E. bimaculata*, *E. brunoi*, *E. perfecta* and *E. remyi*.

DISTRIBUTION (Fig. 111): Central Grande Terre.

ETYMOLOGY: This species is dedicated to Prof. Dr. med. Walter Koller, Vienna.

3. *Exocelina inexspectata* sp.n.

TYPE LOCALITY: New Caledonia, Grande Terre, North Province, Poum region, 10 m a.s.l.

TYPE MATERIAL: **Holotype** ♂ (MNHN): "NEW CALEDONIA 12286, 20°25'S X 164°13'E, Nehoue campground, 29 Apr 2005, 10m G.B. Monteith, MV light.", "HOLOTYPUS Exocelina inexspectata sp.n. Wewalka et al. 2008" [red printed label].

DESCRIPTION: Habitus (Fig. 85): Body oblong-oval, broadest shortly before middle; moderately convex; pronotum and head relatively broad; pronotum broadest between posterior angles, lateral margins moderately curved; base of elytra as broad as pronotal base; lateral margins of elytra moderately curved.

Measurements: TL 5.5 mm; TL-h 5.1 mm; TW 2.7 mm.

Color: Holotype teneral, totally reddish-brown, but mature specimens most likely black to dark-brown.

Surface sculpture: Head with regular microreticulation, relatively fine punctation, somewhat irregular between eyes. Pronotum with fine and regular microreticulation and with fine, moderately dense and irregular punctation consisting of elongated punctures near lateral sides, additional very strong and dense punctures along anterior margin and less strong along posterior margin except on the middle. Elytron with microreticulation limited to a small area along base; punctation consisting of very strong, comparably dense and regular punctures replaced by transverse striae-like punctures on apical third, with few much finer irregular punctures in between;

additional stronger punctures forming three indistinct irregular rows (Fig. 39). Ventral side: metacoxae with many deep and broad longitudinal striae (Fig. 66); strong longitudinal striae on ventrites 1–3; no striae on ventrites 4 and 5 and few indistinct oblique striae on ventrite 6.

Structures: Pronotum with very fine lateral rim, missing only on anterior corners; impressions along lateral margins of pronotum indistinct; posterior corners of pronotum rounded. Prosternum and prosternal process with a distinct keel.

Male: Pro- and mesotarsomeres I–III distinctly dilated; protarsomere IV with long antero-lateral hook. Aedeagus: median lobe as in Fig. 3a–b, tip in lateral view knob-shaped; lateral lobe without obvious setation along inner margin, tip hook-shaped (Fig. 3c).

Female: Unknown.

AFFINITIES: *Exocelina inexspectata* shares with *E. kolleri* the strong elytral punctation but can be separated by the missing elytral microreticulation, the less parallel-sided habitus and shape of male genitalia. *Exocelina inexspectata* can be separated from *E. allerbergeri*, *E. atripennis*, *E. burwelli*, *E. niklasi*, *E. rotteri* and *E. simoni* by the strong punctures on the elytra and by the shape of the male genitalia.

HABITAT: Collected at mercury vapour (MV) light at low altitude.

DISTRIBUTION (Fig. 115): Grande Terre (North Province: Poum region).

ETYMOLOGY: The discovery of this species at a campground was quite unexpected.

4. *Exocelina maculata* (SHARP, 1882)

Copelatus maculatus SHARP 1882: 566; FAUVEL 1883: 340, 1903: 248; BRANDEN 1885: 85; HELLER 1916: 239; ZIMMERMANN 1920: 145; GUÉORGUIEV 1968: 34; NILSSON 2001: 66.
Papuadytes maculatus (SHARP): NILSSON & FERY 2006: 56.
Exocelina maculata (SHARP): NILSSON 2007: 34 (ending of epithet changed due to transfer to feminine gender).

TYPE LOCALITY: New Caledonia, Grande Terre, ? South Province.

TYPE MATERIAL: **Holotype** ♀ (IRSNB): "Coll. I. R. Sc. N. B. Nouvelle Caledonie Coll. Chevrolat Det. Sharp 82", "Sharp det. 1882: Copelatus maculatus Shp.", "TYPE", "sec Zimm. Cat. Junk", "C. (Liopterus) maculatus Shp.".

ADDITIONAL MATERIAL EXAMINED:
SOUTH PROVINCE: 1 ♂ (IRSNB): "Nouvelle Calédonie, Mt. Mou, rec. Deplanche, ex coll. Fauvel, Coll. et det. A. Fauvel, Copelatus maculatus Shp."; 4 ♂♂, 3 ♀♀ (CGW, NMW, QMB, ZSM): "NEW CALEDONIA 11128, 21°53'S x 166°25'E, Mt. Humboldt, source, 5-7 Nov 2002, 1300 m, Burwell, Monteith & Wright."; 27 ♂♂, 23 ♀♀ (CGW, NMW, QMB, ZSM): "NEW CALEDONIA 11124, 21°53'S x 166°25'E, 1350 m Mt. Humboldt refuge creek, 5-6 Nov 2002 C. Burwell. under rocks in creek bed.", "415 DNA M. Balke" [green printed label].

DESCRIPTION: Habitus (Fig. 86): Body oblong-oval, broadest shortly before middle; moderately convex; pronotum and head relatively broad; pronotum broadest between posterior angles, lateral margins moderately curved; base of elytra slightly narrower than pronotal base; lateral margins of elytra moderately curved.

Measurements: TL 6.2–6.8 mm; TL-h 5.6–6.2 mm; TW 3.0–3.2 mm.

Color: Head black to dark-brown, vaguely lighter on clypeal margin and vertex. Pronotum black to dark-brown, distinctly lighter along lateral margins. Elytron black to dark-brown, with a distinct brownish-yellow apical spot not reaching suture. Epipleura dark-brown, rest of ventral surface reddish-brown to black. Antennae and legs reddish-brown.

Surface sculpture: Head with distinct regular microreticulation, slightly matt, with comparably dense punctation, fine on clypeus and denser and stronger between eyes. Pronotum with

microreticulation very similar to that on head, slightly matt; with comparably dense punctation, very fine centrally and stronger laterally; additional strong punctures along anterior margin and along posterior margin except on middle. Elytron with microreticulation very similar to that on pronotum, slightly matt, and with distinct, comparably dense and regular punctation; stronger punctures forming three irregular rows; between rows with few additional punctures. Ventral side: metaventrite with fine oblique wrinkles; metacoxae with few fine transverse wrinkles and many fine longitudinal striae (Fig. 67); moderately fine longitudinal striae on ventrites 1–3, few oblique striae on ventrites 4 and 5.

Structures: Pronotum with very fine lateral rim, missing only on anterior corners; with moderate impressions along lateral margins; posterior corners of pronotum rectangular; posterior margin of pronotum almost straight. Prosternal process little raised medially and not keeled, with broad rim laterally.

Male: Pro- and mesotarsomeres I–IV moderately dilated, pro- and mesotarsomeres V distinctly elongated; protarsomere IV with slim antero-lateral hook. Pro- and mesotarsal claws moderately dilated. Ventrite 6 with several longitudinal striae. Aedeagus: median lobe as in Fig. 4a–b; lateral lobe (Fig. 4c) with broad base and abruptly narrowing towards tip, no obvious setation along inner margin.

Female: Elytra densely covered with comma-like punctures instead of distinct, comparably dense and regular punctation. Ventrite 6 without longitudinal striae. Color as in male.

AFFINITIES: *Exocelina maculata* resembles *E. allerbergeri*, *E. atripennis*, *E. burwelli*, *E. niklasi*, *E. rotteri* and *E. simoni* due to the predominantly black color, the surface sculpture and the size. It can be separated from these species by the distinct brownish-yellow apical spot on elytron, the rectangular posterior corner of the pronotum, almost straight posterior margin of the pronotum and by the shape of the male genitalia.

HABITAT: Pools of clear shaded streams and under stones in a dried out stream in forests at high altitude (1300–1350 m).

DISTRIBUTION (Fig. 115): Grande Terre (South Province: Mt. Mou, Mt. Humboldt).

5. *Exocelina commatifera* (HELLER, 1916)

Copelatus commatifer HELLER 1916: 271; NILSSON 2001: 65.
Papuadytes commatifer (HELLER): NILSSON & FERY 2006: 56.
Exocelina commatifera (HELLER): NILSSON 2007: 33 (ending of epithet changed due to transfer to feminine gender).

TYPE LOCALITY: New Caledonia, Grande Terre, North Province, Mt. Ignambi.

TYPE MATERIAL: **Lectotype** (by present designation) ♂ (MTD): "Drs. F. Sarasin & J. Roux, Neukaledonien, Ignambi" [blue printed and handwritten label], "8.8.11" [blue handwritten label], "C. commatifer Typus" [red printed and handwritten label], "1914 6" [blue printed and handwritten label], "Staatl. Museum für Tierkunde. Dresden" [white printed label], "Lectotype Wewalka & Balke 2007" [red printed label label], "Exocelina commatifera (Heller, 1916), det. Wewalka, Balke & Hendrich 2009" [white printed label].

Paralectotype ♀ (MTD): Cotype, same data as lectotype and "Paralectotype Wewalka & Balke 2007" [red printed label], "Exocelina commatifera (Heller, 1916), det. Wewalka, Balke & Hendrich 2009" [white printed label].

ADDITIONAL MATERIAL EXAMINED:

NORTH PROVINCE: 1 ♀ (QMB): "NEW CALEDONIA Mt Panié, 450-950m 14 May, 1984 G. Monteith & D. Cook"; 1 ♀ (QMB): "NEW CALEDONIA 20°34'S x 164°46'E Mt Panié refuge, 1300 m 16-18 Nov 2000, Bouchard, Burwell & Monteith, 9938".

1 ♀ (NMW): Loc. 2001/NC 13; 44 ♂♂, 34 ♀♀ (CGW, CSR, MNHN, NMW, ZSM): Locs . 2001/NC 14, 15, 16, 18a, 19 (3 ♂♂: "27 DNA M. Balke", "28 DNA M. Balke" and "DNA M. Balke 1557", 1 ♀: "90 DNA M. Balke" [green printed label]); 1 ♀ (NMW): Loc. 2001/NC 18.

DESCRIPTION: Habitus (Fig. 87): Body regularly oblong-oval, broadest shortly behind middle; moderately convex; pronotum broadest between posterior angles, lateral margins moderately curved; base of elytron as broad as pronotal base; lateral margins of elytron almost strait in anterior fifth.

Measurements: TL 6.7–7.5 mm; TL-h 6.0–6.7 mm; TW 3.0–3.6 mm.

Color: Head black to dark-brown, sometimes vaguely lighter on clypeal margin and vertex. Pronotum black to dark-brown, sometimes vaguely lighter along anterior and lateral margins. Elytron black, sometimes vaguely lighter along suture and apex. Epipleura and rest of ventral surface black to dark-brown. Antennae and legs dark-brown.

Surface sculpture: Head with distinct regular microreticulation, slightly matt, with comparably dense punctation, fine on clypeus, denser and stronger between eyes. Pronotum with microreticulation very similar to that on head, slightly matt, with comparably dense punctation, very fine punctation centrally and stronger laterally, additional strong punctures along anterior margin and along posterior margin except on the middle. Elytron with microreticulation very similar to that on pronotum, slightly matt, and with moderately fine, comparably dense and regular punctation; deeply impressed comma-like punctures forming two irregular rows; between rows and laterally with less frequent similar additional punctures (Fig. 40). Ventral side: metaventrite with several oblique wrinkles; metacoxae with few fine transverse wrinkles and many fine longitudinal striae (Fig. 68); strong longitudinal striae on ventrite 1, moderately fine striae on ventrites 2 to 3, few oblique to transverse striae on ventrites 4 and 5.

Structures: Eyes relatively small. Pronotum with very fine lateral rim, missing only on anterior corners; with moderate impressions along lateral margins, posterior corners of pronotum obtuse and rounded. Prosternal process raised medially but not keeled, with broad rim laterally.

Male: Protarsomeres I–V, protarsal claws and mesotarsomeres I–III moderately dilated; protarsomere IV with distinct antero-lateral hook; mesotarsomeres IV and V and mesotarsal claws not distinctly modified. Ventrite 6 with many longitudinal striae laterally. Aedeagus: median lobe as in Fig. 5a–b, tip in lateral view broadly rounded; lateral lobe (Fig. 5c) narrow, with sparse and short setation.

Female: Color and surface sculpture as in male but ventrite 6 without lateral longitudinal striae.

AFFINITIES: *Exocelina commatifera* is very similar to *E. gaulorum* but can be separated by rows of punctures on elytra consisting of more elongate punctures, predominantly black elytra, matt surface and shape of male genitalia. From *E. allerbergeri*, *E. atripennis*, *E. burwelli*, *E. niklasi*, *E. rotteri* and *E. simoni* it can be differentiated by the deeply impressed elongate punctures on elytra.

HABITAT: Rock pools of clear streams at higher altitude (1100–1400 m). Collected together with *E. poellabauerae*.

DISTRIBUTION (Fig. 115): Grande Terre (North Province: Mt. Panié and Mt. Ignambi).

6. *Exocelina gaulorum* sp.n.

TYPE LOCALITY (see JÄCH & BALKE 2010: Fig. 16): New Caledonia, Grande Terre, North Province, SW Ponérihouen, Aoupinié, 700 m a.s.l. (Loc. 2001/NC 34).

TYPE MATERIAL: **Holotype** ♂ (NMW): "NEW CALED.: North Prov. 25 km SW Ponérihouen, Aoupinié, 700 m, 14.11.2001, leg. Balke & Wewalka (NC 34)", "HOLOTYPUS Exocelina gaulorum sp.n. Wewalka et al. 2007" [red printed label].

Paratypes: 1 ♀ (QMB): "NEW CALEDONIA Aoupinié, 20 km NE Poya, 650 m 18-19 May, 1984 G. Monteith & D. Cook".

15 ♂♂, 8 ♀♀ (CGW, MNHN, NMW, ZSM): Loc. 2001/NC 34 (1 ♂: "123 DNA M. Balke" and 1 ♂: "DNA M. Balke 1594" [green printed labels]).

All paratypes are provided with red printed paratype labels.

DESCRIPTION (based on differences from *E. commatifera*): Habitus (Fig. 88): Body form broadest in middle; lateral margins of elytra moderately and regularly curved; average size smaller.

Measurements: TL 6.1–7.2 mm; TL-h 5.6–6.6 mm; TW 2.8–3.3 mm.

Color similar to *E. commatifera*; pronotum distinctly reddish-brown on anterior angles; elytron brownish-black along suture, laterally and on apex.

Surface sculpture: Microreticulation on head, pronotum and elytron less deeply impressed, less matt; punctation on pronotum fine, not stronger laterally; deeply impressed comma-like punctures on elytra similarly arranged but much shorter (Fig. 41). Ventral side: metaventrite with less frequent wrinkles; striae on metacoxae very similar; longitudinal striae on ventrite 1 less strong, striae on ventrites 2–3 similar; striae on ventrites 4 and 5 less frequent; ventrite 6 with few oblique striae laterally.

Structures: Eyes slightly bigger than in *E. commatifera*.

Male: Aedeagus: median lobe as in Fig. 6a–b; lateral lobe (Fig. 6c) narrow, with sparse and short setation restricted to apical third of inner margin.

Female: Color and surface sculpture as in male.

AFFINITIES: *Exocelina gaulorum* can be differentiated from *E. commatifera* by the much shorter, deeply impressed, comma-like punctures on the elytra, predominantly brownish-black elytra, the shinier surface, the smaller average size and the shape of the aedeagus. *Exocelina gaulorum* also resembles *E. allerbergeri*, *E. burwelli*, *E. niklasi*, *E. rotteri* and *E. simoni* by the predominantly black color and the size. It can be separated from these species by the deeply impressed rows of elongate elytral punctures and by the shape of the male genitalia.

HABITAT: Pools of small shaded, partly dried out streams in forests at mid altitude (650–700 m); see JÄCH & BALKE (2010: Fig. 16). Collected together with *E. barbarae*, *E. brunoi* and *E. niklasi*.

DISTRIBUTION (Fig. 115): Grande Terre (North Province: Aoupinié).

ETYMOLOGY: This species is dedicated to Sylvia and Primarius Dr. med. Georg Gaul, Vienna, Austria.

7. *Exocelina simoni* sp.n.

TYPE LOCALITY: New Caledonia, Grande Terre, North Province, Mt. Canala, 600 m a.s.l. (Loc. 2001/NC 37).

TYPE MATERIAL: **Holotype** ♂ (NMW): "New Caledonia, North Prov., Mt. Canala, 15-20 km S Canala, 600 m, 15. XI. 2001, leg. Balke & Wewalka (NC 37)", "HOLOTYPUS Exocelina simoni sp.n. Wewalka et al. 2007" [red printed].

Paratypes: 3 ♂♂, 1 ♀ (QMB, ZSM): "NEW CALEDONIA 11188 21°35'S x 165°58'E, Gelima [Gélima], 5 km S, 485 m, 15 November 2002, G. Monteith & C. Burwell" (1 ♂: "417 DNA M. Balke" [green printed label]); 1 ♂ (IAC): "Nouvelle-Calédonie, Sarraméa / Col d'Amieu, Lat. S 21°34.677, Long. E 165°46.275, Alt. 489 m", "Collecté au piège à interception 2, Le 03 & 05/04/06, Par JPK [J.-P. Kataoui] & JB [J. Brinon]".

71 ♂♂, 53 ♀♀ (CGW, CSR, NMW, ZSM): Loc. 2001/NC 37 (1 ♀: "20 DNA M. Balke", 1 ♂: "21 DNA M. Balke", 1 ♂: "DNA M. Balke 1592" and 1 ♀: "DNA M. Balke 1586" [green printed labels]); 7 ♂♂, 2 ♀♀ (MNHN, NMW): Loc. 2001/NC 38.

2 ♂♂, 4 ♀♀ (NMW): Loc. 2009/NC 16.

All paratypes are provided with red printed paratype labels.

DESCRIPTION: Habitus (Fig. 89): Body regularly oblong-oval, broadest shortly behind middle, moderately convex; pronotum broadest between posterior angles, lateral margins moderately curved; base of elytra as broad as pronotal base, lateral margins of elytra regularly and moderately curved.

Measurements: TL 6.3–7.2 mm; TL-h 5.9–6.6 mm; TW 3.0–3.4 mm.

Color: Head usually totally black, rarely vaguely lighter on vertex. Pronotum usually totally black, sometimes vaguely lighter along anterior margin. Elytron totally black. Epipleura and rest of ventral surface black. Antennae and legs reddish-brown.

Surface sculpture: Head with regular microreticulation, with very fine, moderately dense punctation, denser between eyes. Pronotum with microreticulation very similar to that on head, with fine, moderately dense punctation, additional strong punctures along anterior margin and along posterior margin except on middle. Elytron with microreticulation very similar to that on pronotum, and with fine, moderately dense and regular punctation; strong punctures forming three irregular rows; between rows with similar additional punctures (Fig. 42). Ventral side: metaventrite almost without wrinkles; metacoxae with few fine transverse wrinkles and several fine longitudinal striae limited to lateral side (Fig. 69); fine longitudinal striae on ventrites 1–3; few fine and short oblique to transverse striae on ventrites 4 and 5; ventrite 6 with few oblique striae laterally.

Structures: Pronotum with very fine lateral rim, missing only on anterior corners; with moderate impressions along lateral margins; posterior corners of pronotum obtuse and rounded.

Male: Protarsomeres I–V and mesotarsomeres I–III moderately dilated; protarsomere IV with distinct antero-lateral hook; mesotarsomeres V and claws not distinctly modified. Aedeagus: median lobe as in Fig. 7a–b; lateral lobe (Fig. 7c) very narrow, with sparse and short setation.

Female: Color and surface sculpture as in male.

AFFINITIES: *Exocelina simoni* resembles *E. allerbergeri*, *E. atripennis*, *E. burwelli*, *E. niklasi* and *E. rotteri* very much by predominantly black color, surface sculpture and size, and can be separated from these species by the shape of the male genitalia. From *E. commatifera* and *E. gaulorum* it can be differentiated by the absence of deeply impressed elongate punctures on elytra.

HABITAT: Pools of small shaded, partly dried out forest streams around 485–620 m altitude; see JÄCH & BALKE (2010: Figs. 13, 14, 17). Collected together with *E. aubei*, *E. brunoi*, *E. burwelli*, *E. jeannae*, *E. kolleri*, *E. remyi*, *E. simoni* and *E. subjecta*. Together with *E. aubei*, *E. brunoi*, *E. jeannae* and *E. subjecta* found in a flight interception trap.

DISTRIBUTION (Fig. 115): Central Grande Terre.

ETYMOLOGY: This species is named after Simon Wewalka, Vienna, Austria.

8. *Exocelina burwelli* sp.n.

TYPE LOCALITY: New Caledonia, Grande Terre, North Province, Mt. Canala, 600 m a.s.l. (Loc. 2001/NC 37).

TYPE MATERIAL: **Holotype** ♂ (NMW): "New Caledonia, North Prov., Mt. Canala, 15-20 km S Canala, 600 m, 15. XI. 2001 leg. Balke & Wewalka (NC 37)", "HOLOTYPUS Exocelina burwelli sp.n. Wewalka et al. 2007" [red printed label].

Paratypes: 1 ♂ (QMB): "NEW CALEDONIA 11190 21°36'S x 165°58'E. Gelima [Gélima], 7 km S. 730 m. 15 Nov 2002. hand coll. C.Burwell & G.Monteith.", "409 DNA M. Balke" [green printed label]; 1 ♂ (QMB): "New Caledonia, 11195, 21°37'S x 165°53'E, Plateau de Dogny, 910 m, 16. 11. 2002, hand coll., C. Burwell".

All paratypes are provided with red printed paratype labels.

DESCRIPTION (based mainly on comparison with *E. simoni*): Habitus: Body little broader oblong-oval than in *E. simoni*, broadest in middle.

Measurements: TL 7.3–7.4 mm; TL-h 6.6–6.7 mm; TW 3.5 mm.

Color: Head black, distinctly lighter on vertex. Pronotum black, lighter on anterior angles. Elytron black, vaguely lighter on apex.

Surface sculpture: Rows of strong punctures on elytron more regular. Ventral side: longitudinal striae on metacoxae more extended to medial part; last ventrite without striae.

Male: Aedeagus: median lobe as in Fig. 8a–b; lateral lobe (Fig. 8c) very narrow, with sparse and short setation.

Female: Unknown.

AFFINITIES: *Exocelina burwelli* resembles *E. allerbergeri*, *E. atripennis*, *E. niklasi*, *E. rotteri* and *E. simoni* very much by predominantly black color, surface sculpture and size, and can be separated from these species by the shape of the median lobe of aedeagus. From *E. commatifera* and *E. gaulorum* it can be differentiated by the absence of deeply impressed elongate punctures on elytra.

HABITAT: Pools of small interrupted and shaded forest streams at mid to higher altitude (600–910 m); see JÄCH & BALKE (2010: Fig. 25). Collected together with *Exocelina brunoi*, *E. kolleri*, *E. simoni* and *E. subjecta*.

DISTRIBUTION (Fig. 112): Central Grande Terre.

ETYMOLOGY: This species is dedicated to Dr. Chris Burwell of Queensland Museum, Brisbane, Australia who collected part of the type material.

9. *Exocelina niklasi* sp.n.

TYPE LOCALITY: New Caledonia, Grande Terre, North Province, SW Ponérihouen, Aoupinié, ca. 600 m a.s.l. (Loc. 2001/NC 33).

TYPE MATERIAL: **Holotype** ♂ (NMW): "New Caledonia, North Prov., Aoupinié, 15-25 km SW Ponérihouen, 500-700 m, 14. 11. 2001, leg. Balke & Wewalka (NC 33)", "HOLOTYPUS Exocelina niklasi sp.n. Wewalka et al. 2007" [red printed label].

Paratypes: 1 ♂, 4 ♀♀ (QMB, ZSM): "NEW CALEDONIA 21°11'S x 165°18'E Aoupinie top camp 2-3 Nov. 2001, G. Monteith, at MV light, 850 m, 8712".

102 ♂♂, 80 ♀♀ (CGW, CSR, MNHN, NMW, ZSM): Loc. 2001/NC 33 and Loc. 2001/NC 34 (1 ♂: "39 DNA M. Balke", 1 ♀: "40 DNA M. Balke", 3 ♂♂: "1595 DNA M. Balke", "DNA M. Balke 3003" and "DNA M. Balke 3004" [green printed labels]).

All paratypes are provided with red printed paratype labels.

DESCRIPTION (based mainly on comparison with *E. simoni*): Habitus: Body form very similar to *E. simoni*; average size slightly larger.

Measurements: TL 6.4–7.6 mm; TL-h 5.8–6.9 mm; TW 2.9–3.5 mm.

Color: Head black, often lighter on vertex. Pronotum black, often lighter on anterior and lateral margins. Elytron black, often vaguely lighter on apex.

Surface sculpture: Sculpture very similar to *E. simoni*, slightly more shiny. Impression along lateral margin of pronotum slightly more distinct. Ventral side: longitudinal striae on metacoxae more extended to medial part; last ventrite with few oblique striae laterally.

Male: Aedeagus: median lobe as in Fig. 9a–b; lateral lobe (Fig. 9c) very narrow, with sparse and short setation restricted to apical third of inner margin.

Female: Color and surface sculpture as in male.

AFFINITIES: *Exocelina niklasi* resembles *E. allerbergeri*, *E. atripennis*, *E. burwelli*, *E. rotteri* and *E. simoni* by the predominantly black color, surface sculpture and size, and can be separated from these species by the shape of the male genitalia. From *E. commatifera* and *E. gaulorum* it can be differentiated by the absence of deeply impressed elongate punctures on elytra.

HABITAT: Pools of small interrupted and shaded forest streams at mid to higher altitude (500–850 m). Collected together with *E. allerbergeri*, *E. barbarae*, *E. gaulorum*, *E. leae* and *E. subjecta*.

DISTRIBUTION (Fig. 113): Grande Terre (North Province: Aoupinié).

ETYMOLOGY: This species is named after Niklas Schacherer, Vienna.

10. *Exocelina allerbergeri* sp.n.

TYPE LOCALITY: New Caledonia, Grande Terre, North Province, SW Ponérihouen, Aoupinié, ca. 600 m a.s.l. (Loc. 2001/NC 33).

TYPE MATERIAL: **Holotype** ♂ (NMW): "New Caledonia, North Prov., Aoupinié, 15-25 km SW Ponérihouen, 500-700 m, 14. 11. 2001, leg. Balke & Wewalka (NC 33)", "HOLOTYPUS Exocelina allerbergeri sp.n. Wewalka et al. 2007" [red printed label].

Paratypes: 2 ♂♂, 1 ♀ (CGW, NMW): Loc. 2001/NC 33.

All paratypes are provided with red printed paratype labels.

DESCRIPTION (based mainly on comparison with *E. simoni*): Habitus: Body form very similar to *E. simoni*; average size slightly smaller.

Measurements: TL 6.3–6.6 mm; TL-h 5.8–6.1 mm; TW 3.0–3.2 mm.

Surface sculpture: Sculpture very similar to *E. simoni*; rows of strong punctures on elytra slightly more distinct. Ventral side: metaventrite with more distinct wrinkles; longitudinal striae on metacoxae more extended to medial part; last ventrite with several oblique striae laterally.

Male: Aedeagus: median lobe as in Fig. 10a–b; lateral lobe (Fig. 10c) very narrow, with sparse and short setation restricted to apical third of inner margin.

Female: Color and surface sculpture as in male.

AFFINITIES: *Exocelina allerbergeri* resembles *E. atripennis*, *E. burwelli*, *E. niklasi*, *E. rotteri* and *E. simoni* very much by predominantly black color, surface sculpture and size, and can be separated from these species by the shape of the median lobe of aedeagus. From *E. commatifera* and *E. gaulorum* it can be differentiated by the absence of deeply impressed elongate punctures on elytra.

HABITAT: Pools of small shaded and interrupted streams at mid altitude (500–700 m). Collected together with *E. barbarae*, *E. brunoi*, *E. leae*, *E. niklasi* and *E. subjecta*.

DISTRIBUTION (Fig. 111): Grande Terre (North Province: Aoupinié).

ETYMOLOGY: This species is dedicated to Prof. Dr. med. Franz Allerberger, Vienna, Austria.

11. *Exocelina rotteri* sp.n.

TYPE LOCALITY: New Caledonia, Grande Terre, North Province, Me Maoya Area, 600 m a.s.l. (Loc. 2001/NC 35).

TYPE MATERIAL: **Holotype** ♂ (NMW): "New Caledonia, North Prov. Me Maoya Area, 4 km S Nérin 600 m, 14. 11. 2001, leg. Wewalka (NC 35)", "HOLOTYPUS Exocelina rotteri sp.n. Wewalka, et al. 2007" [red printed label].

Paratypes: 3 ♂♂, 2 ♀♀ (CGW, NMW): Loc. 2001/NC 35 (1 ♂, "124 DNA M. Balke" [green printed label]); 1 ♂, 1 ♀ (CGW) Loc. 2001/NC 40; 1 ♂, 1 ♀ (NMW): Loc. 2001/NC 42 (1 ♀: "135 DNA M. Balke" and 1 ♂: "DNA M. Balke 1581" [green printed labels]).

All paratypes are provided with red printed paratype labels.

DESCRIPTION (based mainly on comparison with *E. simoni*): Habitus: Body form broader-oval, broadest in middle; average size distinctly smaller than in *E. simoni*.

Measurements: TL 6.1–6.6 mm; TL-h 5.6–6.0 mm; TW 2.9–3.1 mm.

Color: Surface totally black, rarely lighter on vertex and on margins of pronotum.

Surface sculpture: Sculpture and ventral side very similar to *E. simoni*; last ventrite with several oblique striae laterally.

Male: Aedeagus: median lobe as in Fig. 11a–b, appearing stout in both ventral and lateral view; lateral lobe (Fig. 11c) with narrow base, lateral lobe strongly narrowing towards apex, with sparse and short setation.

Female: Color and surface sculpture as in male.

AFFINITIES: *Exocelina rotteri* resembles *E. allerbergeri*, *E. atripennis*, *E. burwelli*, *E. niklasi* and *E. simoni* very much by predominantly black color, surface sculpture and size, and can be separated from these species by the shape of male genitalia. From *E. commatifera* and *E. gaulorum* it can be differentiated by the absence of deeply impressed elongate punctures on elytra.

HABITAT: Rocky and sandy pools of larger and smaller streams, partly exposed, from foothill to mid altitude forests (50–600 m); see JÄCH & BALKE (2010: Fig. 20). Collected together with *E. brownei*, *E. brunoi*, *E. burwelli*, *E. interrupta*, *E. jeannae*, *E. kolleri*, *E. simoni* and *E. subjecta.*

DISTRIBUTION (Fig. 111): Rather widely distributed in central Grande Terre.

ETYMOLOGY: This species is dedicated to Prof. Dr. med. Manfred Rotter, Vienna, Austria.

12. *Exocelina atripennis* (BALFOUR-BROWNE, 1939)

Copelatus atripennis BALFOUR-BROWNE 1939: 65; GUÉORGUIEV 1968: 32; NILSSON 2001: 64.
Papuadytes atripennis (BALFOUR-BROWNE): NILSSON & FERY 2006: 56.
Exocelina atripennis (BALFOUR-BROWNE): NILSSON 2007: 33.

TYPE LOCALITY: New Caledonia, Grande Terre, North Province, Pombeï.

TYPE MATERIAL: **Holotype** ♂ (NHML): "Pampai [Pombeï], New Caledonia, 16. ix. 1914. P.D. Montague 1918-87", "Copelatus atripennis n.sp. J. Balfour-Browne det.".

Paratypes: 1 ♂, 1 ♀ (NHML): "Paratype", "New Caledonia P.D. Montague. 1918-87", "Loc. Paompai [Pombeï] Date 15.9.14 Sex Coll. P.D. Montague, New Caledonia Exped.", "Copelatus atripennis n.sp. J. Balfour-Browne det."; 1 ♀ (NHML): "Cotype", "Pampai New Caledonia 15.IX.1914 P.D. Montague. 1918-87", "Copelatus

atripennis n.sp. J. Balfour-Browne det."; 2 ♀♀ (NHML): "Open forest & Najouli [= Niaouli] trees", "New Caledonia: Paompai, 500ft. 12.-19.ix.1914, P.D. Montague.".

ADDITIONAL SPECIMENS EXAMINED (identity uncertain):

NORTH PROVINCE: 1 ♀ (NMW): Koniambo, Foatchiamboué Basin, 179 m, 9.I.2005, leg. C. Pöllabauer; 1 ♀ (NMW): Koniambo, Confiance Basin, 22 m, 4.VIII.2007, leg. C. Pöllabauer.

1 ♀ (NMW): Loc. 2001/NC 29.

In the absence of males these three females cannot be assigned to *E. atripennis* with certainty.

DESCRIPTION (based mainly on comparison with *E. simoni*): Habitus: Body form similar to *E. simoni*, oblong-oval, broadest shortly behind middle; size similar.

Measurements: TL 6.1–6.7 mm; TL-h 5.7–6.3 mm; TW 2.8–3.2 mm.

Color: Surface totally black, lighter on vertex and on lateral margins of pronotum.

Surface sculpture: Regular punctation on head, pronotum, elytron and ventral side very similar to *E. simoni*.

Male: Aedeagus: median lobe as in Fig. 12a–b, appearing stout in both ventral and lateral view; lateral lobe (Fig. 12c) narrow with sparse and short setation.

Female: Color and surface sculpture as in male.

AFFINITIES: *Exocelina atripennis* resembles *E. allerbergeri*, *E. burwelli*, *E. niklasi*, *E. simoni* and *E. rotteri* by the predominantly black color, the size and the surface sculpture, but can be separated from these species by the shape of the median lobe of aedeagus. *Exocelina atripennis* has similar male genitalia to those of *E. staneki* but it can be differentiated from the latter species by its larger size and less distinct punctation on elytra.

HABITAT: In open forest at low altitude (170–180 m).

DISTRIBUTION (Fig. 111): Grande Terre (North Province: Pombeï).

13. *Exocelina staneki* sp.n.

TYPE LOCALITY (see JÄCH & BALKE 2010: Fig. 24): New Caledonia, Grande Terre, South Province, Rivière Bleue Provicial Park, ca. 500–600 m a.s.l. (Loc. 2001/NC 49/50).

TYPE MATERIAL: **Holotype** ♂ (NMW): "New Caledonia, South Prov., PN Rivière Bleue, 500-600 m, 20. 11. 2001, leg. Balke & Wewalka (NC 49/50)", "HOLOTYPUS Exocelina staneki sp.n. Wewalka et al. 2007" [red printed label].

Paratypes: 3 ♂♂, 2 ♀♀ (QMB, ZSM): "NEW CALEDONIA 11153 22°01'S x 166°28'E, Mt. Ouin, 1100 m, 9 Nov. 2002, C. Burwell, under stones/stream bed." (2 ♂♂: "413 DNA M. Balke" and "414 DNA M. Balke" [green printed labels]).

2 ♂♂ (MNHN, NMW): Loc. 2001/NC 4a; 10 ♂♂, 2 ♀♀ (CGW, MNHN, NMW, ZSM): Loc. 2001/NC 44 (5 ♂♂: "141 DNA M. Balke", "DNA M. Balke 1563", "DNA M. Balke 1564", "DNA M. Balke 1567" and "DNA M. Balke 1568" [green printed labels]); 7 ♂♂, 4 ♀♀ (CGW, NMW): Loc. 2001/NC 49/50 (1 ♂: "138 DNA M. Balke" and 1 ♀: "DNA M. Balke 1571" [green printed labels]).

3 ♂♂, 1 ♀ (NMW): Loc. 2009/NC 14.

All paratypes are provided with red printed paratype labels.

DESCRIPTION (based mainly on comparison with *E. simoni*): Habitus: Body form similar to *E. simoni*, oblong-oval, broadest in middle (Fig. 90); size significantly smaller.

Measurements: TL 5.3–5.8 mm; TL-h 4.9–5.3 mm; TW 2.5–2.7 mm.

Color: Surface totally black, rarely lighter on vertex, clypeal margin and at anterior margin of pronotum.

Surface sculpture: Regular punctation on head, on pronotum and elytron significantly stronger than in *E. simoni*. Ventral side: longitudinal striae on metacoxae more extended to medial part; longitudinal striae on ventrites 1–3 stronger; last ventrite with few oblique striae laterally.

Male: Oblique lateral striae on ventrites 5 and 6 stronger than in female. Aedeagus: median lobe as in Fig. 13a–b, appearing stout in both ventral and lateral view; lateral lobe (Fig. 13c) narrow with sparse and short setation.

Female: Color and surface sculpture as in male but striae on ventrites 5 and 6 fine.

AFFINITIES: *Exocelina staneki* resembles *E. allerbergeri*, *E. atripennis*, *E. burwelli*, *E. niklasi*, *E. rotteri* and *E. simoni* by the predominantly black color and the surface sculpture, but it can be separated from these species by the significantly smaller size and the shape of the male genitalia.

HABITAT: Small rock-pools filled with decaying leaves aside small streams and under stones of dried out stream beds at low to high altitude (50–1100 m); see JÄCH & BALKE (2010: Figs. 22, 24, 36). Collected together with *Exocelina aubei*, *E. charlottae*, *E. feryi*, *E. novaecaledoniae* and *E. subjecta*.

DISTRIBUTION (Fig. 111): Southern part of Grande Terre.

ETYMOLOGY: This species is dedicated to Prof. Dr. med. Gerold Stanek, Vienna, Austria.

14. *Exocelina monteithi* sp.n.

TYPE LOCALITY (see JÄCH & BALKE 2010: Figs. 13, 14, 17): New Caledonia, Grande Terre, North Province, Mt. Panié, 1350 m a.s.l. (Loc. 2001/NC 16).

TYPE MATERIAL: **Holotype** ♂ (NMW): "New Caledonia, North Prov. Mt. Panié, 1350 m, 8-9. 11. 2001, leg. Wewalka (NC 16)", "HOLOTYPUS Exocelina monteithi sp.n. Wewalka et al. 2007" [red printed label].

Paratypes: 1 ♀ (QMB): "NEW CALEDONIA Mt. Panié, 950 m 16 May 1984 G. Monteith & D. Cook".

6 ♂♂, 7 ♀♀ (NMW): Loc. 2001/NC 15; 6 ♂♂, 8 ♀♀ (CGW, CSR, NMW): Loc. 2001/NC 16 (2 ♂♂: "29 DNA M. Balke", "292 DNA M. Balke", 2 ♀♀, "30 DNA M. Balke" and "91 DNA M. Balke" [green printed labels]); 1 ♂ (CGW): Loc. 2001/NC 18a.

All paratypes are provided with red printed paratype labels.

DESCRIPTION: Habitus (Fig. 91): Body oblong-oval, distinctly convex. Head relatively broad. Pronotum broad and long, slightly broader between posterior angles than elytra at shoulders; posterior angles distinctly drawn backwards; lateral margins moderately curved, almost parallel-sided in posterior third. Elytra broadest shortly before middle; lateral margins moderately curved.

Measurements: TL 5.3–5.6 mm; TL-h 4.6–4.9 mm; TW 2.35–2.45 mm.

Color: Head reddish-brown, sometimes with vague darker marks near eyes. Pronotum reddish-brown, sometimes vaguely darker along anterior margin and centrally. Elytron dark brown to reddish-brown, darker along suture, along base and on central part; sometimes 4–5 dark longitudinal lines visible. Epipleura reddish-brown, rest of ventral surface dark brown. Antennae and legs reddish-brown.

Surface sculpture: Head with distinct regular microreticulation and very fine comparably dense regular punctation. Pronotum with microreticulation and punctation very similar to that on head, additional strong punctures along anterior margin and along posterior margin laterally. Elytron with microreticulation very similar to that on pronotum and with variable punctation, often with very fine punctation as on pronotum but less dense and additionally with more or less dense and

irregular stronger punctation; some strong punctures forming traces of three longitudinal rows. Ventral side: metaventrite with several wrinkles; metacoxae with few wrinkles but without longitudinal striae (Fig. 70); distinct longitudinal striae on ventrites 1–3.

Structures: Eyes relatively small. Pronotum with very fine lateral rim, missing only on anterior corners; with deep impressions along lateral margins; posterior corners of pronotum acute but rounded at tip. Prosternum and prosternal process raised medially but not keeled.

Male: Pro- and mesotarsomeres I–IV moderately dilated, and V elongated; protarsomere IV with distinct antero-lateral hook. Protarsal claws moderately elongated; inner claws slightly longer and moderately enlarged. Ventrites 4, 5 and 6 with distinct striae. Aedeagus: median lobe as in Fig. 14a–b, tip thin and pointed in lateral view; lateral lobe (Fig. 14c) with very broad base and rather abruptly narrowed third, no obvious setation along inner margin.

Female: Color and surface sculpture as in male but ventrites 4, 5 and 6 without distinct striae.

AFFINITIES: *Exocelina monteithi* can be separated from all other species of *Exocelina* from New Caledonia by shape of body with pronotum relatively long and slightly broader between posterior angles than elytra at shoulders and posterior angles distinctly drawn backwards.

HABITAT: Most specimens have been collected under stones in a dried out stream bed at high altitude (1100–1400 m); see JÄCH & BALKE (2010: Figs. 13, 14, 17; the dry stream in Fig. 14 is only a few meters above the pool shown in Fig. 17 which it feeds into).

DISTRIBUTION (Fig. 111): Grande Terre (North Province: Panié Mountain Range).

ETYMOLOGY: This species is dedicated to Dr. Geoff Monteith of Queensland Museum, Brisbane, Australia who collected a specimen of the new species.

15. *Exocelina subjecta* (SHARP, 1882) comb.n.

Copelatus subjectus SHARP 1882: 568; FAUVEL 1883: 341; BRANDEN 1885: 86; FAUVEL 1903: 248 (partim, placed in synonymy with *Colymbetes bimaculatus*); ZIMMERMANN 1920: 144 (partim); GUÉORGUIEV 1968: 32 (partim); NILSSON 2001: 64 (partim).

TYPE LOCALITY: New Caledonia.

TYPE MATERIAL: **Lectotype** (by present designation) ♂ (NHML): "Type", "New Caledonia 673", "Sharp Coll. 1905-313.", "Type 673 Copelatus rufipes n.sp. New Caledonia", "This name is wrong. It was published as 673 subjectus n.sp.", "Lectotype Wewalka et al. 2007" [red printed label].

ADDITIONAL MATERIAL EXAMINED:

NORTH PROVINCE: 3 ♂♂, 1 ♀ (NMW): "Neukaledonien: Umg. Grotte le Cresson [60 m], 18.9.1965, Österr. Neukaledonien-Expedit.", "R. Mouchamps det. 70, Copelatus bimaculatus Pertr."; 1 ♂ (QMB): "NEW CALEDONIA 11188 21°35'S x 165°58'E, Gelima [Gélima], 5 km S, 485 m, 15 November 2002, G. Monteith & C. Burwell", "418 DNA M. Balke" [green printed label]; 1 ♂ (IRSNB): "Nouvelle Calédonie, Canala, rec. Bougier, ex coll. Fauvel, Coll. et det. A. Fauvel, Copelatus bimaculatus Perr. R.I.Sc.N.B. 17.479".

1 ♀ (NMW): Loc. 2001/NC 29 ("DNA M. Balke 3011" [green printed label]); 3 ♂♂, 2 ♀♀ (CGW, NMW): Loc. 2001/NC 33 (1 ♀, "38 DNA M. Balke", 1 ♂, "DNA M. Balke 3008" [green printed labels]); 2 ♂♂, 2 ♀♀ (CGW): Loc. 2001/NC 35; 5 ♂♂, 1 ♀ (NMW): Loc. 2001/NC 37 (2 ♂♂: "18 DNA M. Balke" and "DNA M. Balke 1585" [green printed labels]).

SOUTH PROVINCE: 1 ♂ (CLH): "Neukaledonien, Col d'Amien [= Amieu], 15. 3. 1994, leg. Schöller"; 1 ♂, 6 ♀♀ (IAC): "Nouvelle-Calédonie, Sarra.[méa] / Col d'Amieu, Lat. S 21°34.694 Long. E 165°46.278, Alt. 489 m, Collecté sur: Malaise alcool, Le 08/02/06, Par S. Cazères"; 2 ♂♂ (IAC): "Nouvelle-Calédonie, Sarraméa / Col d'Amieu, Lat. S 21°35.184 Long. E 165°46.463, Alt. 444 m", "Collecté sur: Piége à interception Le 21/04/06, Par Personnel Entomol."; 3 exs. (CTT, NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m (flight intercept trap) IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg. 12.iii.-31.iii.2007"; 20 exs. (CLH, CTT, NMP, ZSM): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m (flight intercept trap) [T. Théry &] IAC's team [J.-P. Kataoui, J.

Brinon, S. Cazères & C. Mille] leg. 23.xi.-05.xii.2007"; 2 exs. (NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m, (flight intercept trap) T. Théry leg., 19.xii.2007-11.i.2008"; 3 exs. (CTT, NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m, (flight intercept trap) T. Théry leg., 25.i.-8.ii.2008"; 2 exs. (CTT, NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) (malaise trap) 06.ii.2008 IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg."; 1 ex. (NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m (flight intercept trap) IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg. 07.-14.ii.2008"; 13 exs. (CTT, NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (com. de Sarraméa) 21°34.407S 165°45.674E, 412 m (flight intercept trap) IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg. 15.-27.ii.2008"; 8 exs. (CTT, NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (com. de Sarraméa) 21°34.407S 165°45.674E, 412 m, (flight intercept trap) IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg. 27.ii.-12.iii.2008"; 5 ♂♂, 2 ♀♀ (QMB, ZSM): "NEW CALEDONIA 11153 22°01'S x 166°28'E, Mt. Ouin, 1100 m, 9 Nov. 2002, C. Burwell, under stones/stream bed." (1 ♂: "412 DNA M. Balke" [green printed label]).

1 ♂ (NMW): Loc. 2001/NC 4a; 129 ♂♂, 71 ♀♀ (CGW, CSR, MNHN, NMW): Loc. 2001/NC 40; 1 ♂, 1 ♀ (NMW): Loc. 2001/NC 42 ("DNA M. Balke 1582" and "DNA M. Balke 1583" [green printed labels]); 11 ♂♂, 7 ♀♀ (CGW, NMW): Loc. 2001/NC 44 (1 ♂: "DNA M. Balke 1575", 2 ♀♀: "136 DNA M. Balke", "DNA M. Balke 1574" [green printed labels]); 2 ♀♀ (CGW): Loc. 2001/NC 45; 1 ♀ (NMW): Loc. 2001/NC 48 ("DNA M. Balke 1566" [green printed label]); 2 ♀♀ (NMW): Loc. 2001/NC 49/50; 13 ♂♂, 15 ♀♀ (CGW, NMW): Loc. 2001/NC 52 (1 ♂: "130 DNA M. Balke").

1 ♀ (NMW): Loc. 2009/NC 4; 7 ♂♂, 5 ♀♀ (NMW): Loc. 2009/NC 9; 1 ♂ (NMW): Loc. 2009/NC 11; 4 ♂♂, 1 ♀ (NMW): Loc. 2009/NC 14; 9 ♂♂, 2 ♀♀ (NMW): Loc. 2009/NC 16; 8 ♂♂, 2 ♀♀ (NMW): Loc. 2009/NC 18; 10 ♂♂, 2 ♀♀ (NMW): Loc. 2009/NC 22; 3 ♂♂, 3 ♀♀ (NMW): Loc. 2009/NC 27.

DESCRIPTION: Habitus (Fig. 92): Body regularly oblong-oval, broadest shortly behind middle; moderately convex; pronotum and head moderately broad; lateral margins of pronotum regularly and moderately curved.

Measurements: TL 5.7–6.8 mm; TL-h 5.1–6.2 mm; TW 2.6–3.1 mm.

Color: Head black to dark-brown, two connected spots on vertex reddish-brown. Pronotum black to dark-brown, reddish-brown on anterior corners. Elytron dark-brown to reddish-brown, with distinct transverse pale-brown band along base, not reaching shoulder and suture; often pale-brown on apex and along posterior half of lateral margin. Epipleura black to dark-brown, rest of ventral surface black to dark-brown. Antennae and legs reddish-brown.

Surface sculpture: Head with regular microreticulation, with fine and moderately dense punctation. Pronotum with dense microreticulation and fine and comparably sparse punctation; with additional strong punctures along anterior margin and along posterior margin except on middle. Elytron with dense microreticulation and fine, moderately dense punctation; moderately strong punctures forming three comparably regular rows; sometimes punctures elongated posteriorly; between rows few similar punctures; submarginal stria missing. Ventral side: metaventrite almost without wrinkles; metacoxae without distinct wrinkles and with fine lateral longitudinal striae (Fig. 71); distinct longitudinal striae on ventrites 1–3; few oblique striae on ventrites 4–6.

Structures: Pronotum with fine lateral rim, missing only on anterior corners; with moderate impressions along lateral margins; posterior corners of pronotum rectangular, slightly truncate. Prosternum keeled but prosternal process almost flat.

Male: Protarsomeres I–IV and mesotarsomeres I–III moderately dilated; protarsomere IV with moderately large antero-lateral hook. Ventrites 4, 5 and 6 with distinct striae. Aedeagus: median lobe as in Fig. 15a–b; lateral lobe (Fig. 15c) narrow, with short setation.

Female: Color and surface sculpture as in male but ventrites 4–6 with finer striae.

AFFINITIES: *Exocelina subjecta* is similar to *E. brunoi* and *E. lilianae* in size and has dark-brown to reddish-brown elytra with a distinct transverse pale-brown band along the base but can

be distinguished by the absence of striae-like punctures on elytra. It also resembles *E. bimaculata* in coloration and in elytral punctation but is distinctly bigger.

HABITAT: Rocky and sandy pools of bigger and smaller streams in forests and under stones in stream beds from low to high altitude (50–1100 m); see JÄCH & BALKE (2010: Figs. 20, 22, 24, 27, 33–37, 41, 46). Collected together with *E. allerbergeri*, *E. aubei*, *E. barbarae*, *E. bimaculata*, *E. brownei*, *E. brunoi*, *E. burwelli*, *E. charlottae*, *E. feryi*, *E. interrupta*, *E. jeannae*, *E. kolleri*, *E. leae*, *E. lilianae*, *E. niklasi*, *E. novaecaledoniae*, *E. perfecta*, *E. remyi*, *E. rotteri*, *E. simoni* and *E. staneki*.

DISTRIBUTION (Fig. 110): Widely distributed on Grande Terre.

16. *Exocelina lilianae* sp.n.

TYPE LOCALITY: New Caledonia, Grande Terre, South Province, 18 km E Plum, 150 m a.s.l. (Loc. 2001/NC 46).

TYPE MATERIAL: **Holotype** ♂ (NMW): "New Caledonia, South Prov. 18 km E Plum, 150 m, 19. 11. 2001, leg. Wewalka (NC 46)", "HOLOTYPUS Exocelina lilianae sp.n. Wewalka et al. 2007" [red printed label].

Paratypes: 2 ♂♂, 1 ♀ (CLH, NMP): "New Caledonia, South Prov., Plaine des Lacs, Chutes de la Madeleine, S. Bilý leg, 27.-30. 3. 1999".

3 ♂♂ (CGW): Loc. 2001/NC 46 (1 ♂: "DNA M. Balke 1561" [green printed label]); 1 ♂ (CGW): Loc. 2001/NC 48.

All paratypes are provided with red printed paratype labels.

DESCRIPTION: Habitus (Fig. 93): Body regularly oblong-oval, broadest behind middle; moderately convex; pronotum and head relatively broad; lateral margins of pronotum distinctly curved in posterior half.

Measurements: TL 5.7–6.5 mm; TL-h 5.2–6.0 mm; TW 2.8–3.1 mm.

Color: Head dark-brown; labrum, edge of clypeus and vertex reddish-brown. Pronotum black to dark-brown, reddish-brown along lateral margins. Elytron dark-brown to reddish-brown, with distinct transverse pale-brown band along base, not reaching shoulder; often longitudinal striae blackish. Epipleura black to dark-brown, rest of ventral surface black to dark-brown. Antennae and legs reddish-brown.

Surface sculpture: Head with regular microreticulation, and moderately fine and moderately dense punctation. Pronotum with dense microreticulation and fine punctation similar to that on head; additional strong punctures along anterior margin and along posterior margin except on middle. Elytron with dense microreticulation and moderately fine, moderately dense punctation; moderately impressed short striae forming 12 more or less irregular rows; striae sparse and irregular especially in rows 1–3; submarginal stria missing (Fig. 43). Ventral side: metaventrite with few wrinkles; metacoxae with fine wrinkles and with distinct longitudinal striae (Fig. 72); distinct longitudinal striae on ventrites 1–3; oblique striae on ventrites 4–6.

Structures: Pronotum with fine lateral rim, missing only on anterior corners; with moderate impressions along lateral margins; posterior corners of pronotum rectangular, slightly truncate. Prosternum between coxae keeled, prosternal process raised medially but not keeled.

Male: Protarsomeres I–IV and mesotarsomeres I–III moderately dilated; protarsomere IV with large antero-lateral hook; protarsal claws slightly longer, anterior claw slightly dilated. Ventrites 4–6 with distinct striae. Aedeagus: median lobe as in Fig. 16a–b, tip in lateral view knob-shaped; lateral lobe (Fig. 16c) with broader base strongly narrowing towards apex, setation short.

Female: Color and surface sculpture as in male; striae on ventrites as in *E. interrupta*.

AFFINITIES: *Exocelina lilianae* is similar to *E. interrupta* but can be distinguished by the broader body form, the dark-brown to reddish-brown elytra with a distinct transverse pale-brown band along the base and the much shorter and much less impressed striae. *Exocelina lilianae* resembles *E. brunoi* in coloration of elytra and body form but can be separated by longer and more distinct striae on elytra and by male genitalia.

HABITAT: Drainage ditches in swamps and rain pools at low altitude (150 m). Collected together with *E. subjecta*.

DISTRIBUTION (Fig. 112): Southern tip of Grande Terre.

ETYMOLOGY: This species is named after Liliane Schacherer, Vienna.

17. *Exocelina brunoi* sp.n.

TYPE LOCALITY: New Caledonia, Grande Terre, North Province, SE Ouégoa, 560 m a.s.l. (Loc. 2001/NC 26).

TYPE MATERIAL: **Holotype** ♂ (NMW): "New Caledonia, North Prov. 10 km SE Ouégoa, road to Mandjélia, 560 m, 11. 11. 2001, leg. Wewalka (NC 26)", "HOLOTYPUS Exocelina brunoi sp.n. Wewalka et al. 2007" [red printed label].

Paratypes: 2 ♂♂ (IRSNB): "Nouvelle Calédonie, Canala, rec. Bougier, ex coll. Fauvel, Coll. et det. A. Fauvel, Copelatus bimaculatus, R.I.Sc.N.B.17.479"; 1 ex. (QMB): "NEW CALEDONIA 11488 20°25'S x 164°31'E, 550m, Mandjelia, lower creek, 29Nov 2003-31 Jan 2004, G. Monteith, Malaise"; 2 ♂♂ (IAC): "Nouvelle-Calédonie, Sarra.[méa] / Col d'Amieu, Lat. S 21°34.694 Long. E 165°46.278, Alt. 489 m", "Collecté sur: Malaise alcool, Le 08/02/06, Par S. Cazères"; 1 ♂ (IAC): "Nouvelle-Calédonie, Sarraméa / Col d'Amieu, Lat. S 21°35.184, Long. E 165°46.463, Alt. 444 m", "Collecté sur: Piége à interception Le 21/04/06, Par Personnel Entomo."; 1 ♂ 2 ♀♀ (IAC): "Nouvelle-Calédonie, Sarraméa, Col d'Amieu, Lat. S 21°34.694 Long. E 165°46.278, Alt. 489 m", "Collecté au piége à interception Le 03/ & 05/04/06, Par JPK [J.-P. Kataoui] & JB [J. Brinon]"; 11 exs. (CLH, CTT, MNHN, NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m (flight intercept trap) IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg. 12.-31.iii.2007"; 1 ex. (NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m, (flight intercept trap) T. Théry leg., 19.xii.2007-11.i.2008"; 1 ex. (NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (com. de Sarraméa) 21°34.407S, 165°45.674E, 412 m, (flight intercept trap) T. Théry leg., 19.xii.2007-11.i.2008"; 11 exs. (CLH, CTT, NMP, ZSM): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m (flight intercept trap) [T. Théry &] IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg. 23.xi.-05.xii.2007"; 1 ex. (NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (com. de Sarraméa) 21°34.407S 165°45.674E, 412 m, (flight intercept trap) T. Théry leg., 11.i.-25.i.2008"; 2 exs. (CTT, NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m (flight intercept trap) T. Théry leg. 12.-25.i.2008"; 3 exs. (CTT, NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m, (flight intercept trap) T. Théry leg., 25.i.-8.ii.2008"; 1 ex. (NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m (flight intercept trap) IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg. 07.-14.ii.2008"; 15 exs. (CLH, NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (com. de Sarraméa) 21°34.407S 165°45.674E, 412 m (flight intercept trap) IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg. 15.-27.ii.2008"; 13 exs. (CTT, NMP, ZSM): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (com. de Sarraméa) 21°34.407S 165°45.674E, 412 m, (flight intercept trap) IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg. 27.ii.-12.iii.2008".

9 ♂♂, 6 ♀♀ (CGW, MNHN, NMW): Loc. 2001/NC 26 (2 ♂♂: "165 DNA M. Balke" and "DNA M. Balke 3012", 1 ♀: "DNA M. Balke 3013" [green printed labels]); 1 ♂ (NMW): Loc. 2001/NC 34, ("DNA M. Balke 3000" [green printed label]); 3 ♂♂ (NMW): Loc. 2001/NC 37, "19 DNA M. Balke", "DNA M. Balke 1584", "DNA M. Balke 1593" [green printed labels].

7 ♂♂, 2 ♀♀ (NMW): Loc. 2009/NC 16.

All paratypes are provided with red printed paratype labels.

DESCRIPTION: Habitus (Fig. 94): Body regularly oblong-oval, broadest behind middle; moderately convex; pronotum and head moderately broad; lateral margins of pronotum regularly and moderately curved.

Measurements: TL 6.5–7.1 mm; TL-h 6.0–6.5 mm; TW 3.1–3.4 mm.

Color: Head black to dark-brown; labrum and two connected spots on vertex reddish-brown. Pronotum black to dark-brown, reddish-brown on anterior corners. Elytron dark-brown to reddish-brown, with distinct transverse pale-brown band along base, not reaching shoulder; suture pale-brown on apical third and along posterior half of lateral margin; often longitudinal striae blackish. Epipleura black to dark-brown, rest of ventral surface black to dark-brown. Antennae and legs reddish-brown.

Surface sculpture: Head with regular and comparably strong microreticulation, with moderately strong and moderately dense punctation. Pronotum with regular and dense microreticulation and fine and moderately dense punctation, sometimes with short striae; additional strong punctures along anterior margin and along posterior margin except on middle. Elytron with dense and moderately fine microreticulation; with fine to moderately fine, moderately dense punctation; moderately impressed short striae forming three more or less irregular rows; more or less frequent additional striae present between three rows; a submarginal stria missing (Fig. 44). Ventral side: metaventrite with few wrinkles, metacoxae almost without wrinkles and with distinct longitudinal striae (Fig. 73); distinct longitudinal striae on ventrites 1–3, oblique striae on ventrites 4–6.

Structures: Pronotum with fine lateral rim, missing only on anterior corners; with moderate impressions along lateral margins; posterior corners of pronotum rectangular, slightly truncate. Prosternum and prosternal process raised medially but not keeled.

Male: Protarsomeres I–IV and mesotarsomeres I–III moderately dilated; protarsomere IV with moderately large antero-lateral hook. Ventrites 4–6 densely striate. Aedeagus: median lobe as in Fig. 17a–b, tip in ventral view with distinctly triangular, arrowhead-shaped outline and in lateral view tip very broadly rounded; lateral lobe (Fig. 17c) narrow, setation short and mostly restricted to apical third.

Female: Color and surface sculpture as in male; ventrites 4–6 with less frequent striae.

AFFINITIES: *Exocelina brunoi* is similar to *E. lilianae* but can be distinguished by the less frequent and much shorter striae-like punctures on elytra, and by the male genitalia. It also resembles *E. subjecta* in size, coloration and body form but differs in the elytral striae.

HABITAT: Residual pools of small shaded and interrupted streams at mid altitude (400–700 m), in mountain forests; see JÄCH & BALKE (2010: Figs. 16, 35). Collected together with *E. aubei*, *E. bimaculata*, *E. gaulorum*, *E. jeannae*, *E. niklasi*, *E. simoni* and *E. subjecta*. In flight intercept traps together with *E. aubei*, *E. bimaculata*, *E. brunoi*, *E. jeannae*, *E. kolleri*, *E. perfecta*, *E. remyi*, *E. simoni* and *E. subjecta*.

DISTRIBUTION (Fig. 112): Grande Terre (North Province and northern fringe of South Province).

ETYMOLOGY: This species is named after Bruno Mege, Nouméa, New Caledonia.

18. *Exocelina bimaculata* (PERROUD & MONTROUSIER, 1864)

Colymbetes bimaculatus PERROUD & MONTROUSIER 1864: 78; SHARP 1882: 758; FAUVEL 1883: 341; BRANDEN 1885: 83; FAUVEL 1868: 176 (partim); HELLER 1916: 239; ZIMMERMANN 1920: 144 (partim); GUÉORGUIEV 1968: 32 (partim); NILSSON 2001: 64 (partim).

Papuadytes bimaculatus (PERROUD & MONTROUSIER): NILSSON & FERY 2006: 56.

Exocelina bimaculata (PERROUD & MONTROUSIER): NILSSON 2007: 33 (ending of epithet changed due to transfer to feminine gender).

TYPE LOCALITY: New Caledonia, Grande Terre, North Province, Hienghène.

TYPE MATERIAL: **Lectotype** (by present designation) ♀ (IRSNB): "Coll. R.I.Sc.N.B. Nouvelle Calédonie Jenghen [Hienghène] type rec. Montrouzier ex Coll. Fauvel", "Coll. A. Fauvel Copelatus bimaculatus Perr. Syntype", "Lectotype Wewalka & Balke 2007" [red printed label].

ADDITIONAL MATERIAL EXAMINED:

NORTH PROVINCE: 1 ♀ (QMB): "NEW CALEDONIA, 11901, 20°19'S x 164°24'E, 500 m, Col d'Amoss, 3 km WSW, 14 Dec 2004-6 Jan 2005, G. Monteith, Dung pitfall"; 1 ♀ (QMB): "NEW CALEDONIA Mt. Panié, 450-950 m 14 May, 1984 G. Monteith & D. Cook"; 1 ♂ (QMB): "NEW CALEDONIA 8904 20°58'S x 165°17'E, 500 m, Pic d'Amoa, N slopes, 24 Nov 01-31 Jan 2002, G. Monteith, FIT trap"; 2 ♀♀ (QMB): "NEW CALEDONIA, 11483, 20°58'S x 165°17'E, 500 m, Pic d'Amoa, N slopes, 27 Nov 2003-31 Jan 2004, G. Monteith, Malaise".

49 ♂♂, 43 ♀♀ (CGW, CSR, MNHN, NMW): Loc. 2001/NC 26 (3 ♂♂: "163 DNA M. Balke", "164 DNA M. Balke", "DNA M. Balke 3015" and 1 ♀: "DNA M. Balke 3014" [green printed labels]).

SOUTH PROVINCE: 26 exs. (CLH, CTT, NMP, ZSM): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m (flight intercept trap) IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg. 15.-27.ii.2007"; 5 exs. (CTT, NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m (flight intercept trap) IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg. 12.-31.iii.2007"; 12 exs. (CTT, NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m, (flight intercept trap) T. Théry leg., 05.-19.xii.2007"; 68 exs. (CLH, CTT, NMP, ZSM): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m (flight intercept trap) T. Théry leg. 23.xi.-05.xii.2007"; 14 exs. (CTT, NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m, (flight intercept trap) T. Théry leg., 19.xii.2007-11.i.2008"; 2 exs. (NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (com. de Sarraméa) 21°34.407S 165°45.674E, 412 m, (flight intercept trap) T. Théry leg., 11.i.-25.i.2008"; 14 exs. (CLH, CTT, NMP, ZSM): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m (flight intercept trap) T. Théry leg. 12.-25.i.2008"; 10 exs. (CTT, NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (com. de Sarraméa) 21°34.407S 165°45.674E, 412 m, (flight intercept trap) 25.i.-08.ii.2008 T. Théry & IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg."; 10 exs. (NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m, (flight intercept trap) T. Théry leg., 25.i.-8.ii.2008"; 4 exs. (CTT, NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m (flight intercept trap) IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg. 07.-14.ii.2008"; 31 exs. (CTT, NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (com. de Sarraméa) 21°34.407S 165°45.674E, 412 m (flight intercept trap) IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg. 15.-27.ii.2008"; 1 ex. (NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) (malaise trap) 06.ii.2008 IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg."); 35 exs. (CTT, NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (com. de Sarraméa) 21°34.407S 165°45.674E, 412 m, (flight intercept trap) IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg. 27.ii.-12.iii.2008"; 41 exs. (CLH, CTT, NMP, ZSM): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m (flight intercept trap) IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg. 12.iii.-31.iii.2008".

1 ♀ (NMW): Loc. 2009/NC 18.

NORTH OR SOUTH PROVINCE: 1 ♀ (CLH): "Neukaledonien, Col. Roussettes [at border between North and South Province] 23. 3. 1994, Schöller leg.".

ADDITIONAL SPECIMEN EXAMINED (identity uncertain):

NORTH PROVINCE: 1 ♂ (CGW): Loc. 2001/NC 33.

This teneral male is externally not distinguishable from other specimens but the median lobe is slightly different.

DESCRIPTION: Habitus (Fig. 95): Body regularly oblong-oval, broadest shortly behind middle; little convex; pronotum and head moderately broad; lateral margins of pronotum regularly and moderately curved.

Measurements: TL 4.1–4.8 mm; TL-h 3.8–4.4 mm; TW 2.1–2.3 mm.

Color: Head black to dark-brown, labrum, edge of clypeus and two connected spots on vertex reddish-brown. Pronotum black to dark-brown, reddish-brown on anterior corners and often along lateral margins. Elytron dark-brown to reddish-brown, with a distinct transverse pale-brown band along base, not reaching shoulder and suture, also pale-brown on apex and along posterior half of lateral margin. Epipleura black to dark-brown, rest of ventral surface black to dark-brown. Antennae and legs reddish-brown.

Surface sculpture: Head with regular microreticulation, with fine and sparse punctation. Pronotum with dense microreticulation and fine and sparse punctation; additional strong punctures along anterior margin and along posterior margin except on middle. Elytron with dense microreticulation and fine, moderately dense punctation; moderately strong punctures forming three comparably regular rows; between rows few similar punctures and few punctures along suture on anterior third; submarginal stria missing. Ventral side: metaventrite with few wrinkles; metacoxae with few wrinkles and with few distinct longitudinal striae (Fig. 74); distinct longitudinal striae on ventrites 1–3, few oblique striae on ventrites 4 and 6.

Structures: Pronotum with fine lateral rim, missing only on anterior corners; with moderate impressions along lateral margins; posterior corners of pronotum almost rectangular, slightly truncate. Prosternum and prosternal process keeled.

Male: Protarsomeres I–IV and mesotarsomeres I–III moderately dilated; protarsomere IV with small antero-lateral hook. Ventrite 6 with more frequent striae. Aedeagus: median lobe as in Fig. 18a–b, outline of median lobe in ventral view of the shape of a longish arrowhead; lateral lobe (Fig. 18c) narrow, towards apex only moderately narrowed thus appearing stouter than in other species, setation sparse and short, restricted to apical third of inner margin.

Female: Color and surface sculpture as in male; ventrite 6 with very few striae.

AFFINITIES: *Exocelina bimaculata* is very similar to *E. leae* but can be differentiated by its slightly larger size and male genitalia. It also resembles *E. subjecta* in coloration and in elytral punctation but is smaller.

HABITAT: Pools of small shaded and interrupted streams in mountain rainforest at mid to higher altitude (400–950 m); see JÄCH & BALKE (2010: Fig. 37). Collected together with *E. aubei*, *E. brunoi* and *E. subjecta*. In a flight intercept trap together with *E. aubei*, *E. brunoi*, *E. kolleri*, *E. perfecta* and *E. remyi.*

DISTRIBUTION (Fig. 109): Grande Terre (North Province and northern fringe of South Province).

19. *Exocelina leae* sp.n.

TYPE LOCALITY: New Caledonia, Grande Terre, North Province, Aoupinié, ca. 600 m a.s.l. (Loc. 2001/NC 33).

TYPE MATERIAL: **Holotype** ♂ (NMW): "New Caledonia, North Prov. Aoupinié, 15 km SW Ponérihouen, 500-700 m, 14. 11. 2001, leg. Balke & Wewalka (NC 33)", "DNA M. Balke 3005" [green printed label] "HOLOTYPUS Exocelina leae sp.n. Wewalka et al. 2007" [red printed label].

Paratypes: 4 exs. (CGW, CLH, ZSM): "NEW CALEDONIA, Prov. Sud Col d'Amien [Amieu]), 489 m 21°61172 S 165°80805 E 7.III.2008, J. Gomez-Zurita leg.".

1 ♂, 1 ♀ (CGW): Loc. 2001/NC 33 (1 ♀: "DNA M. Balke 3006", 1 ♀: "37 DNA M. Balke" [green printed labels]).

All paratypes are provided with red printed paratype labels.

DESCRIPTION: Habitus: Body form similar to *E. bimaculata*, oblong-oval, broadest in middle; size significantly smaller than in *E. bimaculata*.

Measurements: TL 3.9–4.1 mm; TL-h 3.6–3.8 mm; TW 2.0–2.1 mm.

Color: Head and pronotum similar to *E. bimaculata* but without reddish-brown spots on vertex and reddish-brown color along lateral pronotal margins more extended. Elytron black to dark-brown, with distinct transverse yellowish-brown band along base, not reaching shoulder and suture, also yellowish-brown on apex, along posterior half of lateral margin and with some yellowish-brown spots on posterior half. Ventral surface dark-brown to reddish-brown.

Surface sculpture: Head, elytra and ventral side very similar to E. *bimaculata*. Pronotum also very similar, but with very few additional strong punctures along posterior margin except on middle.

Structures: Very similar to *E. bimaculata*. Pronotal impressions along lateral margins less distinct than in *E. bimaculata*.

Male: Pro- and mesotarsomeres similar to *E. bimaculata* but inner protarsal claw distinctly thickened. Aedeagus (slightly immature): median lobe as in Fig. 19a–b, narrow and parallel-sided in ventral view; tip in lateral view bent dorsad but not forming distinct hook; lateral lobe (Fig. 19c) narrow and without setation along inner margin.

Female: Unknown.

AFFINITIES: *Exocelina leae* is very similar to *E. bimaculata* but can be differentiated by distinctly smaller size and male genitalia. It resembles *E. feryi* in the shape of median lobe, but in the latter species the color of elytra is predominantly brownish-yellow.

HABITAT: Pools of small shaded streams in forests at mid altitude (500–700 m). Collected together with *E. barbarae*, *E. niklasi* and *E. subjecta*.

DISTRIBUTION (Fig. 111): Central Grande Terre.

ETYMOLOGY: This species is named after Lea Pöllabauer, Nouméa, New Caledonia.

20. *Exocelina feryi* sp.n.

TYPE LOCALITY (see JÄCH & BALKE 2010: Fig. 24): New Caledonia, Grande Terre, South Province, Rivière Bleue Provincial Park, 500–600 m a.s.l. (Loc. 2001/NC 49/50).

TYPE MATERIAL: **Holotype** ♂ (NMW): "New Caledonia, South Prov. PN Rivière Bleue, trail 7C, 500-600 m, 20. 11. 2001, leg. Wewalka (NC 49/50)", "HOLOTYPUS Exocelina feryi sp.n. Wewalka et al. 2009" [red printed label].

Paratypes: 1 ♂ (ZSM): "NEW CALEDONIA 11161, 21°22'S x 165°20'E, Me Maoya camp, 1150 m, 11-13.Nov 2002, hand coll. Burwell, Monteith & Wright", "416 DNA M. Balke" [green printed label]; 1 ♀ (QMB): "New Caledonia, 11124, 21°53'S x 166°25'E, 1350 m, Mt. Humboldt, refuge creek, 5.-6. Nov. 2002, C. Burwell, under rocks in creek bed", "408 DNA M. Balke" [green printed label]; 1 ♀ (QMB): "NEW CALEDONIA Mt. REmbai [sic!], 700-900 m 9 May, 1984 G. Monteith & D. Cook"; 1 ♀ (QMB): "NEW CALEDONIA Col des Roussettes, [490 m], 2 February 2004, G.B. Monteith", "QM, Berlesate 1110, 21°25'S x 165°28'E, rainforest, sieved litter".

7 ♂♂, 3 ♀♀ (CGW, NMW): Loc. 2001/NC 49/50 (3 ♂♂: "142 DNA M. Balke", "1559 DNA M. Balke 1559" and "DNA M. Balke 1560" [green printed labels]).

All paratypes are provided with red printed paratype labels.

DESCRIPTION: Habitus (Fig. 96): Body regularly oval, broadest in middle; little convex; pronotum and head moderately broad; lateral margin of pronotum regularly and moderately curved.

Measurements: TL 3.4–4.0 mm; TL-h 3.1–3.6 mm; TW 1.5–1.8 mm.

Color: Head dark-brown, labrum, clypeus and two vague spots on vertex reddish-brown. Pronotum dark-brown, anterior and posterior margin narrowly and lateral margins broadly

reddish-brown. Elytron brownish-yellow with a blackish line along suture and shadows of three to four vague darker lines. Epipleura and rest of ventral surface reddish-brown. Antennae and legs reddish-brown.

Surface sculpture: Head with distinct, regular and dense microreticulation, with fine, sparse and regular punctation. Pronotum with dense and regular microreticulation and fine, sparse and irregular punctation; additional strong punctures along anterior margin and along posterior margin except on middle and on posterior angles. Elytron with dense microreticulation and fine, sparse punctation; few strong punctures forming two lines and few additional strong punctures situated between two lines and laterally of outer line (Fig. 45); submarginal stria missing. Ventral side: metaventrite with distinct wrinkles; metacoxae with fine wrinkles and with few fine longitudinal striae (Fig. 75); fine longitudinal striae on ventrites 1–2; ventrites 3–6 almost without striae.

Structures: Pronotum with very fine lateral rim, missing only on anterior corners; with moderate impressions on posterior angles; posterior corners of pronotum slightly obtuse, truncate. Prosternum and prosternal process keeled.

Male: Protarsomeres I–IV and mesotarsomeres I–III moderately dilated; protarsomere IV with small antero-lateral hook. Aedeagus: median lobe as in Fig. 20a–b, narrow and parallel-sided in ventral view; tip in lateral view forming pointed hook; lateral lobe (Fig. 20c) narrow and without setation along inner margin.

Female: Color and surface sculpture as in male.

AFFINITIES: *Exocelina feryi* is very similar to *E. creuxorum* which differs in significantly stronger punctation on head, pronotum and elytra. *Exocelina feryi* is also similar in size, shape of body and color to *E. brownei*, *E. jeannae*, *E. nielsi* and *E. schoelleri* but differs in absence of elytral striae and by the male genitalia. Male genitalia are very similar to those of *E. leae*, but color of elytra is predominantly brownish-yellow.

HABITAT: Small ditches on loamy road, pools of small streams and in leaf litter sieved at mid to high altitude (500–1350 m); see JÄCH & BALKE (2010: Fig. 24). Collected together with *E. novaecaledoniae*, *E. staneki* and *E. subjecta*.

DISTRIBUTION (Fig. 109): Grande Terre (widely distributed in the South Province, possibly this species occurs in the North Province as well, because Col des Roussettes lies directly at the border between North and South Province and we do have any GPS data for the specimens collected there).

ETYMOLOGY: This species is named after our friend and colleague Dr. Hans Fery, Berlin.

21. *Exocelina creuxorum* sp.n.

TYPE LOCALITY: New Caledonia, Grande Terre, North Province, Pic d'Amoa, N slopes, 20°58'S/165°17'E, 500 m a.s.l.

TYPE MATERIAL: **Holotype** ♂ (MNHN): "New Caledonia, Pic d'Amoa, NC 8687, 500 m, 10.-11. xi. 2001, C. Burwell & G. Monteith leg.", "405 DNA M. Balke" [green printed label], "HOLOTYPUS Exocelina creuxorum sp.n. Wewalka et al. 2007" [red printed label].

Paratypes: 2 ♀♀ (CGW, QMB): same data as holotype (1 ♀: "406 DNA M. Balke" [green printed label]).

All paratypes are provided with red printed paratype labels.

DESCRIPTION (based mainly on comparison with *E. feryi*): Habitus very similar to *E. feryi*.

Measurements: TL 3.3–3.6 mm; TL-h 3.1–3.3 mm; TW 1.7–1.8 mm.

Color: Head and pronotum very similar to *E. feryi*. Pronotum sometimes predominantly reddish-brown. Elytron similar, dark-brown color more extended in middle. Epipleura and rest of ventral surface very similar to *E. feryi*. Antennae and legs reddish-brown.

Surface sculpture: Head similar to *E. feryi* but with distinctly stronger regular punctation. Pronotum similar but with slightly stronger irregular punctation. Elytron similar, but has significantly stronger punctation. Ventral side similar to *E. feryi* but metacoxae with stronger wrinkles.

Structures: Very similar to *E. feryi*.

Male: Aedeagus: median lobe as in Fig. 21a–b, narrow and sub-parallel-sided in ventral view but with the base broader than apical third; tip in lateral view forming pointed hook; lateral lobe (Fig. 21c) narrow and without setation along inner margin.

Female: Color and surface sculpture as in male.

AFFINITIES: *Exocelina creuxorum* is very similar to *E. feryi* which differs only by significantly finer punctation on head, pronotum and elytra. *Exocelina creuxorum* is also similar in size, shape of body and color to *E. brownei*, *E. jeannae*, *E. nielsi* and *E. schoelleri* but differs in absence of elytral striae and by male genitalia. Male genitalia are very similar to those of *E. leae* but color of elytra is predominantly brownish-yellow.

HABITAT: Precise collecting circumstances unknown. *Exocelina aubei* and *E. bimaculata* were collected in the same area.

DISTRIBUTION (Fig. 113): Grande Terre (North Province: Pic d'Amoa).

ETYMOLOGY: This species is dedicated to Elisabeth and George (†) Creux, Vienna.

22. *Exocelina novaecaledoniae* (BALFOUR-BROWNE, 1939)

Copelatus hydroporoides SHARP 1882: 564 (preoccupied by *Copelatus hydroporoides* MURRAY, 1859); FAUVEL 1883: 340, 1903: 248; HELLER 1916: 239; ZIMMERMANN 1920: 145.

Copelatus novaecaledoniae BALFOUR-BROWNE 1939: 62 (replacement name); GUÉORGUIEV 1968: 34; NILSSON 2001: 66.

Papuadytes novaecaledoniae (BALFOUR-BROWNE): NILSSON & FERY 2006: 56.

Exocelina novaecaledoniae (BALFOUR-BROWNE): NILSSON 2007: 34.

TYPE LOCALITY: New Caledonia, Grande Terre, South Province, Mt. Mou.

TYPE MATERIAL: **Neotype** (by present designation) ♂ (IRSNB): "Nouvelle Calédonie, Mt. Mou, rec. Deplanche", "ex coll. Fauvel", "Coll. et det. A. Fauvel, Copelatus hydroporoides Sharp", "Neotypus Copelatus hydroporoides Sharp des. Wewalka, Balke & Hendrich 2009" [red printed label].

According to SHARP (1882: 564) the holotype (by monotypy), a female, was in bad condition. It could not be traced in the NHML and therefore a neotype is designated here.

ADDITIONAL MATERIAL EXAMINED:

SOUTH PROVINCE: 21 ♂♂, 9 ♀♀ (CGW, MNHN, NMW, ZSM): Locs. 2001/NC 49/50 (4 ♂♂: "128 DNA M. Balke", "129 DNA M. Balke", "DNA M. Balke 1572" and "DNA M. Balke 1573"); 2 ♂♂, 1 ♀ (NMW): Loc. 2001/NC 51 (2 ♂♂: "129 DNA M. Balke", "DNA M. Balke 1590", and 1 ♀: "DNA M. Balke 1591").

DESCRIPTION: Habitus (Fig. 97): Body oblong-oval, broadest shortly behind middle; moderately convex; pronotum and head relatively broad; lateral margins of pronotum regularly and moderately curved; lateral margins of elytra almost straight in anterior third.

Measurements: TL 5.0–5.8 mm (mean: 5.35 mm); TL-h 4.5–5.4 mm; TW 2.4–2.8 mm.

Color: Head dark-brown, often labrum, edge of clypeus and two connected spots on vertex reddish-brown. Pronotum dark-brown, reddish-brown along lateral margins and often along anterior and posterior margin. Elytron dark-brown to reddish-brown, with distinct transverse

pale-brown band along base, reaching shoulder but not suture, and often pale-brown on apex and along lateral margin. Epipleura pale-brown, rest of ventral surface dark-brown. Antennae and legs reddish-brown.

Surface sculpture: Head with regular and dense microreticulation, with fine and sparse punctation and with additional much stronger punctures between eyes. Pronotum with dense microreticulation; fine and sparse punctation centrally and stronger punctation laterally, additional strong punctures along anterior margin and along posterior margin except on middle. Elytron with dense microreticulation, with comparably strong, moderately dense and regular punctation and few fine punctures in between; strong punctures forming three rudimentary rows; between rows few similar punctures; submarginal stria missing. Ventral side: metaventrite with fine wrinkles; metacoxae with few wrinkles and with several fine longitudinal striae (Fig. 76); distinct longitudinal striae on ventrites 1–3, few oblique striae on ventrites 4 and 6.

Structures: Pronotum with fine lateral rim, missing only on anterior corners; with moderate impressions along lateral margins; posterior corners of pronotum rectangular, slightly truncate. Prosternum and prosternal process keeled.

Male: Pro- and mesotarsomeres I–III moderately dilated; protarsomere IV with rudimentary antero-lateral hook, pro- and mesotarsomeres V elongated; inner protarsal claw slightly dilated. Ventrite 6 with more frequent striae. Aedeagus: median lobe as in Fig. 22a–b, tip in lateral view very narrowly extended; lateral lobe (Fig. 22c) base broad, strongly narrowed towards apex and without setation along inner margin.

Female: Color and surface sculpture as in male; ventrite 6 with very few striae.

AFFINITIES: *Exocelina novaecaledoniae* is very similar to *E. ouin* in terms of body form and elytral punctation but can be separated by its slightly smaller size, by the head and pronotum being largely reddish-brown, and by the shape of the male genitalia.

HABITAT: Small rocky pools along small stream in forest, and small sandy pools on a path at mid to higher altitude (500–900 m); see JÄCH & BALKE (2010: Fig. 24). Collected together with *E. feryi*, *E. staneki* and *E. subjecta*.

DISTRIBUTION (Fig. 115): Southern Grande Terre.

23. *Exocelina ouin* sp.n.

TYPE LOCALITY: New Caledonia, Grande Terre, South Province, Mt. Ouin, 1100 m a.s.l.

TYPE MATERIAL: **Holotype** ♂ (MNHN): "NEW CALEDONIA 11153 22°01'S x 166°28'E, Mt. Ouin, 1100 m, 9 Nov. 2002, C. Burwell, under stones/stream bed." (1 ♂: "410 DNA M. Balke" [green printed label]), "HOLOTYPUS Exocelina ouin sp.n. Wewalka et al. 2008" [red printed label].

Paratypes: 3 ♂♂, 1 ♀ (CGW, NMW, QMB): same data as holotype.

All paratypes are provided with red printed paratype labels.

DESCRIPTION: Habitus (Fig. 99): Body form similar to *E. novaecaledoniae* but less oval; pronotum and head relatively broad; lateral margins of pronotum regularly and distinctly curved; pronotum distinctly convex; lateral margins of elytra almost parallel; average size distinctly smaller.

Measurements: TL 4.6–5.0 mm (mean: 4.8 mm); TL-h 4.3–4.6 mm; TW 2.2–2.4 mm.

Color similar to *E. novaecaledoniae* but head and pronotum largely reddish-brown; ventral surface reddish-brown.

Surface sculpture: Very similar to *E. novaecaledoniae*.

Structures: Very similar to *E. novaecaledoniae* but posterior angles of pronotum slightly drawn backwards and rounded.

Male: Very similar to *E. novaecaledoniae* but inner protarsal claw not dilated. Aedeagus: median lobe as in Fig. 23a–b, tip in lateral view broader and of different curvature than in *E. novaecaledoniae*; lateral lobe (Fig. 23c) base broad, strongly narrowed towards apex and without setation along inner margin.

Female: Color and surface sculpture as in male.

AFFINITIES: *Exocelina ouin* is very similar to *E. novaecaledoniae* but can be distinguished by slightly smaller size, head and pronotum largely reddish-brown and shape of the male genitalia.

HABITAT: Under stones in stream bed at high altitude (1100 m).

DISTRIBUTION (Fig. 115): Grande Terre (South Province: Mt. Ouin).

ETYMOLOGY: This species is named after the type locality.

24. *Exocelina koghis* sp.n.

TYPE LOCALITY: New Caledonia, Grande Terre, South Province, Mt. Koghi [also known as Mts. Koghis], 500 m a.s.l. (Loc. 2001/NC 1a).

TYPE MATERIAL: **Holotype** ♂ (NMW): "New Caledonia, South Prov. Mt. Koghis, 500 m, 2. 11. 2001, leg. Wewalka (NC 1a)", "HOLOTYPUS Exocelina koghis sp.n. Wewalka et al. 2008" [red printed label].

Paratypes: 2 ♀♀ (CGW, ZSM): "NEW CALEDONIA 11153 22°01'S x 166°28'E, Mt. Ouin, 1100 m, 9 Nov. 2002, C. Burwell, under stones/stream bed." (1 ♀: "411 DNA M. Balke" [green printed label]); 1 ♂, 4 ♀♀ (CGW, QMB): "NEW CALEDONIA 11791, 22°14'S x 166°50'E, 280 m, Pic du Pin, site 2, rainfor., 25-26. Nov. 2004, QM Party [C. Burwell and G. Monteith], day hand collecting".

All paratypes are provided with red printed paratype labels.

DESCRIPTION: Habitus (Fig. 98): Body regularly oblong-oval, broadest shortly behind middle; moderately convex; pronotum and head moderately broad; lateral margins of pronotum moderately curved, almost straight in anterior third.

Measurements: TL 5.1–5.3 mm; TL-h 4.7–4.9 mm; TW 2.3–2.6 mm.

Color: Head black to dark-brown, labrum, edge of clypeus and sometimes two connected spots on vertex reddish-brown. Pronotum black to dark-brown, reddish-brown to pale-brown along lateral margins. Elytron reddish-brown, blackish along suture, blackish color more extended in middle. Epipleura and rest of ventral surface dark-brown to reddish-brown. Antennae and legs reddish-brown.

Surface sculpture: Head with dense microreticulation, with moderately fine and sparse punctation, punctures stronger between eyes. Pronotum with dense microreticulation and fine and comparably sparse punctation; additional strong punctures along anterior margin and along posterior margin except on middle. Elytron with dense microreticulation; with moderately strong, comparably dense and moderately regular punctation; strong punctures forming three sparse rows, between rows similar punctures; submarginal stria missing. Ventral side: metaventrite with distinct wrinkles; metacoxae with fine wrinkles, with several fine and short longitudinal striae and some stronger punctures (Fig. 77); distinct longitudinal striae on ventrites 1–3, few oblique striae on ventrites 4 and 6.

Structures: Pronotum with fine lateral rim, missing only on anterior corners; with moderate impressions along lateral margins; posterior corners of pronotum rectangular, slightly truncate. Prosternum and prosternal process keeled.

Male: Protarsomeres I–IV and mesotarsomeres I–III moderately dilated; protarsomere IV with moderately large antero-lateral hook. Ventrite 6 with more frequent striae. Aedeagus: median lobe as in Fig. 24a–b, of stout appearance; lateral lobe (Fig. 24c) base broad, very strongly narrowed towards apex and with short and sparse setation along inner margin.

Female: Color and surface sculpture as in male; ventrite 6 with less frequent striae.

AFFINITIES: *Exocelina koghis* is similar to *E. novaecaledoniae* in size, color and comparably strong punctures on elytra but can be distinguished by less convex form, almost completely pale-brown elytra and male genitalia. This species is also similar to *E. ouin* which can be distinguished by smaller size, more convex form, dark-brown to reddish-brown elytra with a distinct transverse pale-brown band along the base and male genitalia.

HABITAT: Under stones in (temporary) stream beds at medium high to high altitude (280–1100 m), shaded by primary forest. Collected together with *E. ouin*.

DISTRIBUTION (Fig. 112): Grande Terre (southern part of South Province: several mountains near Nouméa).

ETYMOLOGY: This species is named after the type locality.

25. *Exocelina interrupta* (PERROUD & MONTROUSIER, 1864)

Agabus interruptus PERROUD & MONTROUSIER 1864: 79; SHARP 1882: 753.

Copelatus interruptus SHARP 1882: 577 (junior synonym and secondary homonym); BRANDEN 1885: 84; ZIMMERMANN 1920: 140.

Copelatus interruptus FAUVEL 1868: 176, 1903: 249 (partim); HELLER 1916: 239; ZIMMERMANN 1920: 140; BALFOUR-BROWNE 1939: 77; GUÉORGUIEV 1968: 11; NILSSON 2001: 74.

Papuadytes interruptus (PERROUD & MONTROUSIER): NILSSON & FERY 2006: 56.

Exocelina interrupta (PERROUD & MONTROUSIER): NILSSON 2007: 33 (ending of epithet changed due to transfer to feminine gender).

TYPE LOCALITY: New Caledonia, Grande Terre, North Province, Canala.

TYPE MATERIAL:

Agabus interruptus: **Lectotype** (by present designation) ♂ (IRSNB): "Coll. R.I.Sc.N.B. Nouvelle Calédonie, Canala, rec Montrouzier, type, ex coll. Fauvel", "Coll. A. Fauvel, Copelatus interruptus Perr.", "Syntype", "Lectotype Wewalka & Balke 2007" [red printed label].
Paralectotype: 1 ♀ (IRSNB): "Coll. R.I.Sc.N.B. Nouvelle Calédonie, Canala, rec Montrouzier, ex coll. Fauvel", "Coll. A. Fauvel, Copelatus interruptus Perr.", "Syntype", "Paralectotype Wewalka & Balke 2007" [red printed label]. The series of syntypes at IRSNB also included a specimen of *E. nielsi*.

Copelatus interruptus: **Lectotype** (by present designation) ♂ (NHML): "Copelatus interruptus Type D.S. New Caledonia", "Type H.T.", "Sharp Coll. 1905-313", "Type 681 Copelatus interruptus n.sp. New Caledonia", "Lectotype Wewalka & Balke 2007" [red printed label].

ADDITIONAL MATERIAL EXAMINED:

NORTH PROVINCE: 1 ♀ (CLH): "Grotte de Ninrin-Reu [also known as d'Adio cave, 200 m], nr. Poya, New Caledonia, at light, 25. 12. 1965, G. Gross. Biospel. Exp.".

4 ♂♂, 4 ♀♀ (NMW): Loc. 2009/NC 29.

SOUTH PROVINCE: 1 ♂ (IRSNB): "Nouvelle Calédonie, Bourail, rec. Lécard, ex coll. Fauvel, Coll. et det. A. Fauvel, Copelatus interruptus, R.I.Sc.N.B. 17.479".

1 ♀ (CGW): Loc. 2001/NC 1; 2 ♂♂, 1 ♀ (CGW, NMW): Loc. 2001/NC 40; 2 ♂♂ (NMW): Loc. 2001/NC 52 ("253 DNA M. Balke" and "DNA M. Balke 1562" [green printed labels]).

1 ♂ (NMW): Loc. 2009/NC 27.

LOCALITY DATA UNKNOWN: 1 ♂ (IRSNB): "Nouvelle Calédonie, Coll. Chevrolat, Det. Sharp 82, interruptus Perroud".

DESCRIPTION: Habitus (Fig. 100): Body regularly oblong-oval, broadest in middle; moderately convex; pronotum and head moderately broad; lateral margins of pronotum regularly and moderately curved.

Measurements: TL 5.8–6.0 mm; TL-h 5.3–5.4 mm; TW 2.8 mm.

Color: Head black to dark-brown, labrum and edge of clypeus and two connected spots on vertex reddish-brown. Pronotum black to dark-brown, reddish-brown along lateral margins and sometimes also along anterior and posterior margin. Elytron pale-brown to reddish-brown; longitudinal striae and their surrounding black. Epipleura dark-brown, rest of ventral surface black to dark-brown. Antennae and legs reddish-brown.

Surface sculpture: Head with regular microreticulation, with moderately fine and moderately dense punctation. Pronotum with dense microreticulation and fine, sparse punctation; additional strong punctures along anterior margin and along posterior margin except on middle. Elytron with dense microreticulation and fine, moderately dense punctation; deeply impressed more or less long striae forming 12 sometimes irregular rows not reaching base of elytron; submarginal stria missing (Fig. 46). Ventral side: metaventrite with distinct wrinkles; metacoxae with fine transverse wrinkles and with several distinct longitudinal striae (Fig. 78); distinct longitudinal striae on ventrites 1–3, few oblique striae on ventrites 4 and 6.

Structures: Pronotum with fine lateral rim, missing only on anterior corners; with moderate impressions along lateral margins; posterior corners of pronotum rectangular, slightly truncate. Prosternum keeled; prosternal process elevated but not keeled.

Male: Protarsomeres I–IV and mesotarsomeres I–III moderately dilated; protarsomere IV with large antero-lateral hook. Last ventrite with distinct striae. Aedeagus: median lobe as in Fig. 25a–b, tip in lateral view slightly knob-shaped; lateral lobe (Fig. 25c) base broad, moderately narrowed towards apex and with short and sparse setation along inner margin.

Female: Color and surface sculpture as in male; striae on last ventrite less distinct.

AFFINITIES: *Exocelina interrupta* is very similar to *E. charlottae* but can be separated by slightly smaller size, pronotum without striae-like punctures, and by male genitalia. *Exocelina interrupta* is also similar to *E. lilianae* but can be distinguished by more slender body form, pale-brown to reddish-brown elytra without distinct transverse pale-brown band along the base and much longer and much more impressed striae. From *E. aubei*, *E. interrupta* differs in interrupted striae on elytra, missing submarginal striae and paler elytra. Other species from New Caledonia with twelve more or less interrupted elytral striae as *E. nielsi*, *E. perfecta* and *E. remyi* are much smaller.

HABITAT: Pools of streams at low to mid altitude (50–400 m); see JÄCH & BALKE (2010: Fig. 46). Collected together with *E. aubei*, *E. brownei*, *E. jeannae*, *E. nielsi*, *E. perfecta*, *E. remyi*, *E. rotteri* and *E. subjecta*.

DISTRIBUTION (Fig. 114): Widely distributed on Grande Terre (not in northern third).

26. *Exocelina charlottae* sp.n.

TYPE LOCALITY (see JÄCH & BALKE 2010: Fig. 22): New Caledonia, Grande Terre, South Province, Mt. Koghi, 500 m a.s.l. (Loc. 2001/NC 44).

TYPE MATERIAL: **Holotype** ♂ (NMW): "New Caledonia, South Prov., Mt. Koghis, 500 m, 19. XI. 2001, leg. Balke & Wewalka (NC 44)", "254 DNA M. Balke" [green printed label], "HOLOTYPUS Exocelina charlottae sp.n. Wewalka et al. 2008" [red printed label].

DESCRIPTION: Habitus: Body form similar to *E. interrupta*, less oval; broadest shortly behind middle; lateral margins of pronotum less curved anteriorly; size slightly bigger.

Measurements: TL 6.3 mm; TL-h 5.7 mm; TW 3.0 mm.

Color strongly resembling *E. interrupta*.

Surface sculpture: Head very similar to *E. interrupta*; punctation on pronotum consisting of striae-like punctures (Fig. 59); elytron (Fig. 47) very similar to *E. interrupta*. Ventral side: very similar to *E. interrupta*.

Structures: Very similar to *E. interrupta.*

Male: Very similar to *E. interrupta*. Aedeagus: median lobe as in Fig. 26a–b, tip in lateral view rounded; lateral lobe (Fig. 26c) base broad, very strongly narrowed towards apex and with short and sparse setation along apical fourth or fifth of inner margin.

Female: Unknown.

AFFINITIES: *Exocelina charlottae* is very similar to *E. interrupta* but can be distinguished by slightly bigger size, punctation on pronotum consisting of striae-like punctures, and by the shape of the male genitalia.

An undescribed species recently discovered by M.A. Jäch is also very similar to *E. charlottae*. This species will be described in the "Water beetles of New Caledonia (part 2)".

HABITAT: In small rock-pools with leaf packs at the edges of narrow streams at mid altitude (500 m); see JÄCH & BALKE (2010: Fig. 22). Collected together with *E. staneki* and *E. subjecta*.

DISTRIBUTION (Fig. 114): Grande Terre (South Province: Mt. Koghi).

ETYMOLOGY: This species is named after Charlotte Wewalka, Vienna, Austria.

27. *Exocelina poellabauerae* sp.n.

TYPE LOCALITY: New Caledonia, Grande Terre, North Province, Mt. Panié, 1200 m a.s.l. (Loc. 2001/NC 15).

TYPE MATERIAL: **Holotype** ♂ (NMW): "New Caledonia, North Prov. Mt. Panié, 1200 m, 9. 11. 2001, leg. Wewalka (NC 15)", "HOLOTYPUS Exocelina poellabauerae sp.n. Wewalka et al. 2007" [red printed label].

Paratypes: 1 ♂, 3 ♀♀ (QMB, ZSM): "NEW CALEDONIA Mt. Panié, 450-950 m 14 May, 1984 G. Monteith & D. Cook".

5 ♂♂, 3 ♀♀ (NMW): Loc. 2001/NC 13 (1 ♂: "DNA M. Balke 1558" [green printed label]); 31 ♂♂, 22 ♀♀ (CGW, NMW, ZSM): Loc. 2001/NC 14 and Loc. 2001/NC 15 (3 ♂♂: "35 DNA M. Balke", "DNA M. Balke 1555", "DNA M. Balke 1556", and 1 ♀: "36 DNA M. Balke" [green printed labels]); 8 ♂♂, 14 ♀♀ (MNHN, NMW): Loc. 2001/NC 18; 25 ♂♂, 24 ♀♀ (CGW, CSR): Loc. 2001/NC 18a.

All paratypes are provided with red printed paratype labels.

DESCRIPTION: Habitus (Fig. 101): Body regularly oval, broadest shortly behind middle; little convex; pronotum and head moderately broad; lateral margins of pronotum regularly and moderately curved.

Measurements: TL 4.3–5.3 mm; TL-h 3.9–4.9 mm; TW 2.2–2.6 mm.

Color: Head dark-brown, labrum, clypeus and two spots on vertex reddish-brown. Pronotum dark-brown, anterior corners and lateral margins reddish-brown. Elytron brownish-yellow, black to dark brown along: suture, narrow area on base, around the broadly interrupted lines and lateral margins. Epipleura black to dark-brown, rest of ventral surface dark-brown to reddish-brown. Antennae and legs reddish-brown.

Surface sculpture: Head with distinct, regular and dense microreticulation, with fine, sparse and regular punctation. Pronotum with dense and regular microreticulation and fine, sparse and regular punctation; additional strong punctures along anterior margin and along posterior margin except on middle and on posterior angles; sometimes with short longitudinal striae near posterior margin and in anterior part. Elytron with dense microreticulation and fine, moderately dense punctation; short, often confluent striae forming two lines; additional short striae near suture; between lines and laterally of outer line short striae forming about four broadly interrupted additional lines; submarginal stria missing (Fig. 48). Ventral side: metaventrite with few fine wrinkles; metacoxae with few fine transverse wrinkles and with several long and distinct longitudinal striae (Fig. 79); distinct longitudinal striae on ventrites 1–3, very few oblique striae on ventrites 4 and 6.

Structures: Pronotum with fine lateral rim, missing only on anterior corners; with moderate impressions along lateral margins; posterior corners of pronotum rectangular, slightly truncate. Prosternum and prosternal process keeled.

Male: Protarsomeres I–V and mesotarsomeres I–III moderately dilated; protarsomere IV with moderately large antero-lateral hook; inner protarsal claw slightly enlarged. Aedeagus: median lobe as in Fig. 27a–b, tip in lateral view broadly rounded; lateral lobe (Fig. 27c) of triangular shape, short and sparse setation along apical fourth of inner margin.

Female: Color and surface sculpture as in male.

AFFINITIES: *Exocelina poellabauerae* is characterized by series of short striae forming two often continuous lines and additional broadly interrupted lines on elytron. It differs from *E. barbarae* and *E. gelima* by the often longer confluent striae and by the shape of the male genitalia.

HABITAT: Pools of small streams at mid to high altitude (750–1200 m). Collected together with *E. commatifera*.

DISTRIBUTION (Fig. 110): Grande Terre (North Province: Mt. Panié).

ETYMOLOGY: This species is dedicated to Dr. Christine Pöllabauer, Nouméa, New Caledonia.

28. *Exocelina barbarae* sp.n.

TYPE LOCALITY: New Caledonia, Grande Terre, North Province, Aoupinié, ca. 600 m a.s.l. (Loc. 2001/NC 33).

TYPE MATERIAL: **Holotype** ♂ (NMW): "New Caledonia, North Prov., Aoupinié, 15-25 km SW Ponérihouen, 500-700 m, 14. 11. 2001, leg. Balke & Wewalka (NC 33)", "HOLOTYPUS Exocelina barbarae sp.n. Wewalka et al. 2007" [red printed label].

Paratypes: 11 ♂♂, 6 ♀♀ (CGW, NMW): Loc. 2001/NC 33 (2 ♂♂, 1 ♀: "DNA M. Balke 3001", "DNA M. Balke 3002" and "DNA M. Balke 3007" [green printed labels]); 41 ♂♂, 23 ♀♀ (CGW, CSR, MNHN, NMW, ZSM): Loc. 2001/NC 34 (5 ♂♂: "121 DNA M. Balke", "122 DNA M. Balke", "DNA M. Balke 1596", "DNA M. Balke 1597", "DNA M. Balke 1598", 1 ♀: "DNA M. Balke 1599" [green printed labels]).

All paratypes are provided with red printed paratype labels.

DESCRIPTION: Habitus: Similar to *E. poellabauerae* but distinctly more oblong oval.

Measurements: TL 4.4–4.9 mm; TL-h 4.0–4.4 mm; TW 2.1–2.3 mm.

Color: Very similar to *E. gelima* and *E. poellabauerae*.

Surface sculpture: Similar to *E. poellabauerae* but pronotum without short longitudinal striae near posterior margin and in anterior part. Striae on elytra of similar distribution but shorter and less impressed (Fig. 49). Ventral side very similar but striae on metacoxae less frequent.

Structures: Very similar to *E. gelima* and *E. poellabauerae*.

Male: Pro- and mesotarsomeres very similar to *E. gelima* and *E. poellabauerae*; inner protarsal claw not enlarged. Aedeagus: median lobe as in Fig. 28a–b, outline in ventral view arrowhead-shaped, tip in lateral view broadly knob-shaped; lateral lobe (Fig. 28c) narrow, with sparse and short setation.

Female: Color and surface sculpture as in male.

AFFINITIES: *Exocelina barbarae* resembles *E. gelima* and *E. poellabauerae* but striae on elytra of similar distribution are shorter and less impressed. From these species *Exocelina barbarae* can reliably be distinguished by male genitalia only.

HABITAT: Pools of small streams at mid altitude (500–700 m); see JÄCH & BALKE (2010: Fig. 16). Collected together with *E. allerbergeri*, *E. brunoi*, *E. gaulorum*, *E. leae*, *E. niklasi* and *E. subjecta*.

DISTRIBUTION (Fig. 114): Grande Terre (North Province: Aoupinié).

ETYMOLOGY: This species is named after Barbara Wewalka, Vienna, Austria.

29. *Exocelina gelima* sp.n.

TYPE LOCALITY: New Caledonia, Grande Terre, North Province, Gelima S of Canala, 730 m a.s.l.

TYPE MATERIAL: **Holotype** ♂ (MNHN): "NEW CALEDONIA 11190 21°36'S x 165°58'E. Gelima [Gélima], 7 km S. 730 m. 15 Nov 2002. hand coll. C.Burwell & G.Monteith.", "HOLOTYPUS Exocelina gelima sp.n. Wewalka et al. 2008" [red printed label].

Paratypes: 4 ♂♂, 5 ♀♀ (CGW, NMW, QMB, ZSM): same data as holotype (1 ♂: "403 DNA M. Balke" and 1 ♂: "404 DNA M. Balke" [green printed labels]); 3 ♂♂ (QMB, ZSM): "New Caledonia, 11195, 21°37'S x 165°53'E, Plateau de Dogny, 910 m, 16. 11. 2002, hand coll., C. Burwell".

All paratypes are provided with red printed paratype labels.

ADDITIONAL SPECIMEN EXAMINED (identity uncertain):

SOUTH PROVINCE: 1 ♂ (CGW): Loc. 2001/NC 40.

In this specimen the color is as in *E. barbarae* but the aedeagal median lobe is more like in *E. gelima*.

DESCRIPTION: Habitus (Fig. 102): Similar to *E. poellabauerae* but slightly more oblong oval.

Measurements: TL 4.6–5.0 mm; TL-h 4.2–4.6 mm; TW 2.2–2.4 mm.

Color: Very similar to *E. poellabauerae* and *E. barbarae* but reddish brown areas on clypeus and vertex of head and on pronotum more extended and distinct. Ventral surface predominantly reddish brown.

Surface sculpture: Similar to *E. poellabauerae* but pronotum without short longitudinal striae near posterior margin and in anterior part. Striae on elytra as in Fig. 50. Ventral side very similar to *E. poellabauerae* but striae on metacoxae less frequent (Fig. 80).

Structures: Very similar to *E. poellabauerae* and *E. barbarae*.

Male: Pro- and mesotarsomeres very similar to *E. poellabauerae* and *E. barbarae*; inner protarsal claw not enlarged. Aedeagus: median lobe as in Fig. 29a–b, outline in ventral view

arrowhead-shaped, tip in lateral view knob-shaped; lateral lobe (Fig. 29c) narrow, with sparse and short setation.

Female: Color and surface sculpture as in male.

AFFINITIES: *Exocelina gelima* is very similar to *E. poellabauerae* and *E. barbarae* but can be distinguished by the much more extended reddish-brown areas on head and pronotum. From *E. poellabauerae* it differs in missing distinct striae on pronotum. From both species it can be distinguished by the shape of the male genitalia.

HABITAT: Pools of small streams at mid altitude (700 m).

DISTRIBUTION (Fig. 114): Central Grande Terre.

ETYMOLOGY: This species is named after the type locality.

30. *Exocelina brownei* (GUIGNOT, 1942)

Copelatus striolatus BALFOUR-BROWNE 1939: 77 (preoccupied by PESCHET 1917).
Copelatus brownei GUIGNOT 1942: 86 (replacement name); GUÉORGUIEV 1968: 11; NILSSON 2001: 74.
Papuadytes brownei (GUIGNOT): NILSSON & FERY 2006: 56.
Exocelina brownei (GUIGNOT): NILSSON 2007: 33.

TYPE LOCALITY: New Caledonia, Grande Terre, North Province, Pombeï.

TYPE MATERIAL: **Holotype** ♂ (NHML): "Type", "Pampai [Pombeï], New Caledonia, 15. IX. 1914. P.D. Montague. 1918-87", "Copelatus striolatus B-B. Type J. Balfour-Browne det.".

ADDITIONAL MATERIAL EXAMINED:

NORTH PROVINCE: 1 ♂ (CLH): "Grotte de Ninrin-Reu [also known as d'Adio cave, 200 m], nr. Poya, New Caledonia, at light, 25. 12. 1965, G. Gross. Biospel. Exp.".

SOUTH PROVINCE: 1 ex. (NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m (flight intercept trap) T. Théry leg. 12.-25.i.2008"; 1 ex. (ZSM): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (com. de Sarraméa) 21°34.407S 165°45.674E, 412 m, (flight intercept trap) IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg. 27.ii.-12.iii.2008"; 2 ♂♂ (IRSNB): "Nouvelle Calédonie, Yahoué, février, rec. Savés, ex coll. Fauvel, Coll. et det. A. Fauvel, Copelatus interruptus Perr., R.I.Sc.N.B. 17.479".

9 ♂♂, 3 ♀♀ (CGW, NMW): Loc. 2001/NC 40; 3 ♂♂ (NMW): Loc. 2001/NC 42 ("139 DNA M. Balke", "140 DNA M. Balke" and "DNA M. Balke 1569" [green printed labels]).

DESCRIPTION: Habitus (Fig. 103): Body regularly oval, broadest in middle; little convex; pronotum and head moderately broad; lateral margins of pronotum regularly and moderately curved.

Measurements: TL 3.7–4.0 mm; TL-h 3.4–3.6 mm; TW 1.7–2.0 mm.

Color: Head black to dark-brown, labrum, edge of clypeus and two connected spots on vertex reddish-brown. Pronotum black to dark-brown, anterior corners and lateral margins reddish-brown. Elytron brownish-yellow, the rows of serial strioles and their surrounding, suture and lateral margin black to dark-brown. Epipleura black to dark-brown, rest of ventral surface dark-brown to reddish-brown. Antennae and legs reddish-brown.

Surface sculpture: Head with distinct and dense microreticulation, with moderately fine, sparse and irregular punctation. Pronotum with dense microreticulation and fine, comparably sparse and irregular punctation; additional strong punctures along anterior margin and along posterior margin except on middle, and on posterior angles. Elytron with dense microreticulation and fine, moderately dense punctation; rows of serial strioles forming about ten irregular lines; "lines" 3, 4 and 8 more complete or confluent; submarginal stria missing (Fig. 51).

Ventral side: metaventrite with few fine wrinkles; metacoxae with fine transverse wrinkles and with some moderately distinct longitudinal striae (Fig. 81); distinct longitudinal striae on ventrites 1–3, only few striae on ventrites 4–6, striation also faint.

Structures: Pronotum with fine lateral rim, missing only on anterior corners; with moderate impressions along lateral margins; posterior corners of pronotum rectangular, slightly truncate. Prosternum and prosternal process keeled.

Male: Protarsomeres I–IV and mesotarsomeres I–III moderately dilated; protarsomere IV with moderately large antero-lateral hook. Aedeagus: median lobe as in Fig. 30a–d, tip in lateral view broadly rounded, faintly knob-shaped (see also below under affinities); lateral lobe (Fig. 30e) narrow, with sparse and short setation.

Female: Color and surface sculpture as in male.

AFFINITIES: *Exocelina brownei* is characterized by about ten lines of striae-like punctures which it has in common with *E. jeannae* and *E. schoelleri*. From these it can be distinguished by longer, often confluent striae, different size and male genitalia. The median lobe of aedeagus of the type specimen – which is somewhat immature – fits rather well to the specimens from the area of Thio (Locs. 2001/NC 40, 42) (Fig. 30c–d) and to the specimens from Yahoué (IRSNB), but the median lobe of the specimen from the area of Poya is in ventral view narrower at the apex (Fig. 30a–b). However, no other differences have been found, therefore the single specimen from Poya is not described as a different species.

HABITAT: Pools of small streams and a pond, at low to mid altitude (50–350 m); see JÄCH & BALKE (2010: Fig. 20). Collected together with *Exocelina interrupta*, *E. jeannae*, *E. rotteri* and *E. subjecta*. Some specimens were collected at light.

DISTRIBUTION (Fig. 115): Central and southern Grande Terre.

31. *Exocelina jeannae* sp.n.

TYPE LOCALITY: New Caledonia, Grande Terre, South Province, west of Thio, 350 m a.s.l. (Loc. 2001/NC 40).

TYPE MATERIAL: **Holotype** ♂ (NMW): "NEW CALED.: South Prov. 16 km W Thio 350 m, 16./17.11.2001, leg. Wewalka & Balke (NC 40)", "HOLOTYPUS Exocelina jeannae sp.n. Wewalka et al. 2007" [red printed].

Paratypes: 2 ♂♂ (IAC): "Nouvelle-Calédonie, Sarraméa / Col d'Amieu, Lat. S 21°35.184, Long. E 165°46.463, Alt. 444 m", "Collecté sur: Piége à interception Le 21/04/06, Par Personnel Entomo."; 2 ♀♀ (IAC): "Nouvelle-Calédonie, Sarraméa, Col d'Amieu, Lat. S 21°34.694 Long. E 165°46.278, Alt. 489 m", "Collecté au piége à interception Le 03 / & 05/04/06, Par JPK [J.-P. Kataoui] & JB [J. Brinon]".

9 ♂♂, 3 ♀♀ (CGW, MNHN, NMW): Loc. 2001/NC 40; 1 ♂ (NMW): Loc. 2001/NC 42 ("DNA M. Balke 1570" [green printed label]).

15 ♂♂, 7 ♀♀ (NMW): Loc. 2009/NC 16; 1 ♂ (NMW): Loc. 2009/NC 22.

All paratypes are provided with red printed paratype labels.

DESCRIPTION: Habitus: Body form very similar to *E. brownei*, slightly bigger than the latter.

Measurements: TL 4.0–4.3 mm; TL-h 3.6–3.9 mm; TW 1.9–2.1 mm.

Color: As in *E. brownei*.

Surface sculpture: Elytra with about ten irregular lines, formed by several broken striae, much less impressed than in *E. brownei*, shorter and not confluent (Fig. 52). Ventral side similar to *E. brownei.*

Male: Tarsi and claws very similar to *E. brownei.* Aedeagus: median lobe as in Fig. 31a–b, tip in lateral view more broadly rounded than in *E. brownei*, slightly knob-shaped; lateral lobe (Fig. 31c) narrow, with sparse and short setation.

Female: Color and surface sculpture as in male.

AFFINITIES: *Exocelina jeannae* is very similar to *E. brownei* but can be distinguished by shorter striae-like punctures on elytra, larger body size and the shape of the male genitalia.

HABITAT: Pools of small streams at mid altitude (350 m); see JÄCH & BALKE (2010: Figs. 35, 41). Collected together with *Exocelina aubei*, *E. brownei*, *E. brunoi*, *E. interrupta*, *E. remyi*, *E. rotteri*, *E. simoni* and *E. subjecta*. In a flight intercept trap at 400–500 m with *E. aubei*, *E. brunoi*, *E. jeannae*, *E. simoni* and *E. subjecta.*

DISTRIBUTION (Fig. 114): Central Grande Terre.

ETYMOLOGY: This species is named after Lydie-Jeanne Pöllabauer, Nouméa, New Caledonia.

32. *Exocelina schoelleri* sp.n.

TYPE LOCALITY: New Caledonia, Grande Terre, North or South Province, Col des Roussettes [at border between North and South Province] (490 m a.s.l.) north of Bourail.

TYPE MATERIAL: **Holotype** ♂ (NMW): "Neukaledonien Col. Roussettes 23.3.1994 Schöller leg.", "HOLOTYPUS Exocelina schoelleri sp.n. Wewalka et al. 2007" [red printed label].

Paratypes: 1 ♀ (CLH): same data as holotype; 1 ♂ (QMB): "NEW CALEDONIA, 21°11'S x 165°18'E Aoupinie, top camp, 2-3 Nov 2001, G. Monteith at MV light, 850 m, 8712".

All paratypes are provided with red printed paratype labels.

DESCRIPTION: Habitus (Fig. 104): Body much smaller than in *E. brownei*, less regularly oval, almost parallel-sided, broadest slightly behind middle; distinctly convex; pronotum and head relatively broad; lateral margins of pronotum distinctly curved in anterior part.

Measurements: TL 3.3–3.5 mm; TL-h 3.0–3.1 mm; TW 1.5–1.7 mm.

Color: Very similar to *E. brownei*.

Surface sculpture: Rows of striae forming about 10 irregular lines, shorter than in *E. brownei* and not confluent, they appear much more as linear series of elongated punctures (Fig. 53). In a specimen from Aoupinié lines of striae reduced to three lines with some additional short striae in between. Ventral side very similar to *E. brownei*.

Male: Tarsi and claws very similar to *E. brownei.* Aedeagus: median lobe as in Fig. 32a–b, tip in lateral view broadly rounded, faintly knob-shaped, in ventral view with truncate tip bent towards right hand side of beetle (on figure: towards left); lateral lobe (Fig. 32c) narrow, with sparse and short setation.

Female: Color and surface sculpture as in male.

AFFINITIES: *Exocelina schoelleri* resembles *E. brownei* and *E. jeannae* but can be distinguished by smaller size, the narrower, almost parallel form, shorter, not confluent striae-like punctures on elytra and the shape of the male genitalia.

HABITAT: Small pool rich in rotten leaves at the edge of a closed canopy forest stream at mid altitude (490 m a.s.l.) (M. Schöller, personal communication), and at light (850 m a.s.l.).

DISTRIBUTION (Fig. 113): Central Grande Terre.

ETYMOLOGY: This species is named after Dr. Matthias Schöller (Berlin, Germany) who collected part of the type material.

33. *Exocelina perfecta* (SHARP, 1882)

Copelatus perfectus SHARP 1882: 593; FAUVEL 1883: 341, 1903: 249; BRANDEN 1885: 85; HELLER 1916: 239; ZIMMERMANN 1920: 141; GUÉORGUIEV 1968: 10; NILSSON 2001: 75.
Papuadytes perfectus (SHARP): NILSSON & FERY 2006: 56.
Exocelina perfecta (SHARP): NILSSON 2007: 34 (ending of epithet changed due to transfer to feminine gender).

TYPE LOCALITY: New Caledonia.

TYPE MATERIAL: **Lectotype** (by present designation) ♂ (NHML): "Type", "New Caledonia", "Sharp Coll. 1905-313", "Type 680 Copelatus perfectus n.sp. New Caledonia", "11 striae on each elytron", "Lectotype Wewalka & Balke 2007" [red printed label].

ADDITIONAL MATERIAL EXAMINED:

NORTH PROVINCE: 1 ♀ (MNHW): "NEW CALEDONIA (N), 20°25.2'S 164°13.3'E, Nehoue river, 15 m, 8.01.2007, public camp site, night coll. (lamp & beating), leg. M. Wanat & R. Dobosz"; 6 ♀♀ (MNHW, ZSM): "NEW CALEDONIA (N), 21°07'S/164°57'E, 30 m, Tiéa Forest (GIE Fab Nicoli) [private sclerophyll forest reserve owned by Fab Nicoli] sclerophyllous forest, 30.01.2004, ad lucem, leg. M. Wanat"; 1 ♀ (IRSNB): "Nouvelle Calédonie, Canala, rec. Montrouzier, ex coll. Fauvel, Coll. et det. A. Fauvel, Copelatus perfectus Sharp".

1 ♀ (NMW): Loc. 2001/NC 6; 33 ♂♂, 57 ♀♀ (CGW, CSR, MNHN, NMW, ZSM): Loc. 2001/NC 7 (3 ♀♀: "4 DNA M. Balke", "DNA M. Balke 3027" and "DNA M. Balke 3028" [green printed labels]); 5 ♂♂, 4 ♀♀ (CGW, NMW): Loc. 2001/NC 10 (1 ♂: "169 DNA M. Balke", 3 ♂♂: "168 DNA M. Balke", "DNA M. Balke 3025" and "DNA M. Balke 3026" [green printed labels]).

1 ♂ (NMW): Loc. 2009/NC 29; 1 ♀ (NMW): Loc. 2009/NC 30.

SOUTH PROVINCE: 1 ex. (NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m (flight intercept trap) IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg. 12.-31.iii.2007"; 1 ex. (CTT): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m (flight intercept trap) [T. Théry &] IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg. 23.xi.-05.xii.2007"; 2 exs. (NMP, ZSM): "NEW CALEDONIA, Prov. Sud, La Foa (S.R.F. de Pocquereux) 21°44.243S 165°53.848E, 32 m, (light trap) 03.xii.2007, T. Théry leg."; 5 ♂♂, 4 ♀♀ (NMP, CLH): "New Caledonia, S.P. Paita, 20. 3. 1999, S. Bílý leg."; 1 ♀ (IRSNB): "Nouvelle Calédonie, Noumea, Coll. Séverin, Régimbart det., 1891, Copelatus perfectus Sharp"; 1 ♂ (IRSNB): "Nouvelle Calédonie, Yahoué, ruisseau [de la ferme modèle, octobre, according to Fauvel 1883], rec. Savés, ex coll. Fauvel, Coll. et det. A. Fauvel, Copelatus perfectus Sharp, R I.Sc.N.B. 17.479".

15 ♂♂, 12 ♀♀ (CGW, NMW): Loc. 2001/NC 1 (1 ♂: "DNA M. Balke 3030", 2 ♀♀: "1 DNA M. Balke" and "DNA M. Balke 3031" [green printed labels]); 2 ♂♂ (CGW): Loc. 2001/NC 4; 8 ♂♂, 6 ♀♀ (CGW, NMW): Loc. 2001/NC 5; 1 ♂ (CGW): 2001/NC 43; 1 ♂, 3 ♀♀ (CGW): Loc. 2001/NC 52 ("132 DNA M. Balke" [green printed label]).

2 ♀♀ (NMW): Loc. 2009/NC 4; 1 ♂ (NMW): Loc. 2009/NC 5; 1 ♀ (NMW): Loc. 2009/NC 6; 1 ♂, 10 ♀♀ (NMW): Loc. 2009/NC 21; 4 ♀♀ (NMW): Loc. 2009/NC 27.

DESCRIPTION: Habitus (Fig. 105): Body regularly oblong-oval, broadest in middle; little convex; pronotum and head moderately broad; lateral margins of pronotum regularly and moderately curved.

Measurements: TL 4.1–4.6 mm; TL-h 3.7–4.2 mm; TW 1.9–2.2 mm.

Color: Head dark-brown, labrum, clypeus and two vague spots on vertex reddish-brown. Pronotum dark-brown, anterior corners broadly, lateral margins narrowly and sometimes also anterior margin narrowly reddish-brown. Elytron brownish-yellow, striae blackish. Epipleura brownish-yellow, rest of ventral surface brownish-yellow to reddish-brown. Antennae and legs reddish-brown.

Surface sculpture: Head with distinct, regular and dense microreticulation, with fine, sparse and regular punctation and with some strong, short, irregular longitudinal striae between eyes. Pronotum with dense and regular microreticulation and fine, sparse and irregular punctation; with additional strong punctures along anterior margin and along posterior margin except on

middle; with comparably dense and strong, short or moderately long, irregular longitudinal striae, missing or less frequent only centrally (Fig. 60).

Elytron with superficial, dense microreticulation; almost without fine punctation; with 11 strong almost regular elytral striae and a submarginal stria; striae 3, 5, 7, 9, and 10 more or less reduced apically; sometimes few striae interrupted (Fig. 54). Ventral side: metaventrite with few fine wrinkles; metacoxae with few fine transverse wrinkles and with strong longitudinal striae (Fig. 82); distinct longitudinal striae on ventrites 1–3, ventrites 4–6 with few transverse striae.

Structures: Pronotum with lateral, very fine, almost complete rim; posterior corners of pronotum slightly obtuse, truncate. Prosternum and prosternal process keeled.

Male: Protarsomeres I–IV and mesotarsomeres I–III moderately dilated; protarsomere IV with distinct antero-lateral hook. Aedeagus: median lobe as in Fig. 33a–b, in ventral view subparallel-sided, apical 1/5 narrowing towards narrowly blunt tip; lateral lobe (Fig. 33c) narrow yet comparably broad towards apex, with sparse and short setation.

Female: Color and surface sculpture as in male.

AFFINITIES: *Exocelina perfecta* is similar in size, shape of body, color and elytral striae to *E. flammi* and *E. remyi*, but differs mainly by the shape of the male genitalia.

HABITAT: Pools of small streams with sandy ground at low to mid altitude (20–400 m); see JÄCH & BALKE (2010: Figs. 8, 9, 11, 27, 28, 31, 38, 46, 47, 51). Collected together with *E. aubei*, *E. interrupta*, *E. nielsi*, *E. remyi* and *E. subjecta*. In a flight intercept trap at 412 m collected with *E. aubei*, *E. bimaculata*, *E. brunoi*, *E. kolleri* and *E. remyi*.

DISTRIBUTION (Fig. 113): Widely distributed on Grande Terre.

34. *Exocelina flammi* sp.n.

TYPE LOCALITY: New Caledonia, Grande Terre, North Province, Ouégoa, 50 m a.s.l. (Loc. 2001/NC 23).

TYPE MATERIAL: **Holotype** ♂ (NMW): "New Caledonia, North Prov. 9 km SSW Ouégoa, near crossing of road to Bondé, 50 m, 11. XI. 2001, leg. Balke & Wewalka (NC 23)", "HOLOTYPUS Exocelina flammi sp.n. Wewalka et al. 2008" [red printed label].

Paratypes: 2 ♂♂, 1 ♀ (NMW): "Neukaledonien: Umg. Grotte le Cresson [60 m], 18.9.1965, Österr. Neukaledonien-Expedit.", "R. Mouchamps det. 70, Copelatus perfectus Sharp".

8 ♂♂, 1 ♀ (CGW): Loc. 2001/NC 23 (1 ♂♂: "170 DNA M. Balke" [green printed label]); 1 ♀ (CGW): Loc. 2001/NC 25a; 1 ♂ (CGW): Loc. 2001/NC 27.

All paratypes are provided with red printed paratype labels.

DESCRIPTION: Habitus: Very similar but on average slightly smaller than *E. perfecta*.

Measurements: TL 4.1–4.5 mm; TL-h 3.7–4.1 mm; TW 1.9–2.2 mm.

Color: Very similar to *E. perfecta*.

Surface sculpture: Longitudinal striae on head and on pronotum often less frequent than in *E. perfecta* (Fig. 61); elytral striae similar (Fig. 55). Ventral side very similar to *E. perfecta*.

Structures: Very similar to *E. perfecta*.

Male: Pro- and mesotarsomeres very similar to *E. perfecta*. Aedeagus: median lobe as in Fig. 34a–b, in ventral view narrower at base than mid area, gently narrowing towards blunt tip; lateral lobe (Fig. 34) narrow, with sparse and short setation.

Female: Color and surface sculpture as in male.

AFFINITIES: *Exocelina flammi* is very similar to *E. perfecta* and can only be differentiated by study of male genitalia. It is also very similar to *E. remyi* but can be distinguished by distinct striae on head, more frequent striae on pronotum, more impressed and less frequently broken elytral striae and by male genitalia.

HABITAT: Pools of small streams at low altitude (50–100 m). Collected together with *E. aubei* and *E. nielsi*.

DISTRIBUTION (Fig. 113): Northern tip of Grande Terre.

ETYMOLOGY: This species is dedicated to Prof. DDr. Heinz Flamm, Klosterneuburg, Austria.

35. *Exocelina remyi* sp.n.

TYPE LOCALITY: New Caledonia, Grande Terre, South Province, Dumbéa, 50 m a.s.l. (Loc. 2001/NC 1).

TYPE MATERIAL: **Holotype** ♂ (NMW): "New Caledonia, South Prov. Dumbea, 50 m, near road to Mt. Koghis, 3.11.2001, leg. Wewalka (NC 1)", "HOLOTYPUS Exocelina remyi sp.n. Wewalka et al. 2007" [red printed label].

Paratypes: 2 ♂♂ (IRSNB): "Nouvelle Calédonie, Yahoué, février, rec. Savés, ex coll. Fauvel, Coll. et det. A. Fauvel, Copelatus perfectus Sharp., R.I.Sc.N.B. 17.479"; 3 exs. (NMP, ZSM): "NEW CALEDONIA, Prov. Sud, SARRAMEA, 27.xii.2006-25.i.2007, I. Jenis leg."; 5 exs. (CLH, CTT, NMP, ZSM): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m (flight intercept trap) [T. Théry &] IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg. 23.xi.-05.xii.2007"; 1 ex. (MNHN): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (Sarraméa) 21°34.407S 165°45.674E, 412 m (flight intercept trap) IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg. 07.-14.ii.2008"; 1 ex. (NMP): "NEW CALEDONIA, Prov. Sud, Col d'Amieu (com. de Sarraméa) 21°34.407S 165°45.674E, 412 m (flight intercept trap) IAC's team [J.-P. Kataoui, J. Brinon, S. Cazères & C. Mille] leg. 15.-27.ii.2008".

1 ♂, 4 ♀♀ (CGW, MNHN, NMW): Loc. 2001/NC 1; 2 ♂♂, 1 ♀ (CGW, NMW): Loc. 2001/NC 52 (1 ♂: "133 DNA M. Balke" and 1 ♀: "DNA M. Balke 1589" [green printed labels]).

2 ♂♂ (NMW): Loc. 2009/NC 16; 1 ♀ (NMW): Loc. 2009/NC 22.

All paratypes are provided with red printed paratype labels.

ADDITIONAL MATERIAL EXAMINED:
NORTH PROVINCE: 5 ♀♀ (CGW): Loc. 2001/NC 7.
These females are not designated as paratypes because no matching male has been collected from this locality.

DESCRIPTION: Habitus (Fig. 106): Very similar to *E. perfecta* but slightly less oblong-oval and on average slightly smaller.

Measurements: TL 3.9–4.5 mm; TL-h 3.5–4.1 mm; TW 1.9–2.2 mm.

Color: Very similar to *E. perfecta*.

Surface sculpture: Similar to *E. flammi* and *E. perfecta* but head almost without striae; pronotum with striae less impressed and reduced (Fig. 62); striae on elytron less impressed and more often interrupted (Fig. 56). Ventral side very similar to *E. perfecta*.

Structures: Very similar to *E. perfecta*.

Male: Pro- and mesotarsomeres very similar to *E. perfecta*. Aedeagus: median lobe as in Fig. 35a–b; lateral lobe (Fig. 35c) narrow, with sparse and short setation.

Female: Color and surface sculpture as in male.

AFFINITIES: *Exocelina remyi* is very similar to *E. flammi* and *E. perfecta* but can be distinguished by its head being almost without striae, pronotal striae less impressed, elytral striae less impressed and more often interrupted and by shape of male genitalia.

HABITAT: Pools of small streams at low to mid altitude (50–500 m); see JÄCH & BALKE (2010: Figs. 11, 35, 41). Collected together with *E. aubei*, *E. brunoi*, *E. interrupta*, *E. jeannae*, *E. nielsi*, *E. perfecta*, *E. simoni* and *E. subjecta*. In a flight intercept trap collected together with *E. aubei*, *E. bimaculata*, *E. brunoi*, *E. kolleri* and *E. perfecta*.

DISTRIBUTION (Fig. 109): Southern half of Grande Terre.

ETYMOLOGY: This species is named after Remy Pöllabauer, Nouméa, New Caledonia.

36. *Exocelina nielsi* sp.n.

TYPE LOCALITY: New Caledonia, Grande Terre, South Province, Dumbéa, 50 m a.s.l. (Loc. 2001/NC 1).

TYPE MATERIAL: **Holotype** ♂ (NMW): "New Caledonia, South Prov. Dumbea, 50 m, near road to Mt. Koghis, 3. 11. 2001, leg. Wewalka (NC 1)", "HOLOTYPUS Exocelina nielsi sp.n. Wewalka et al. 2007" [red printed label].

Paratypes: 1 ♀ (IRSNB): "Nouvelle Calédonie, Canala", "rec. Montrousier", "ex coll. Fauvel", "Coll. A. Fauvel", "Copelatus interrupus Perr.", "R.I.Sc.N.B. 17.673", "Syntype".

2 ♂♂ (NMW): Loc. 2001/NC 1 (2 ♂♂: "166 DNA M. Balke" and "167 DNA M. Balke" [green printed labels]); 2 ♀♀ (CGW): Loc. 2001/NC 7; 2 ♂♂ (CGW): Loc. 2001/NC 23.

All paratypes are provided with red printed paratype labels.

DESCRIPTION: Habitus (Fig. 107): Similar to *E. perfecta* but slightly less oblong-oval and significantly smaller.

Measurements: TL 3.3–3.7 mm; TL-h 3.0–3.3 mm; TW 1.6–1.8 mm.

Color: Very similar to *E. perfecta*.

Surface sculpture: Similar to *E. perfecta* but head without striae; pronotum without striae or only traces of such (Fig. 63). Elytron with ten much less impressed striae, more or less reduced anteriorly and often interrupted; stria 9 sometimes doubled; submarginal stria very much reduced anteriorly (Fig. 57). Ventral side similar to *E. perfecta* but longitudinal striae on metacoxae less strong and frequent and striae on ventrites 4–6 almost missing.

Structures: Very similar to *E. perfecta*.

Male: Pro- and mesotarsomeres very similar to *E. perfecta*. Aedeagus: median lobe as in Fig. 36a–b, in ventral view strongly expanded laterad on both sides along midlength; lateral lobe (Fig. 36c) narrow, with sparse and short setation.

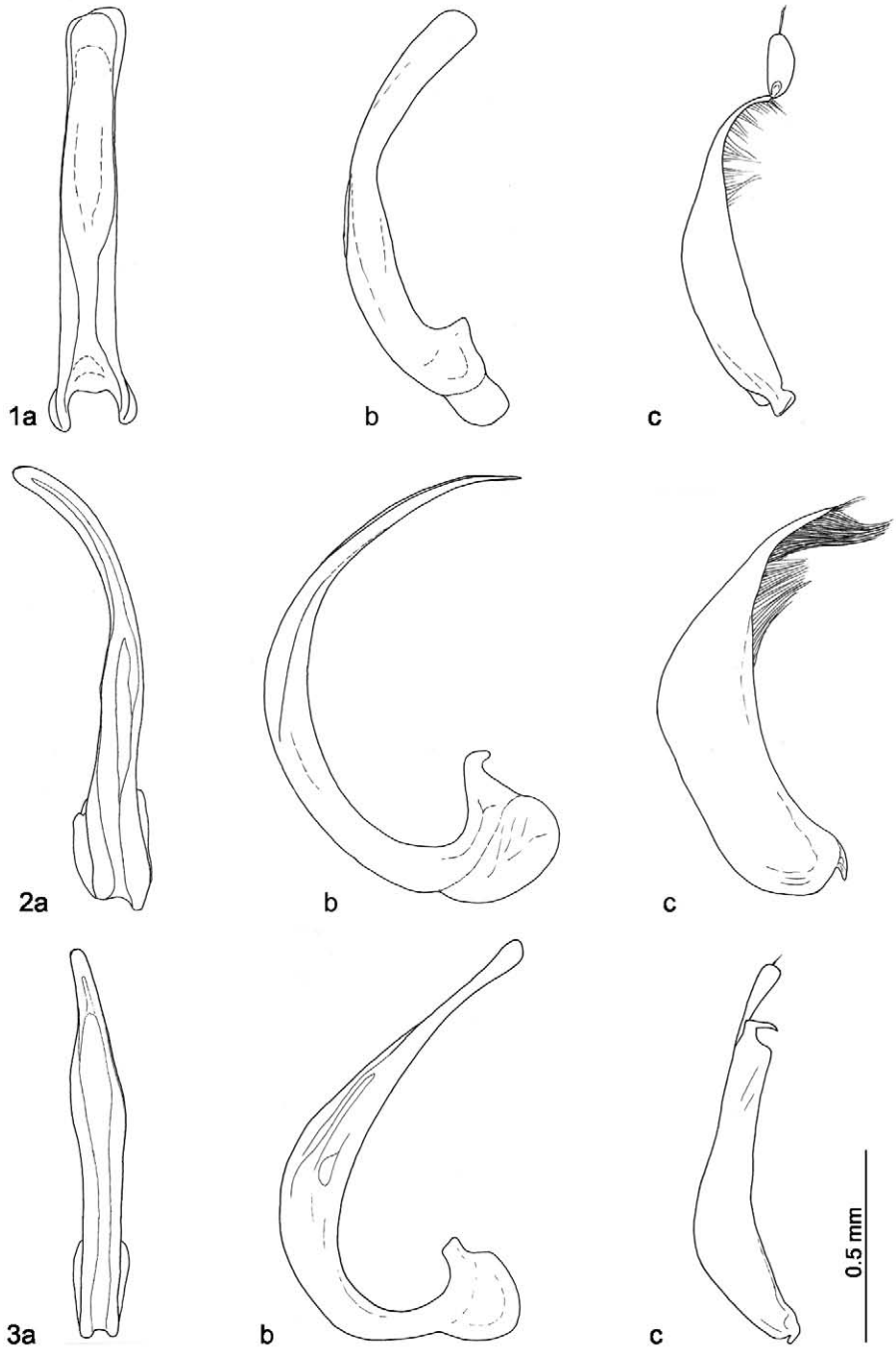
Female: Color and surface sculpture as in male.

AFFINITIES: *Exocelina nielsi* is similar to *E. flammi*, *E. perfecta* and *E. remyi* but can be distinguished by ten elytral striae and one submarginal stria, significantly smaller size and by shape of male genitalia.

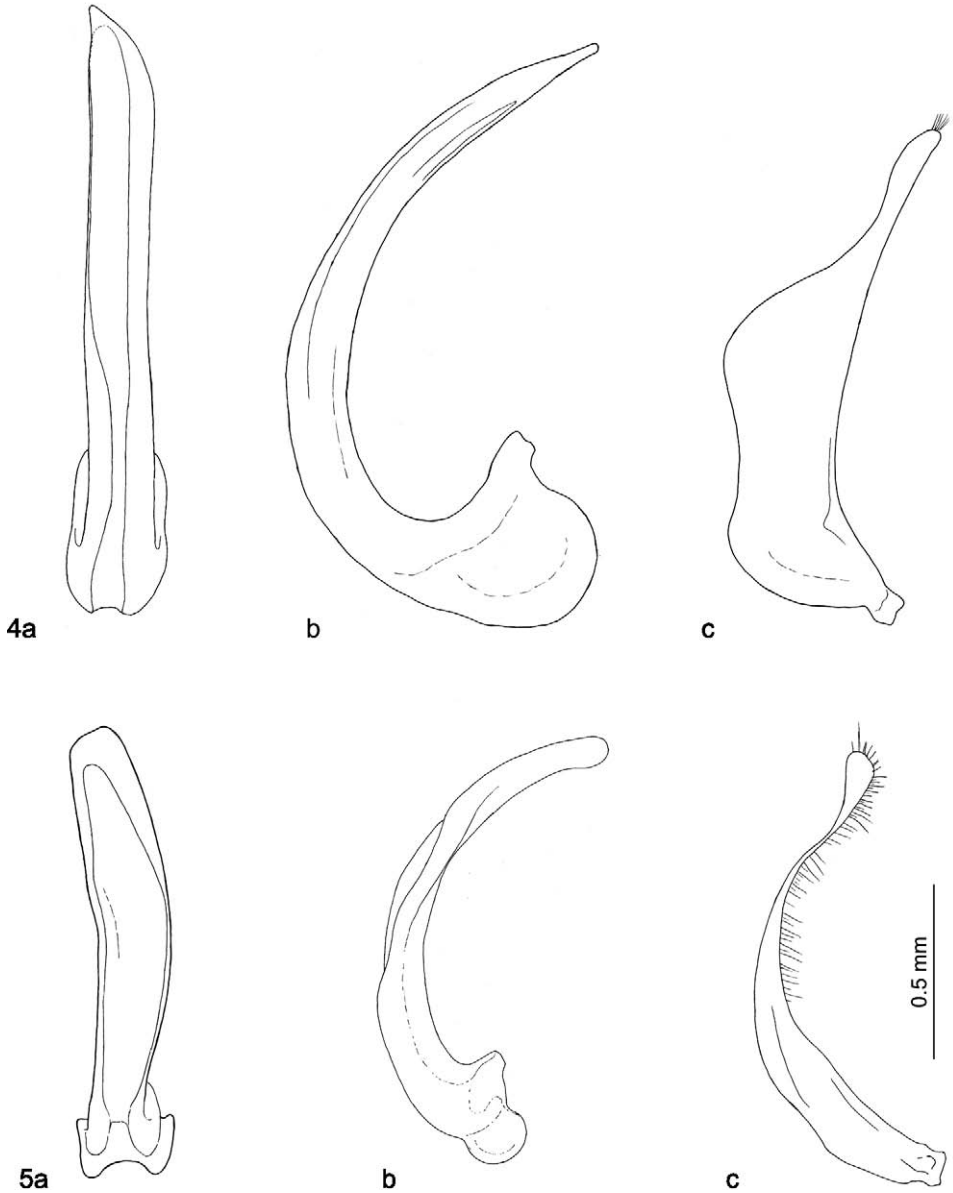
HABITAT: Pools of small streams in lowland forests (50 m); see JÄCH & BALKE (2010: Fig. 11). Collected together with *E. aubei*, *E. interrupta*, *E. perfecta*, and *E. remyi*.

DISTRIBUTION (Fig. 109): Widely distributed on Grande Terre.

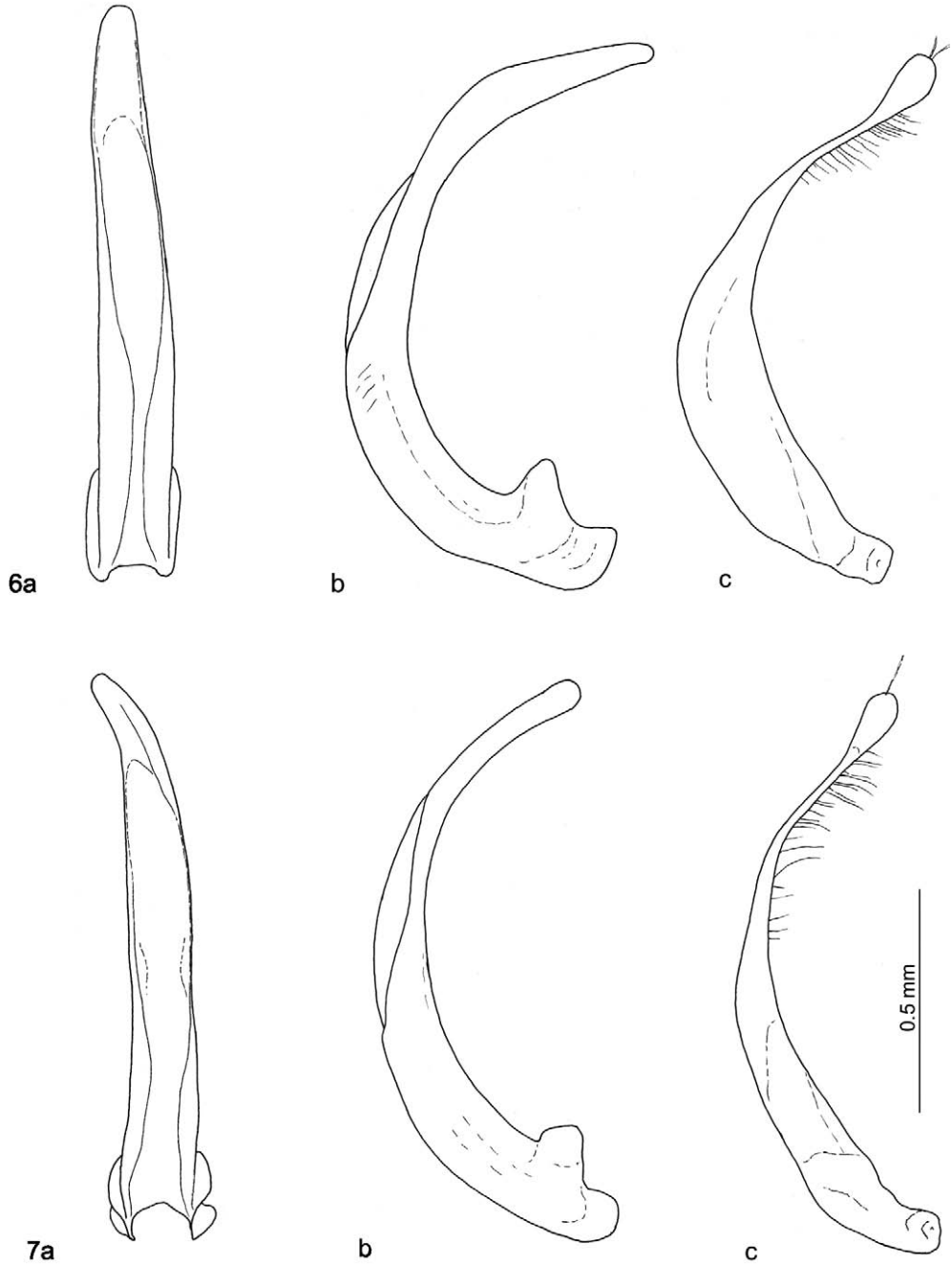
ETYMOLOGY: This species is named after Niels Pöllabauer, Nouméa, New Caledonia.



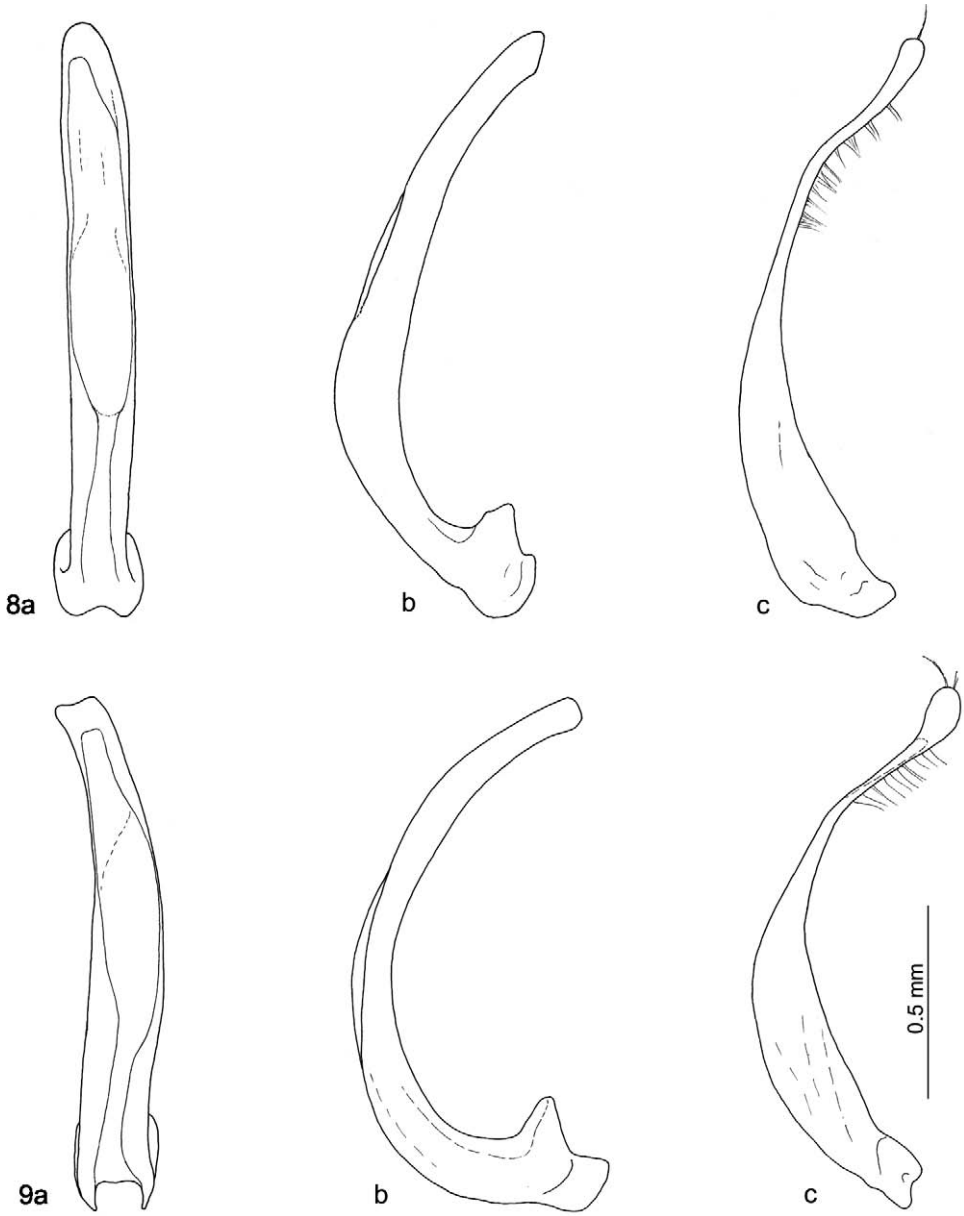
Figs. 1–3: Aedeagus, median lobe in ventral (a) and lateral (b) view; lateral lobe (c): 1) *Exocelina aubei*, 2) *E. kolleri*, 3) *E. inexspectata*.



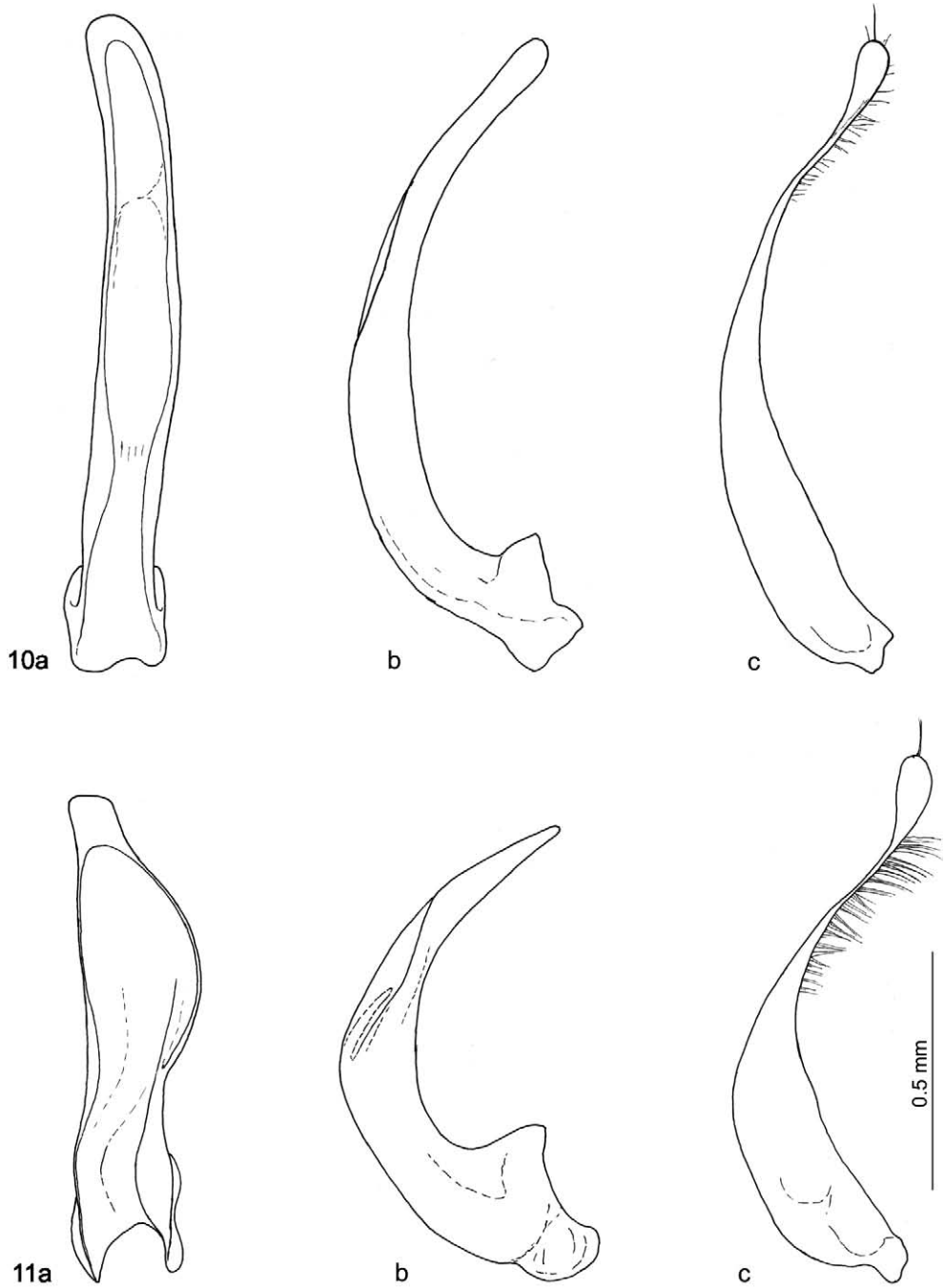
Figs. 4–5: Aedeagus, median lobe in ventral (a) and lateral (b) view; lateral lobe (c): 4) *Exocelina maculata*, 5) *E. commatifera*.



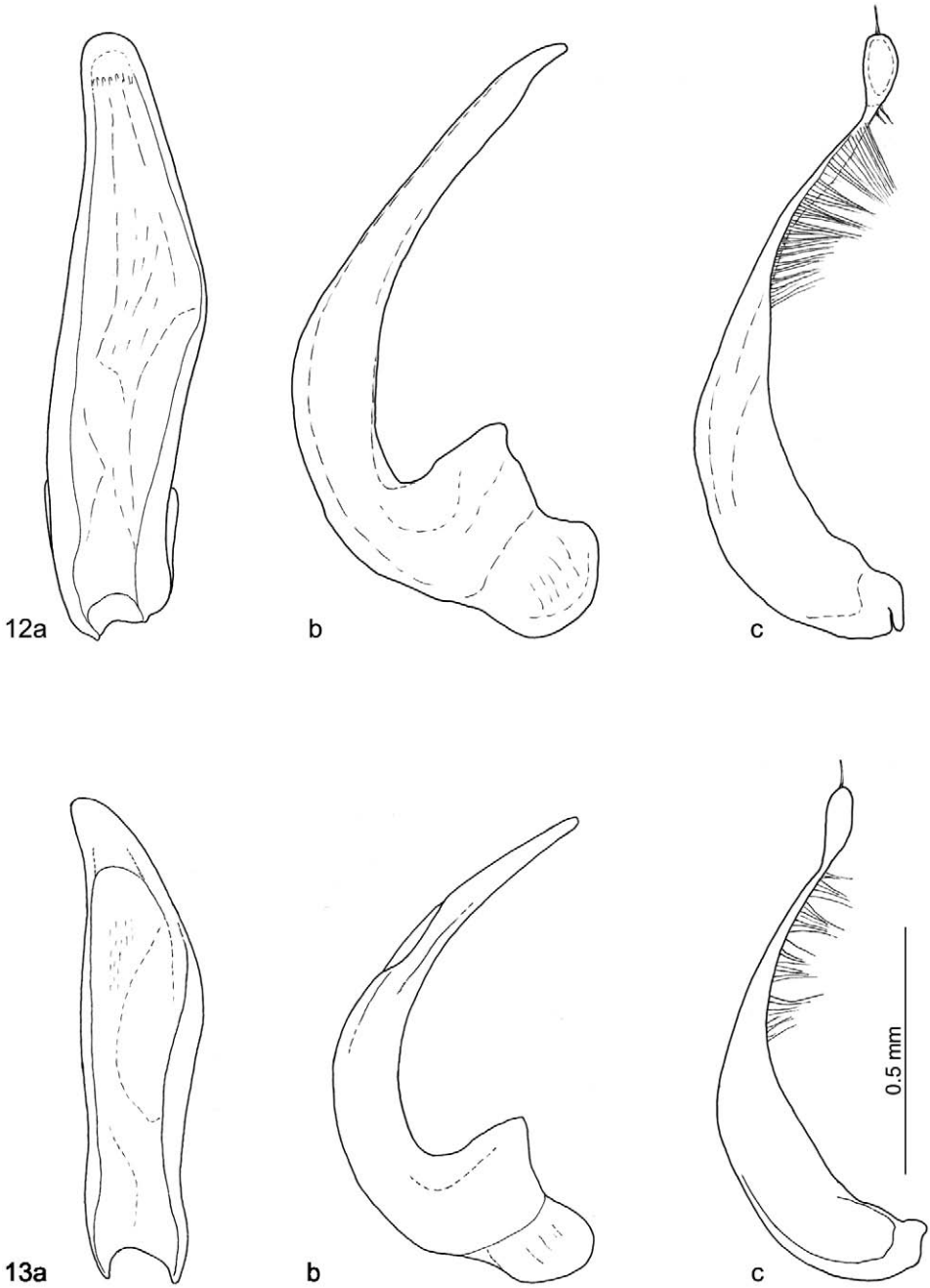
Figs. 6–7: Aedeagus, median lobe in ventral (a) and lateral (b) view; lateral lobe (c): 6) *Exocelina gaulorum*, 7) *E. simoni*.



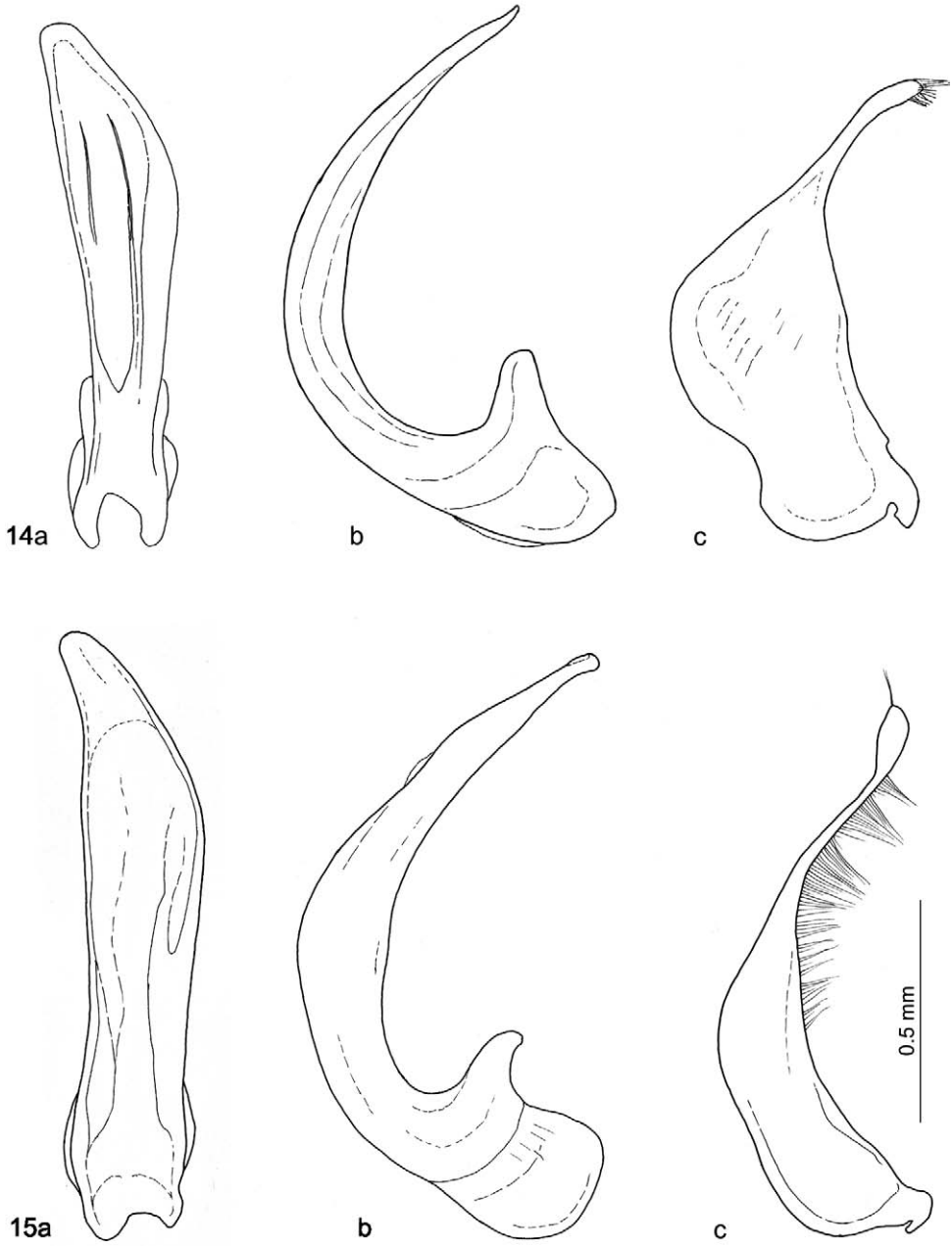
Figs. 8–9: Aedeagus, median lobe in ventral (a) and lateral (b) view, lateral lobe (c): 8) *Exocelina burwelli*, 9) *E. niklasi*.



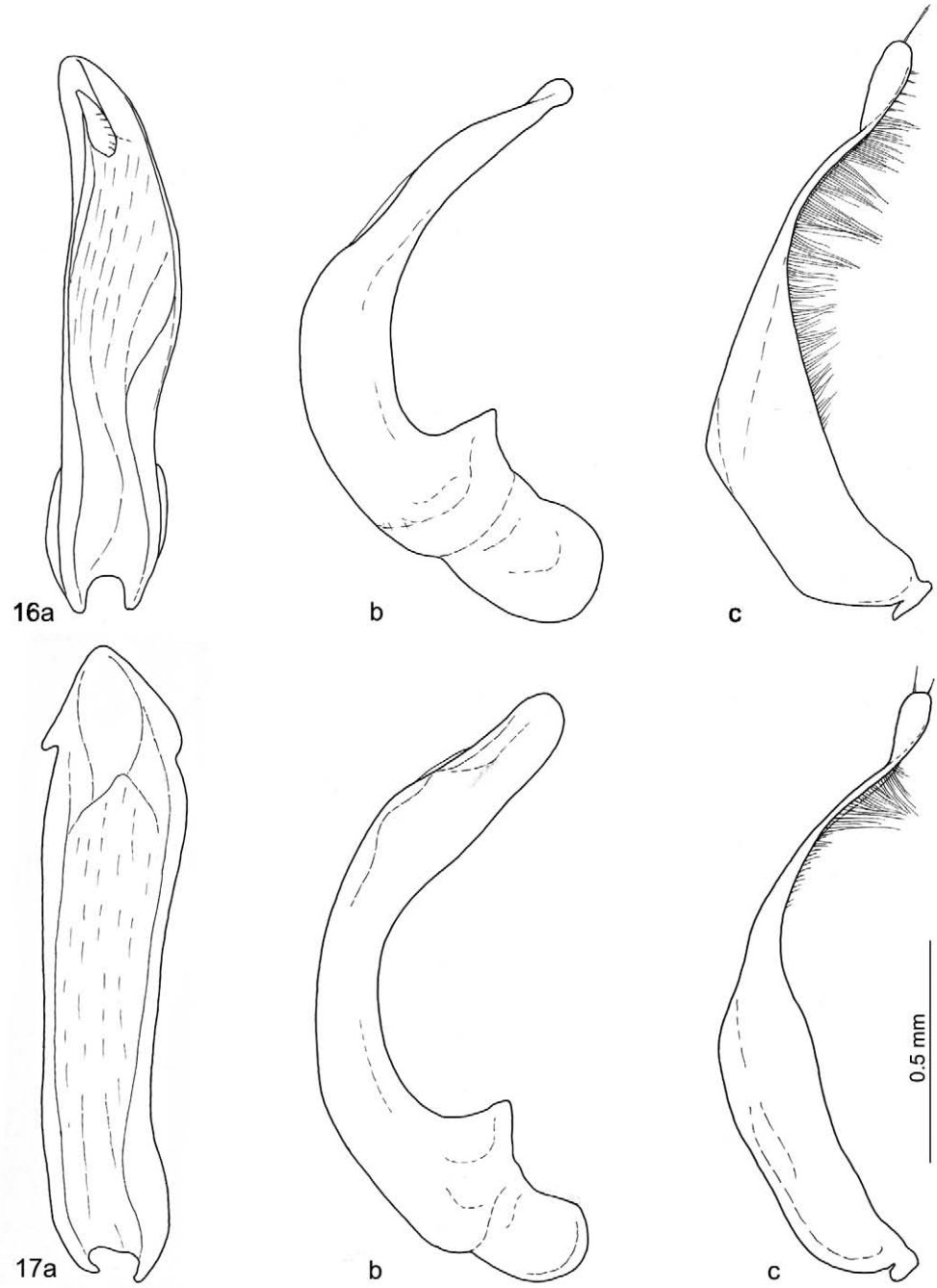
Figs. 10–11: Aedeagus, median lobe in ventral (a) and lateral (b) view, lateral lobe (c): 10) *Exocelina allerbergeri*, 11) *E. rotteri*.



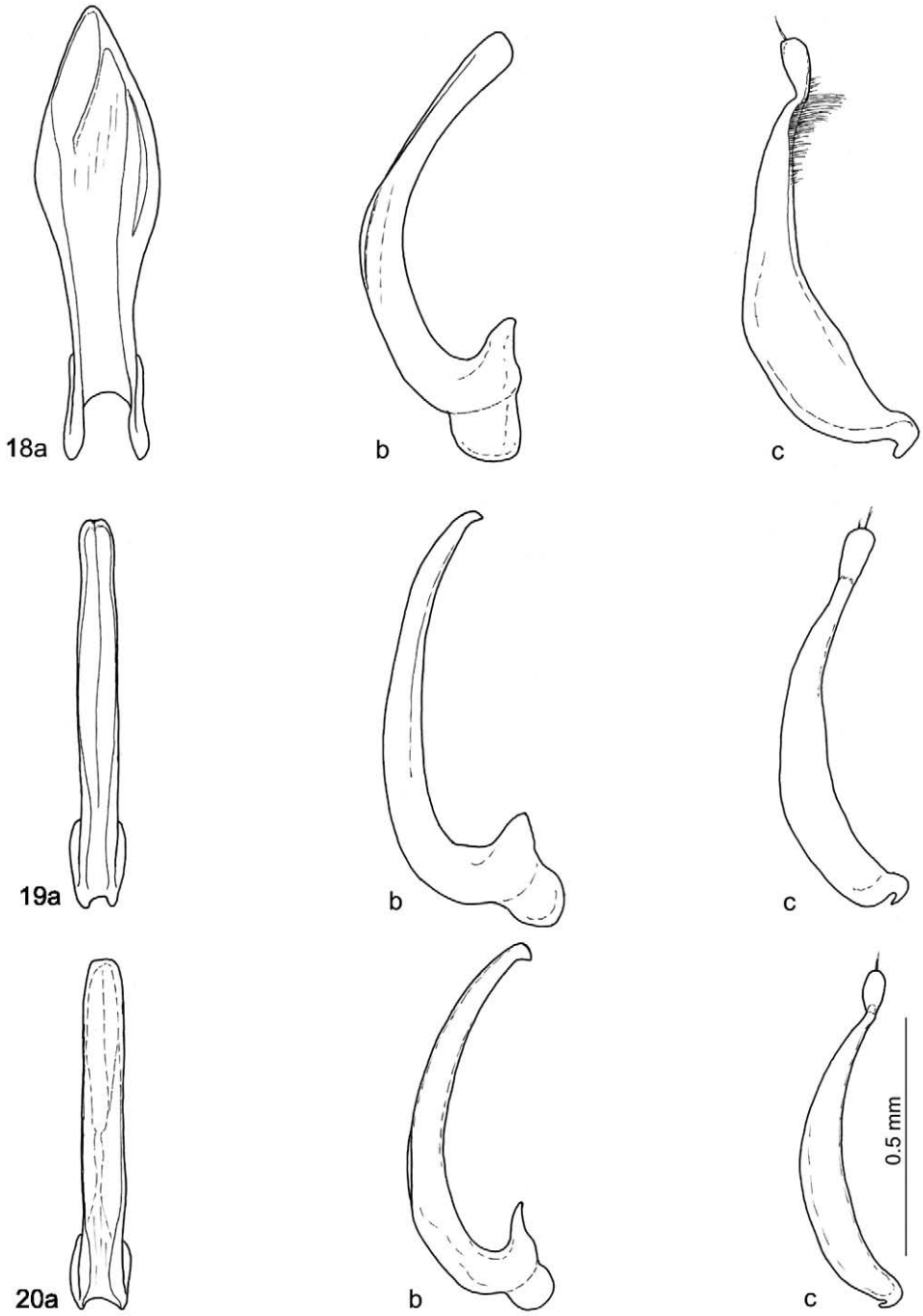
Figs. 12–13: Aedeagus, median lobe in ventral (a) and lateral (b) view, lateral lobe (c): 12) *Exocelina atripennis*, 13) *E. staneki*.



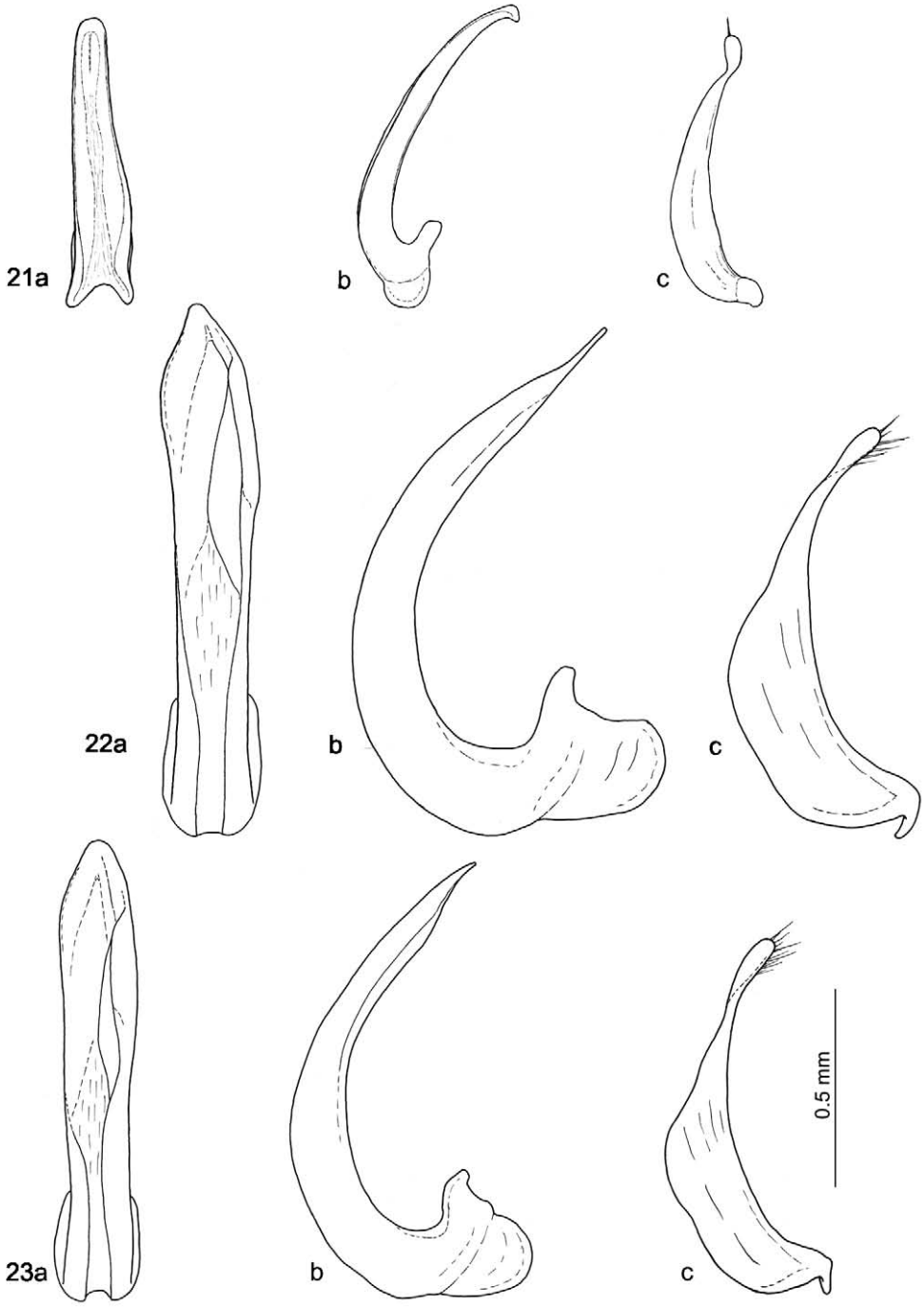
Figs. 14–15: Aedeagus, median lobe in ventral (a) and lateral (b) view, lateral lobe (c): 14) *Exocelina monteithi*, 15) *E. subjecta*.



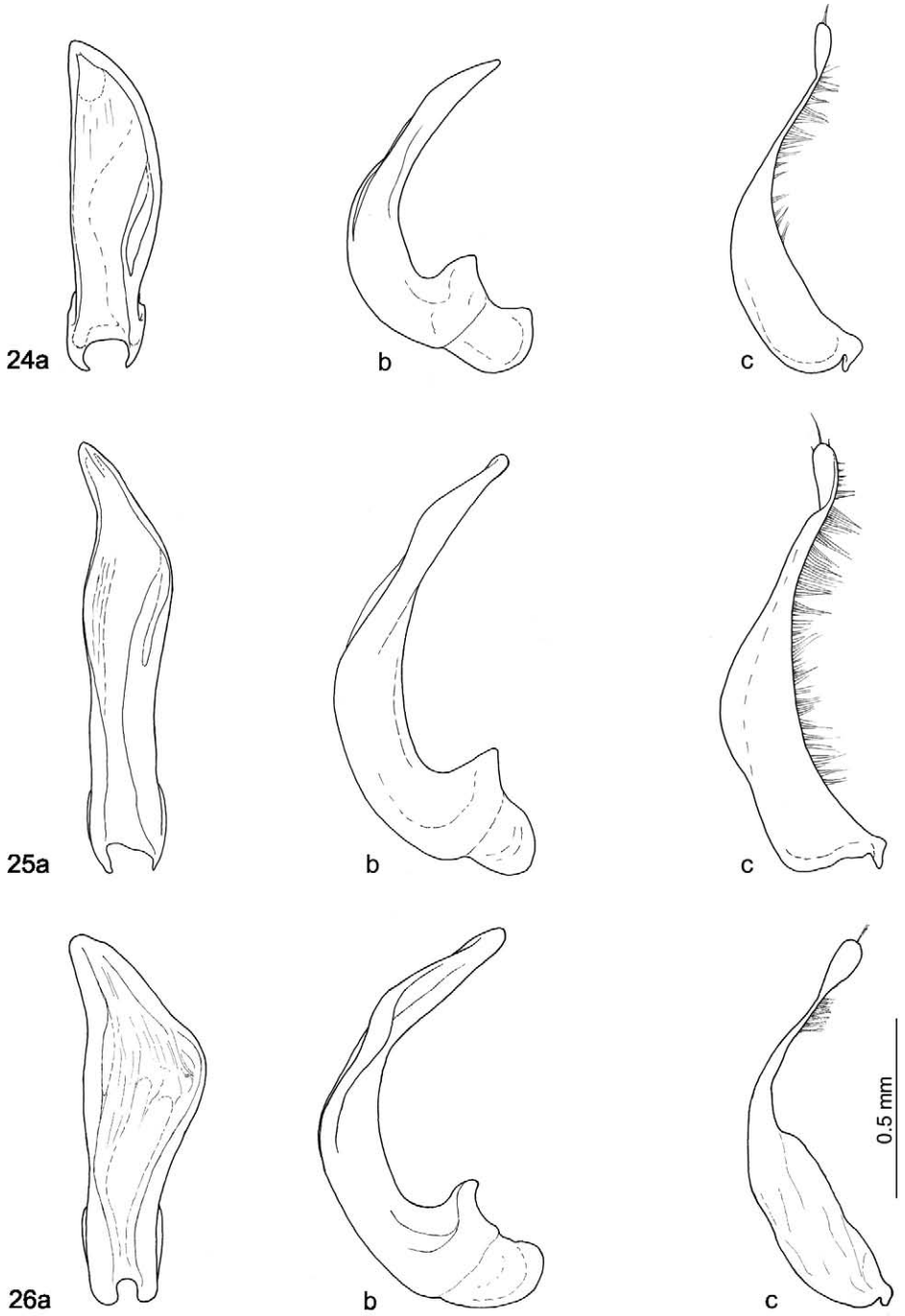
Figs. 16–17: Aedeagus, median lobe in ventral (a) and lateral (b) view, lateral lobe (c): 16) *Exocelina lilianae*, 17) *E. brunoi*.



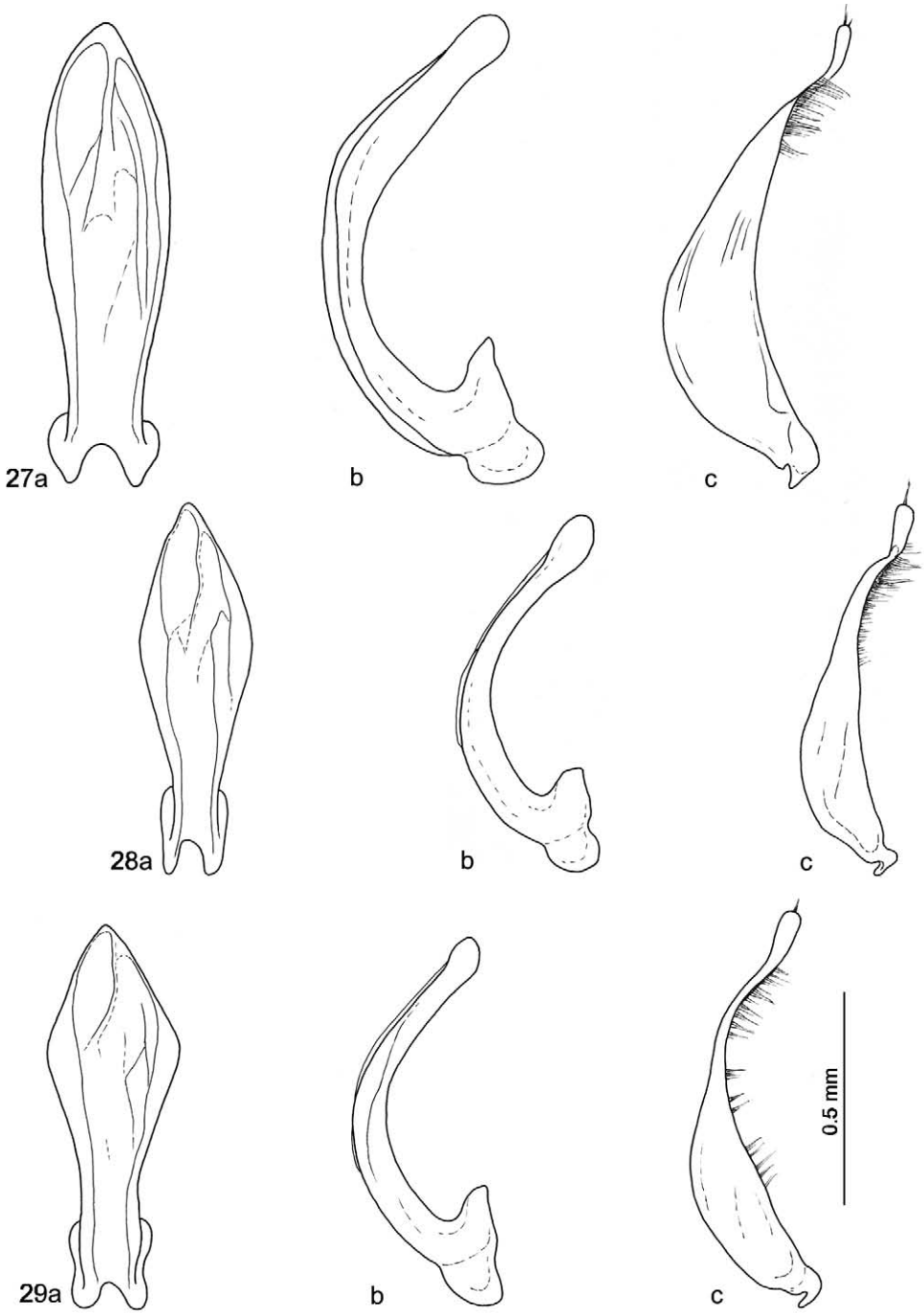
Figs. 18–20: Aedeagus, median lobe in ventral (a) and lateral (b) view, lateral lobe (c): 18) *Exocelina bimaculata*, 19) *E. leae*, 20) *E. feryi*.



Figs. 21–23: Aedeagus, median lobe in ventral (a) and lateral (b) view, lateral lobe (c): 21) *Exocelina creuxorum*, 22) *E. novaecaledoniae*, 23) *E. ouin*.



Figs. 24–26: Aedeagus, median lobe in ventral (a) and lateral (b) view, lateral lobe (c): 24) *Exocelina koghis*, 25) *E. interrupta*, 26) *E. charlottae*.



Figs. 27–29: Aedeagus, median lobe in ventral (a) and lateral (b) view, lateral lobe (c): 27) *Exocelina poellabauerae*, 28) *E. barbarae*, 29) *E. gelima*.

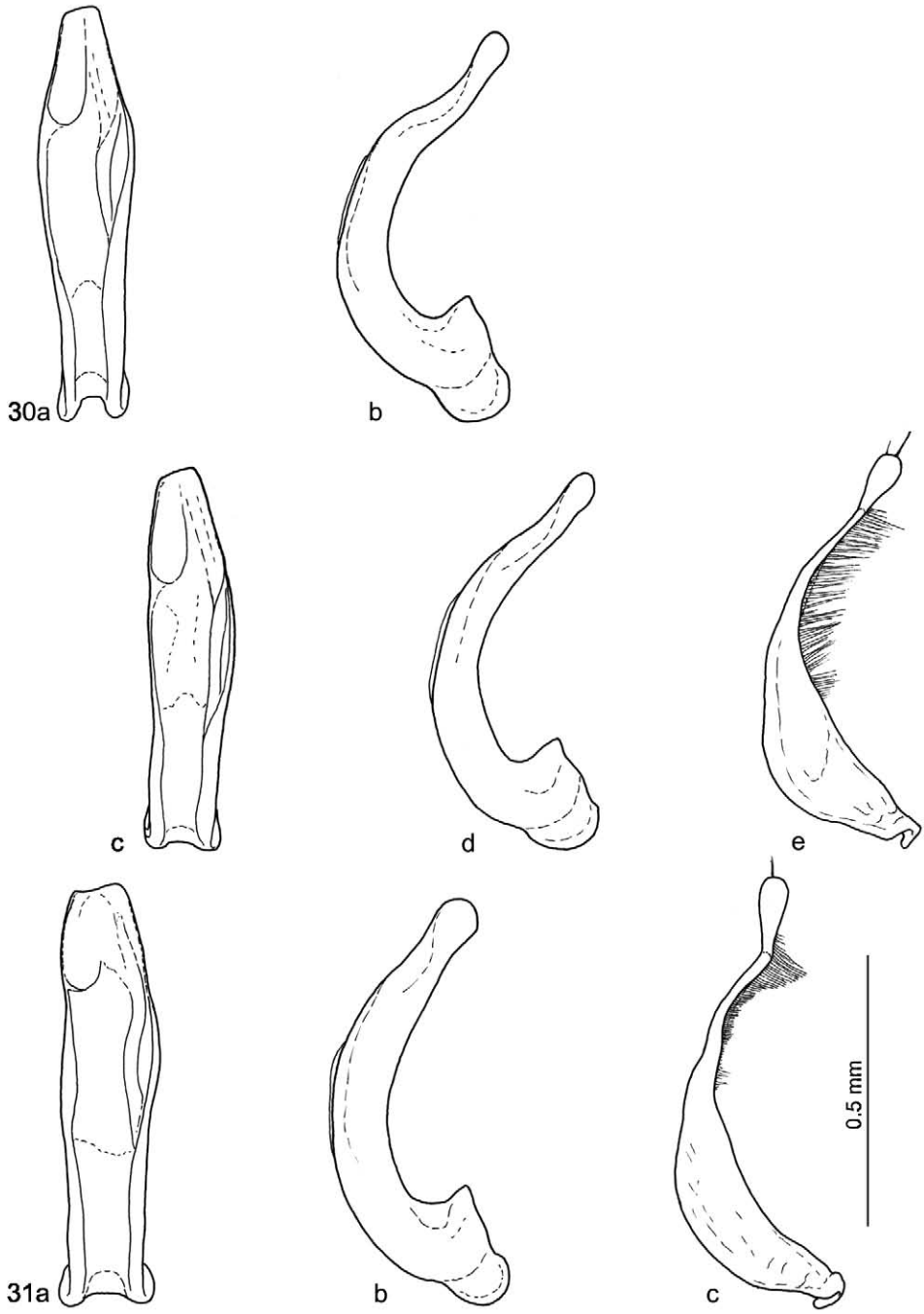
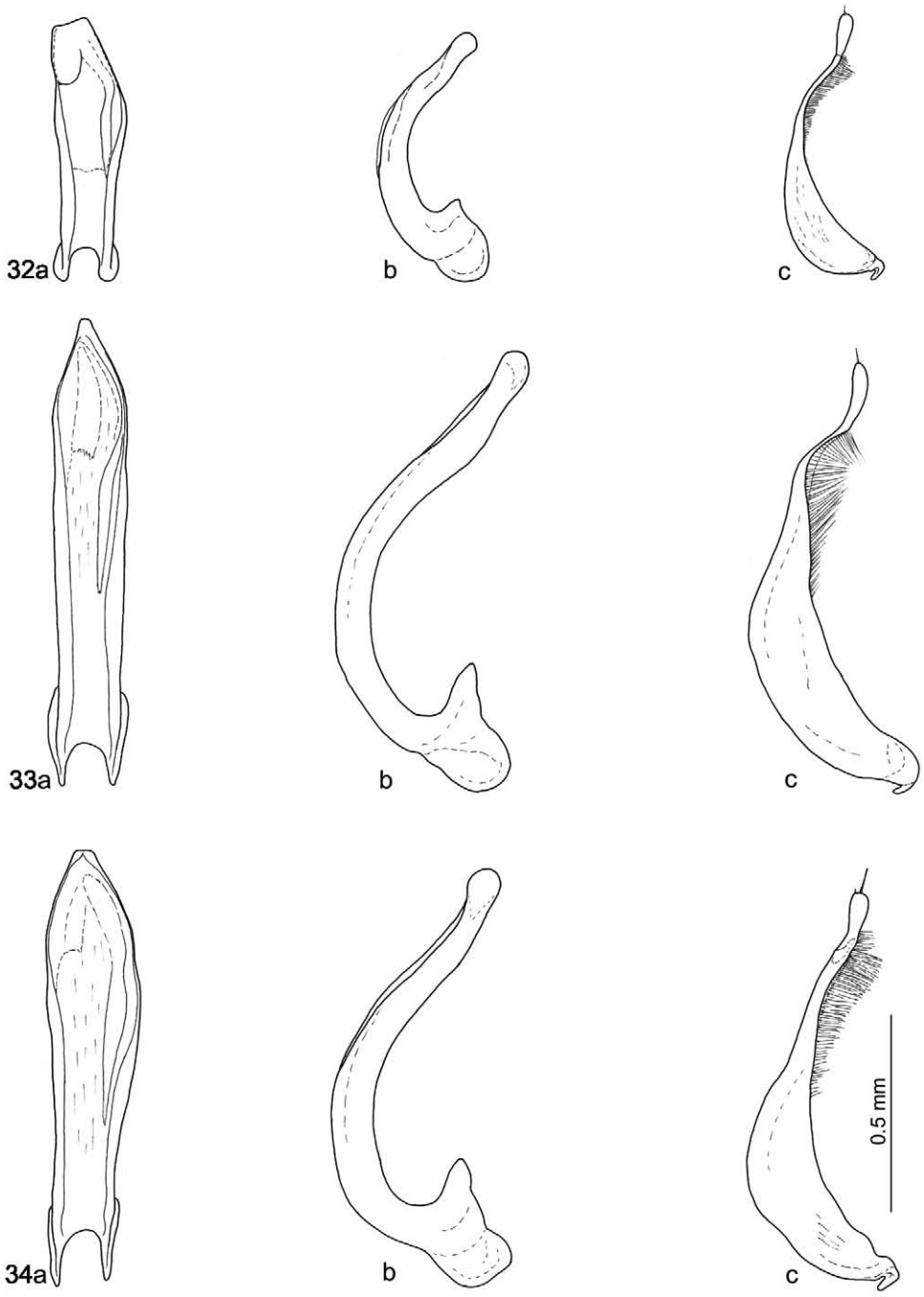
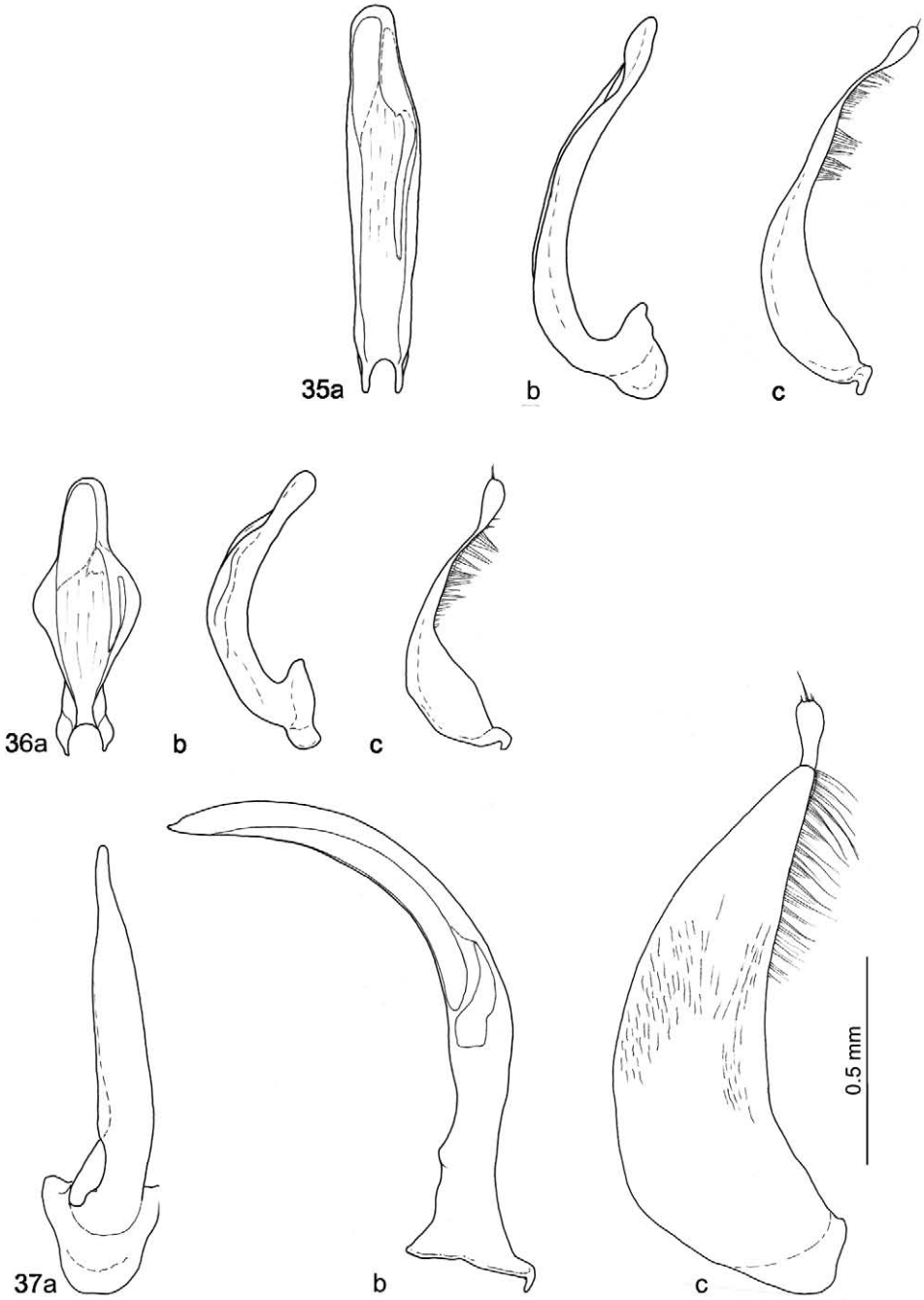


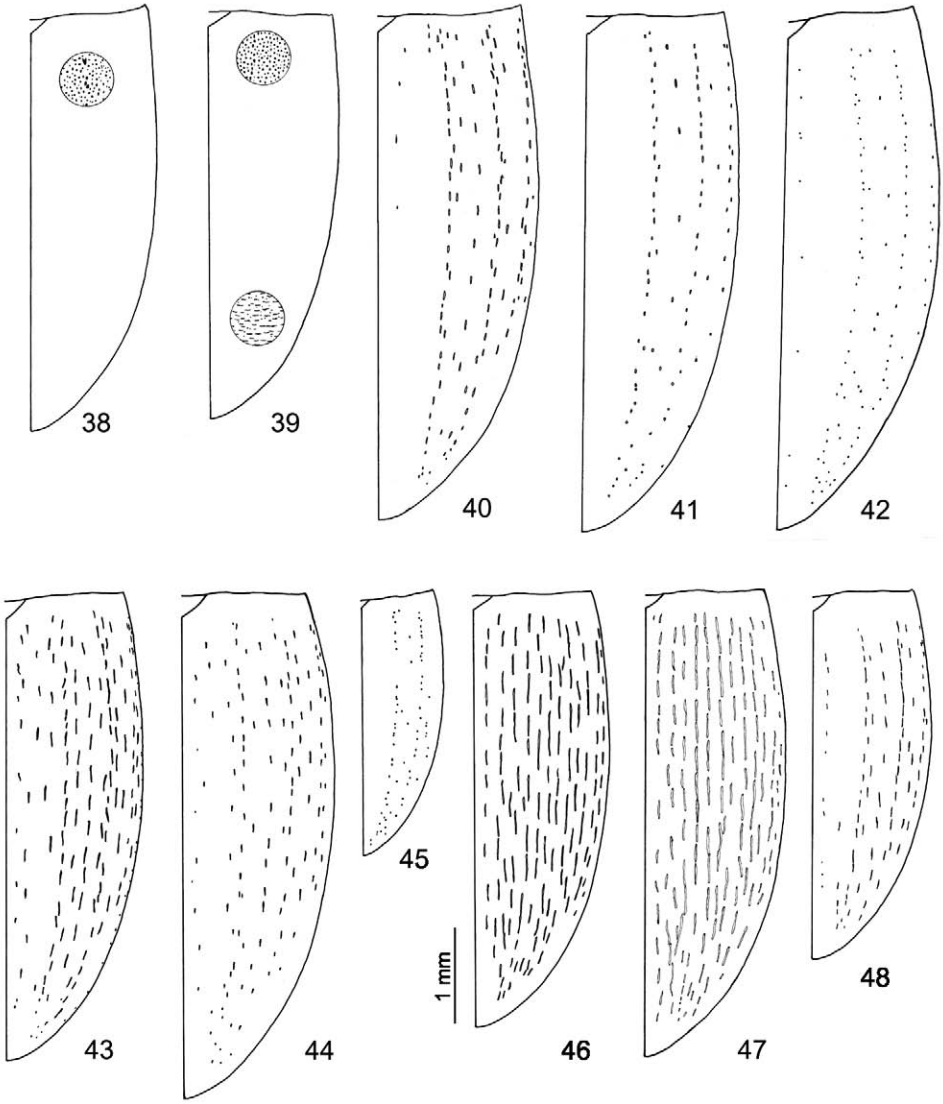
Fig. 30: Aedeagus, median lobe in ventral (a) and lateral (b) view: *Exocelina brownei*, specimen from Grotte de Ninrin-Reu; specimen from Loc. 2001/NC 40: (c) median lobe, ventral (d) lateral view, (e) lateral lobe.
Fig. 31: Aedeagus, median lobe in ventral (a) and lateral (b) view, lateral lobe (c): *E. jeannae*.



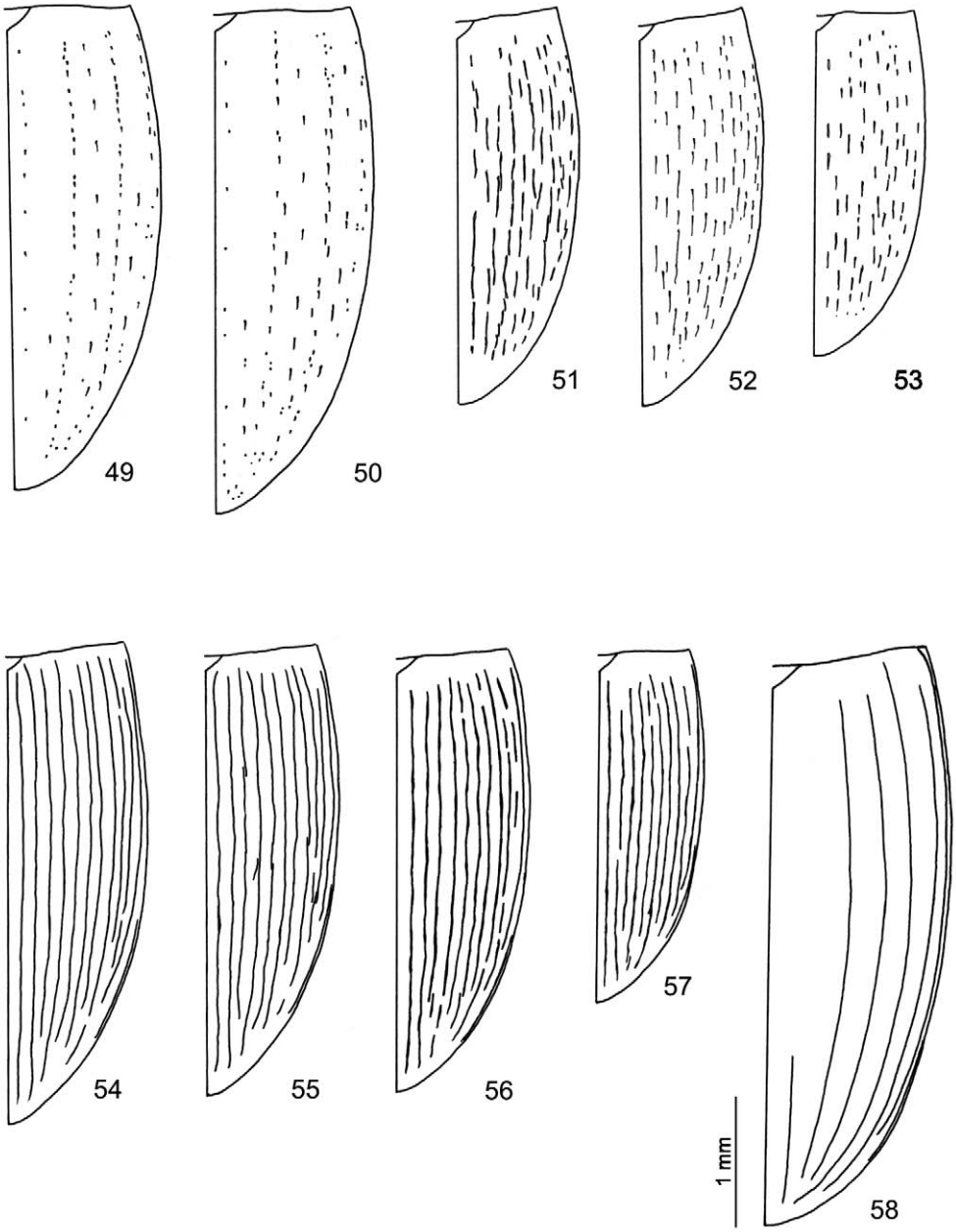
Figs. 32–34: Aedeagus, median lobe in ventral (a) and lateral (b) view, lateral lobe (c): 32) *Exocelina schoelleri*, 33) *E. perfecta*, 34) *E. flammi*.



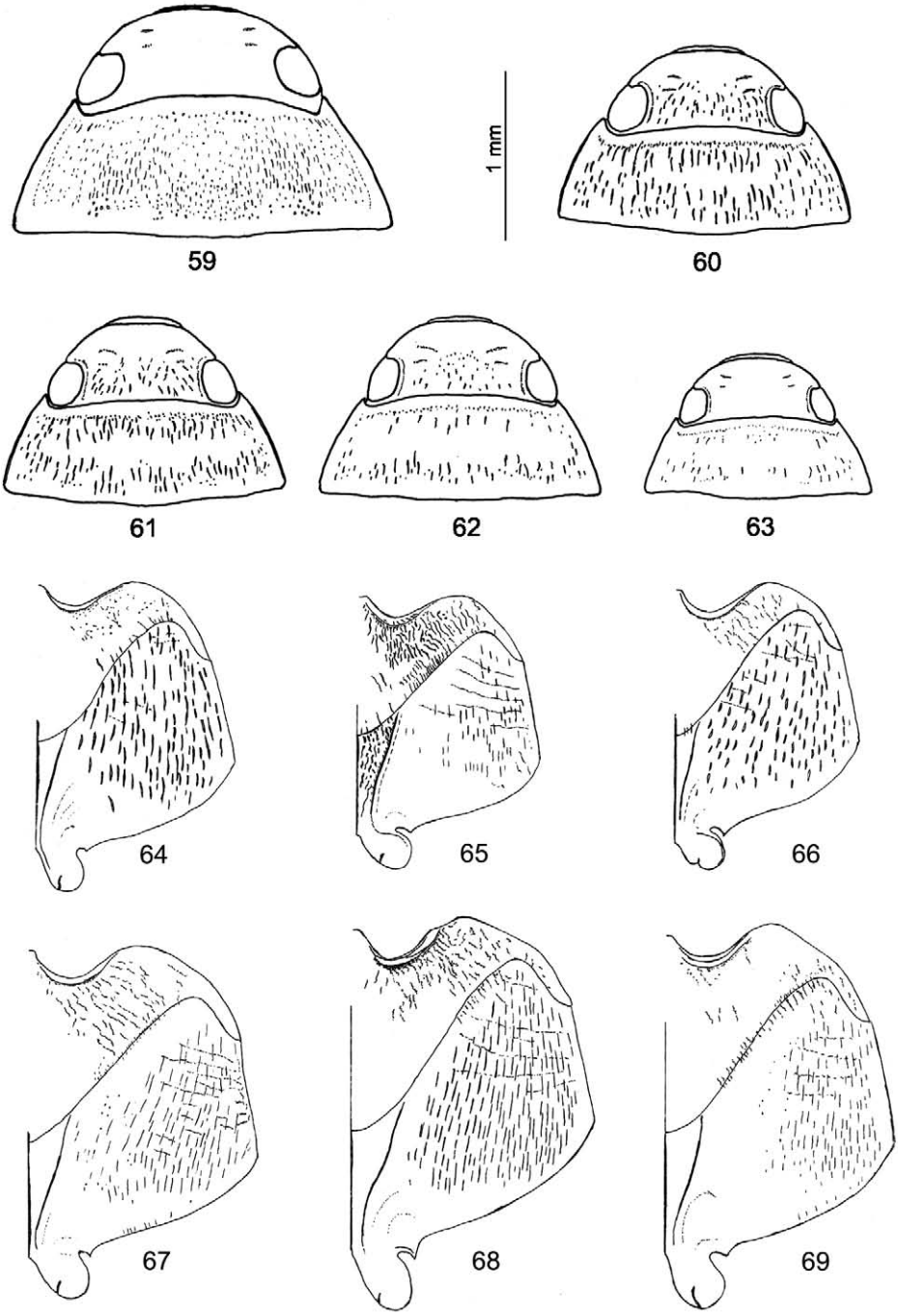
Figs. 35–37: Aedeagus, median lobe in ventral (a) and lateral (b) view, lateral lobe (c): 35) *Exocelina remyi*, 36) *E. nielsi*, 37) *Copelatus marginatus*.



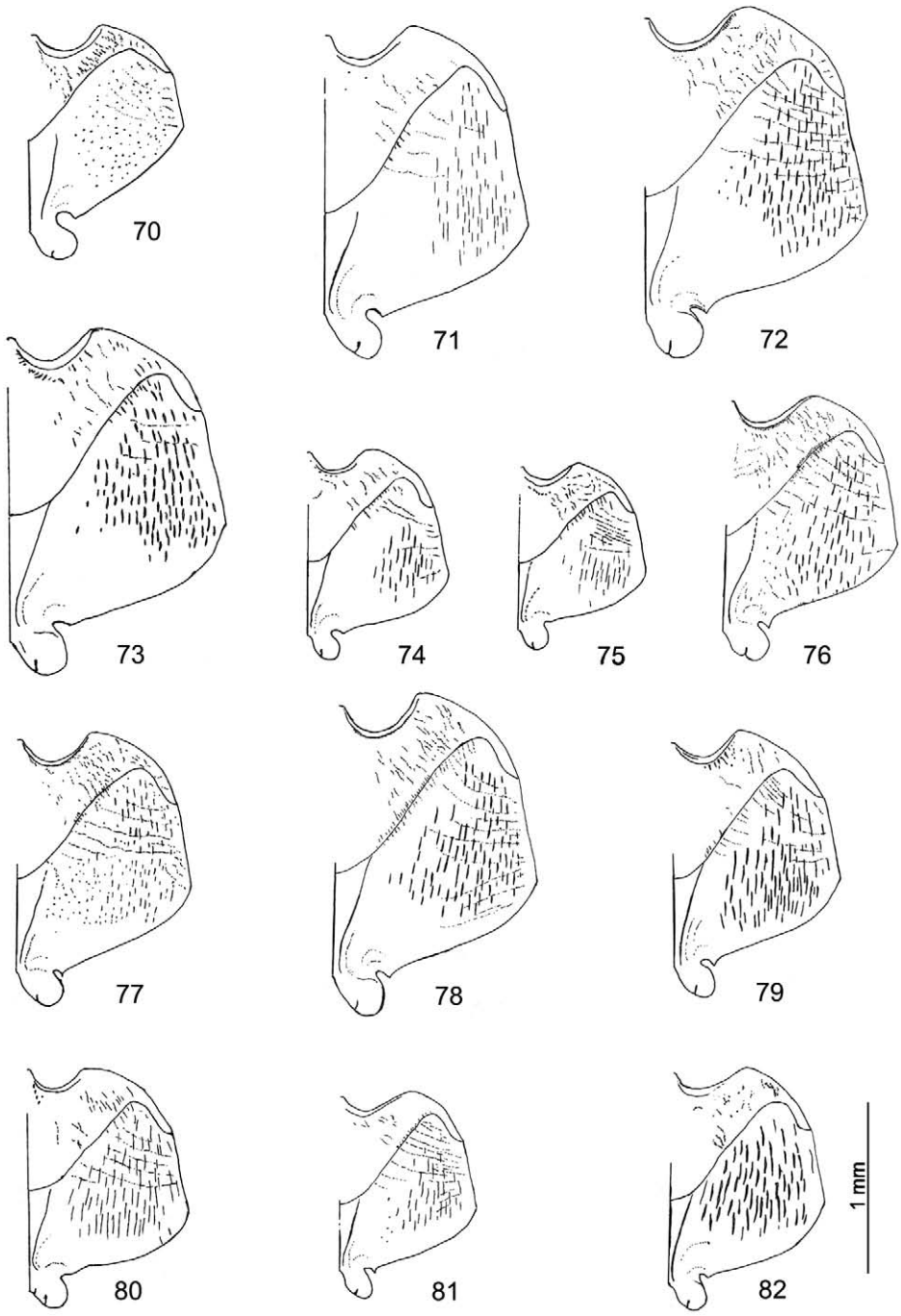
Figs. 38–48: Sculpture of right elytron: 38) *Exocelina kolleri*, 39) *E. inexspectata*, 40) *E. commatifera*, 41) *E. gaulorum*, 42) *E. simoni*, 43) *E. lilianae*, 44) *E. brunoi*, 45) *E. feryi*, 46) *E. interrupta*, 47) *E. charlottae*, 48) *E. poellabauerae.*



Figs. 49–58: Sculpture of right elytron: 49) *Exocelina barbarae*, 50) *E. gelima*, 51) *E. brownei*, 52) *E. jeannae*, 53) *E. schoelleri*, 54) *E. perfecta*, 55) *E. flammi*, 56) *E. remyi*, 57) *E. nielsi*, 58) *Copelatus marginatus*.



Figs. 59–69: Sculpture of head and pronotum: 59) *Exocelina charlottae*, 60) *E. perfecta*, 61) *E. flammi*, 62) *E. remyi*, 63) *E. nielsi*. Sculpture of left part of metaventrite and left metacoxa: 64) *E. aubei*, 65) *E. kolleri*, 66) *E. inexspectata*, 67) *E. maculata*, 68) *E. commatifera*, 69) *E. simoni.*



Figs. 70–82: Sculpture of left part of metaventrite and left metacoxa: 70) *Exocelina monteithi*, 71) *E. subjecta*, 72) *E. lilianae*, 73) *E. brunoi*, 74) *E. bimaculata*, 75) *E. feryi*, 76) *E. novaecaledoniae*, 77) *E. koghis*, 78) *E. interrupta*, 79) *E. poellabauerae*, 80) *E. gelima*, 81) *E. brownei*, 82) *E. perfecta*.

DISCUSSION

DNA Sequence data, zoogeography, phylogeny and species delineation

According to a recent molecular phylogenetic analysis of the Copelatinae, as well as an analysis more focussed on *Exocelina*, the New Caledonian species do not form a monophyletic group, but two distinct, strongly supported clades within *Exocelina* (BALKE et al. 2004a, 2007). *Exocelina maculata*, *E. monteithi*, *E. novaecaledoniae* and *E. ouin* represent an older colonization of the island (Fig. 116, Node A). Probably *E. kolleri* (no DNA sequence available) also belongs to this group. All other New Caledonian species with known DNA sequence data belong to a second, more recent lineage which has however radiated extensively on the island (Fig. 116, Node B).

Table 1: Vertical ranges of New Caledonian species of Copelatinae. Dark green = actual records; light green = altitudinal zones, where the species are suspected to also occur; beige = mid altitudes from 300–800 m a.s.l. Right column = tentative number of square grids (25 × 25 km) from which the species have been collected.

	0	100	200	300	400	500	600	700	800	900	1000	1100	1200	1300	1400	1500	# grids
Copelatus marginatus																	2
Exocelina nielsi																	4
Exocelina inexspectata																	1
Exocelina flammi																	2
Exocelina atripennis																	3
Exocelina lilianae																	3
Exocelina brownei																	3
Exocelina interrupta																	5
Exocelina jeannae																	2
Exocelina perfecta																	10
Exocelina remyi																	3
Exocelina aubei																	25
Exocelina staneki																	2
Exocelina subjecta																	10
Exocelina rotteri																	2
Exocelina bimaculata							?	?	?								5
Exocelina koghis																	2
Exocelina kolleri																	1
Exocelina leae																	2-3
Exocelina simoni																	1
Exocelina brunoi																	4
Exocelina schoelleri																	2
Exocelina charlottae																	1
Exocelina creuxorum																	1
Exocelina allerbergeri																	1
Exocelina barbarae																	1
Exocelina poellabauerae					?		?		?	?							1
Exocelina niklasi																	1
Exocelina novaecaledoniae																	2
Exocelina feryi									?	?							5
Exocelina gaulorum																	2
Exocelina burwelli																	1
Exocelina gelima																	1
Exocelina commatifera					?	?	?		?	?							2
Exocelina ouin																	1
Exocelina monteithi																	1
Exocelina maculata																	2

Both colonizations originate very likely in Australia, where all basal species of the genus occur.

In the analyses for Fig. 116, *E. ouin* and *E. maculata* were not included, but the former is morphologically very similar to *E. novaecaledoniae* and this proximity was confirmed by *cox1*

sequence data. This pattern of *E. monteithi*, *E. novaecaledoniae* and *E. ouin* versus the other species is also evident in our species level cytochrome *c* oxidase 1 tree (Fig. 117a–c).

The intraspecific sequence divergence for the New Caledonian *Exocelina* was 0.0–6.8 % (uncorrected p-distance), interspecific distances were between 0.13 and 15.60 %. Clustering the sequences with a 3 % divergence threshold using Species Identifier software (MEIER et al. 2006), the 29 morphospecies for which we have sequences in the dataset were assigned to 15 clusters, 14 less than a priori identified species. Moreover, only six clusters are congruent with morphologically delineated units, but 9 clusters contain more than one and up to five morphospecies. Clustering at 1, 2, or 4 % does not remedy this situation. Inspection of the *cox1* tree topology, no matter if inferred using maximum likelihood (Fig. 117a–c), or the neighbour joining criterion (not shown here) reveals wide-spread incongruence between mtDNA clusters and morphologically defined species. For example, *E. remyi* and *E. flammi* are nested within *E. perfecta*; *E. interrupta* is nested in *E. subjecta*; *E. gelima* and *E. bimaculata* are nested within *E. barbarae* and e.g. *E. feryi* and *E. leae* cluster together. We suggest that incomplete lineage sorting and/or introgression are likely causes for these incongruences, similar to the widely incongruent mtDNA-morphospecies clustering in another insular radiation of Copelatinae, the Fijian *Copelatus* (MONAGHAN et al. 2006).

Species diversity and endemism

There are 37 species of Copelatinae in New Caledonia. *Copelatus marginatus* is wide-spread in the Australian Region, whereas all 36 species of *Exocelina* are endemic to New Caledonia. The degree of endemism in New Caledonian Copelatinae is therefore 97.3 %. *Exocelina aubei* is more or less wide-spread within New Caledonia, being reported from three islands (Grande Terre, Belep Islands and Île des Pins). All other species are restricted to Grande Terre. Remarkably, no Copelatinae has so far been recorded from the Loyalty Islands!

Vertically, the highest diversity occurs on mid altitudes around 300–800 m a.s.l., from where we have records for 28 species (75.6 %) (Table 1). As a general trend it appears that high altitude species have much smaller ranges than species of lower altitudes. Exactly 50 % (18 of 36) of the species of *Exocelina* have so far been recorded from only one square grid (25 × 25 km). This suggests that New Caledonia, more specifically Grande Terre, does not only exhibit a high degree of endemism, but that the number of species with restricted distribution (SORD) is also very high. Only two or three species of *Exocelina* could at present be referred to as wide-spread on Grande Terre.

Including undescribed species, there are about 30 species in Australia, one in New Zealand, one in Hawaii, one in Vanuatu, at least 100 in New Guinea, and one in China (NILSSON 2001, BALKE et al. 2007, Balke & Hendrich, in prep.). Relative to its comparably small landmass, New Caledonia has therefore by far the highest *Exocelina* diversity in the world.

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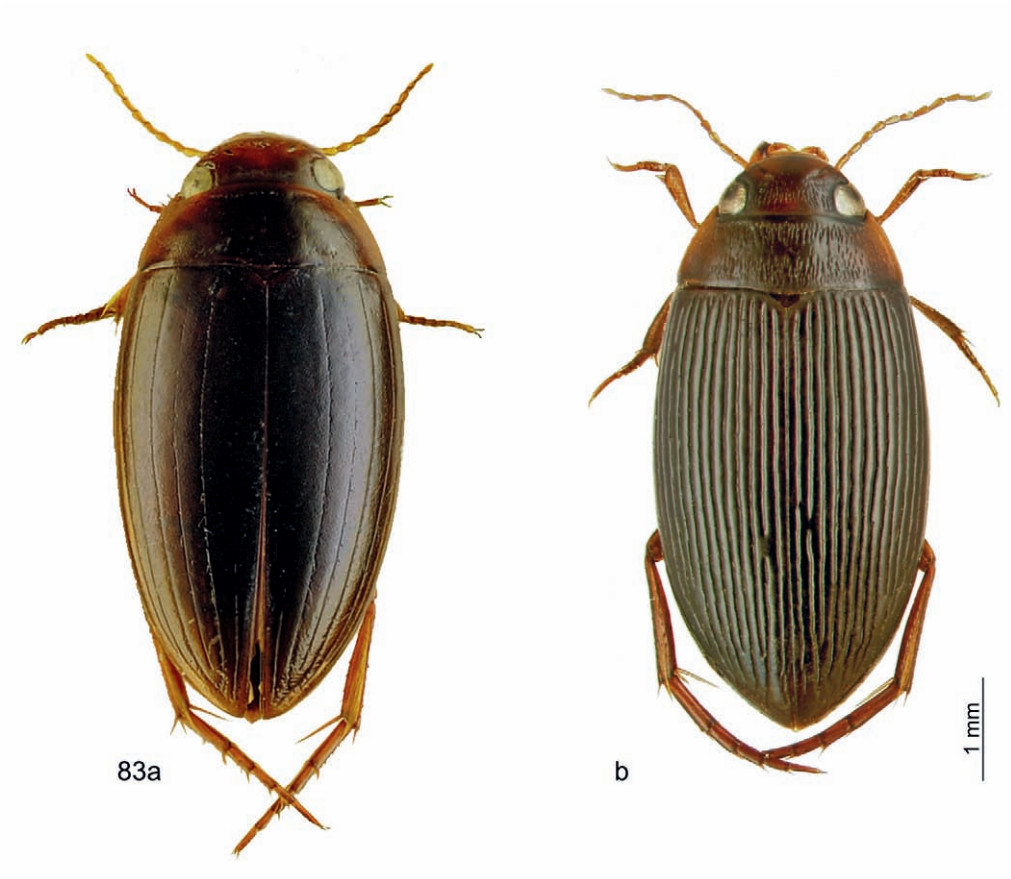

Fig. 83: Habitus and coloration of a) *Copelatus marginatus*, b) *Exocelina aubei*.

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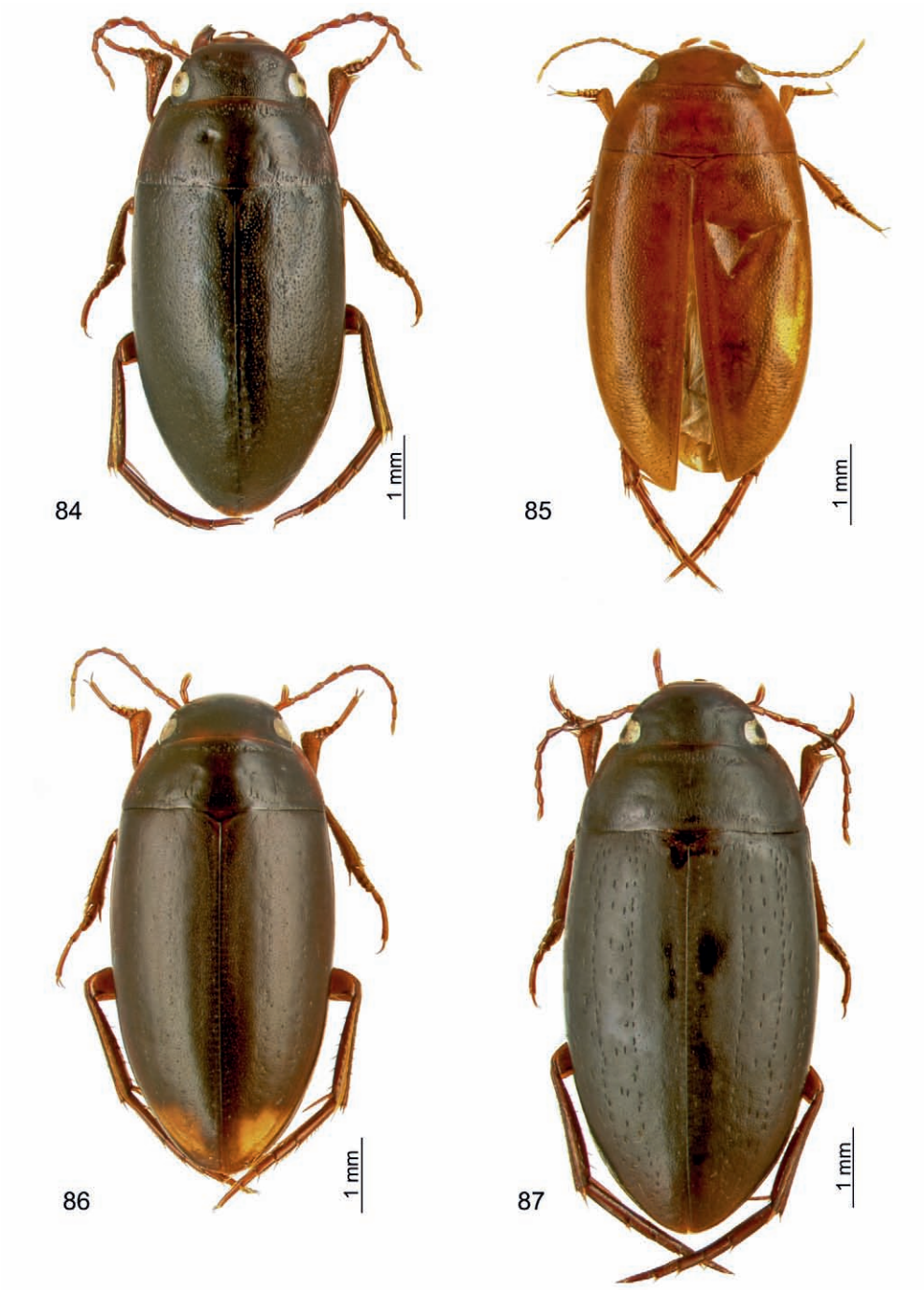
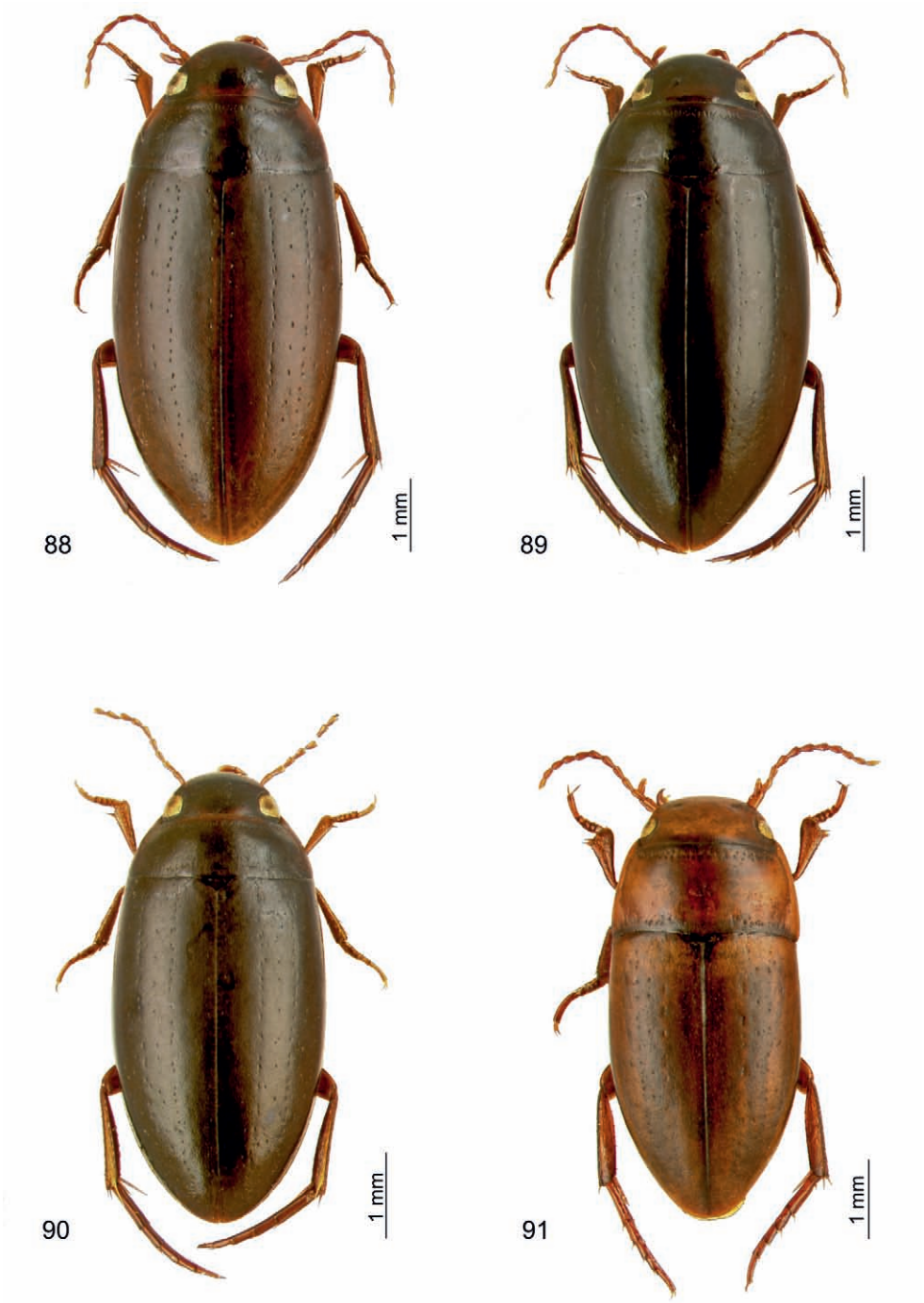
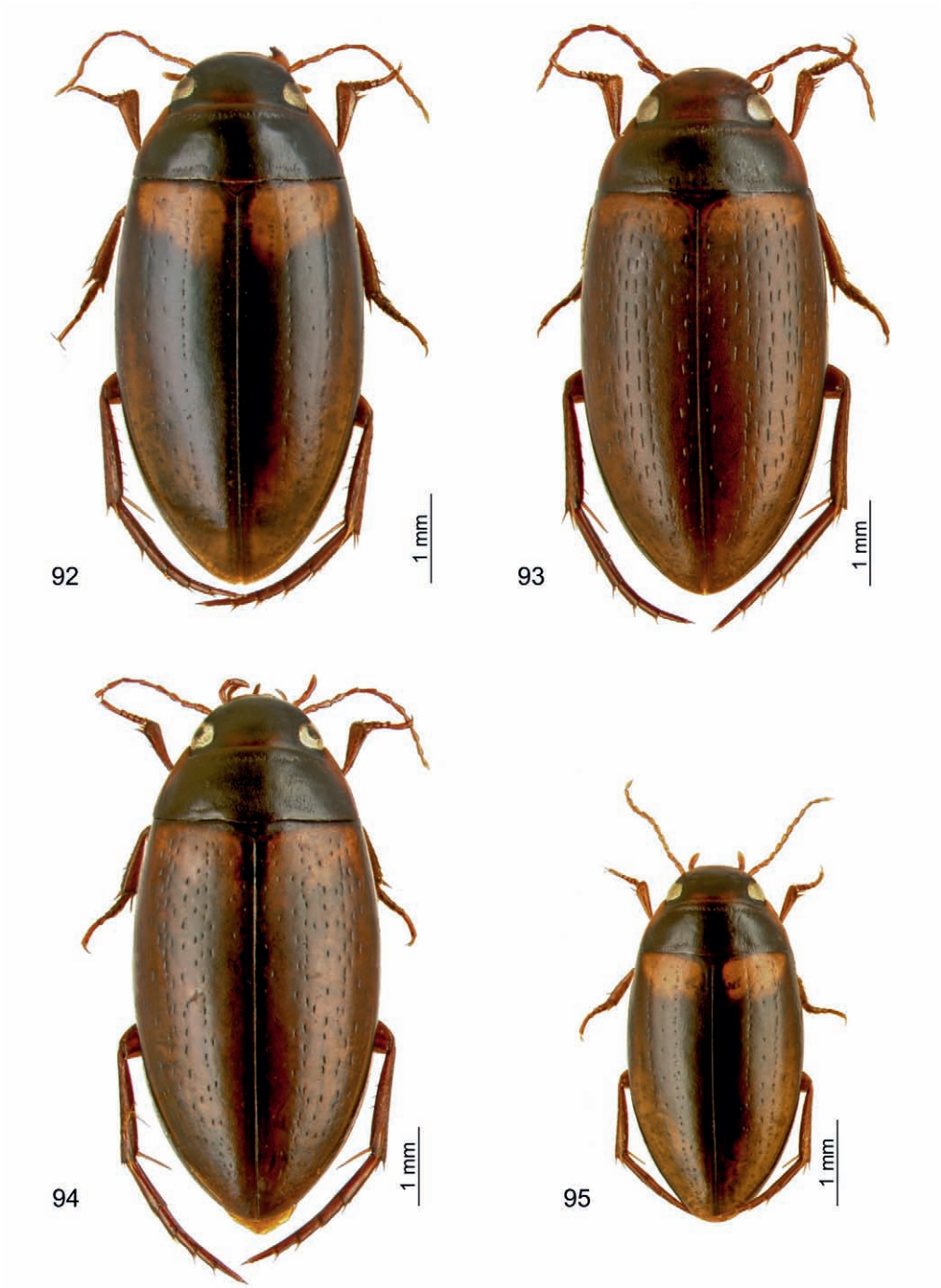


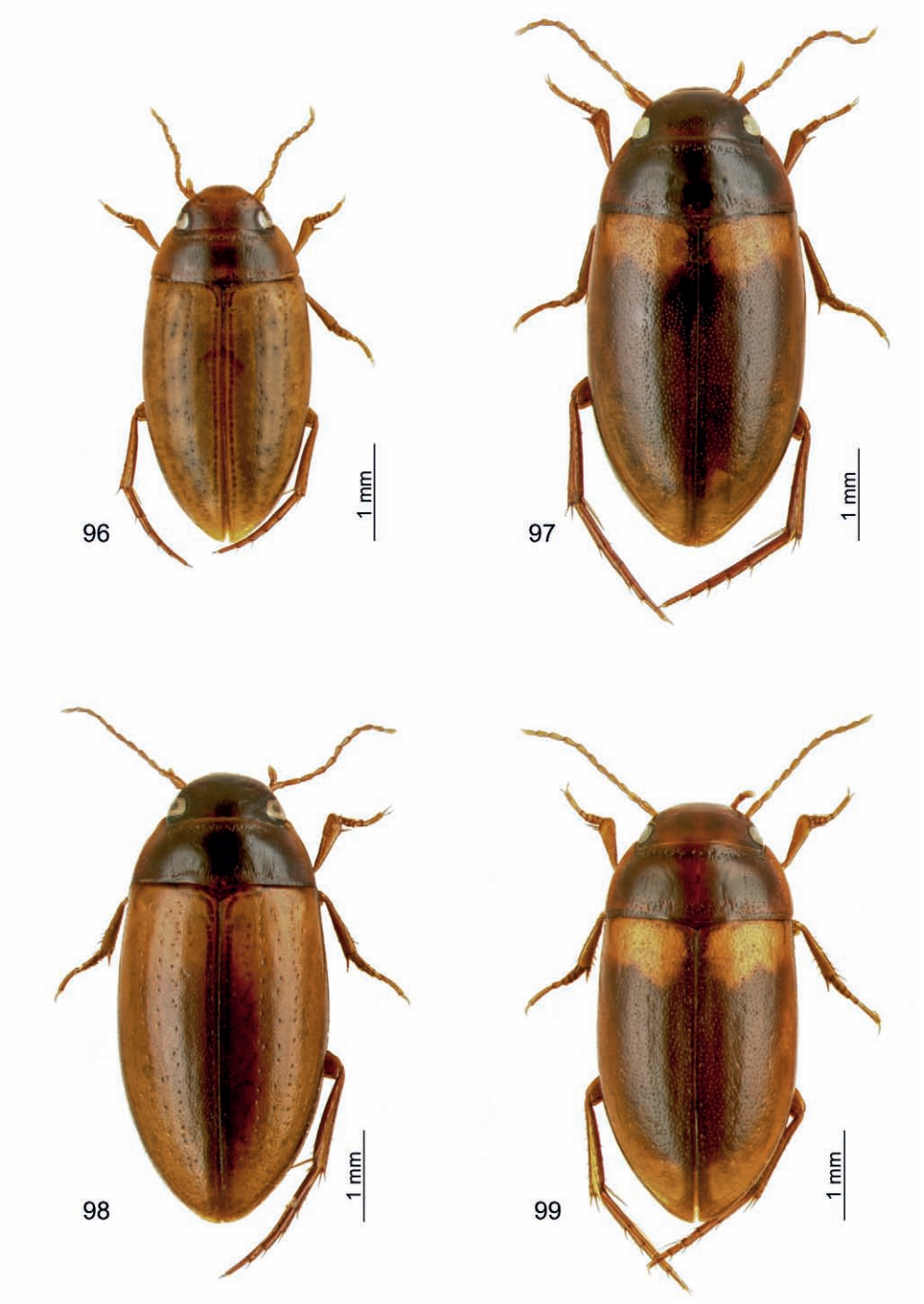
Figs. 84–87: Habitus and coloration of 84) *Exocelina kolleri*, 85) *E. inexspectata*, 86) *E. maculata*, 87) *E. commatifera*.



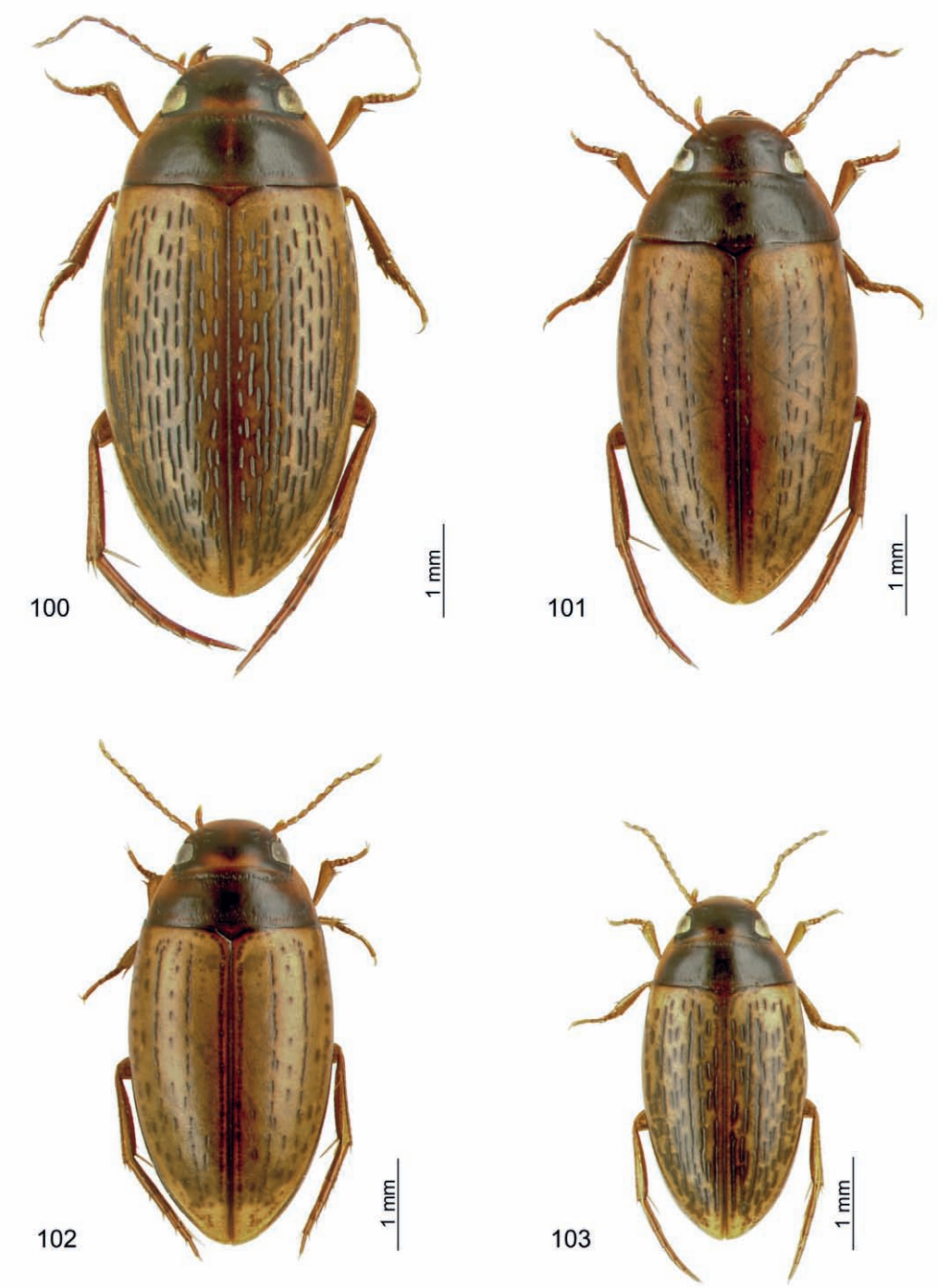
Figs. 88–91: Habitus and coloration of 88) *Exocelina gaulorum*, 89) *E. simoni*, 90) *E. staneki*, 91) *E. monteithi*.



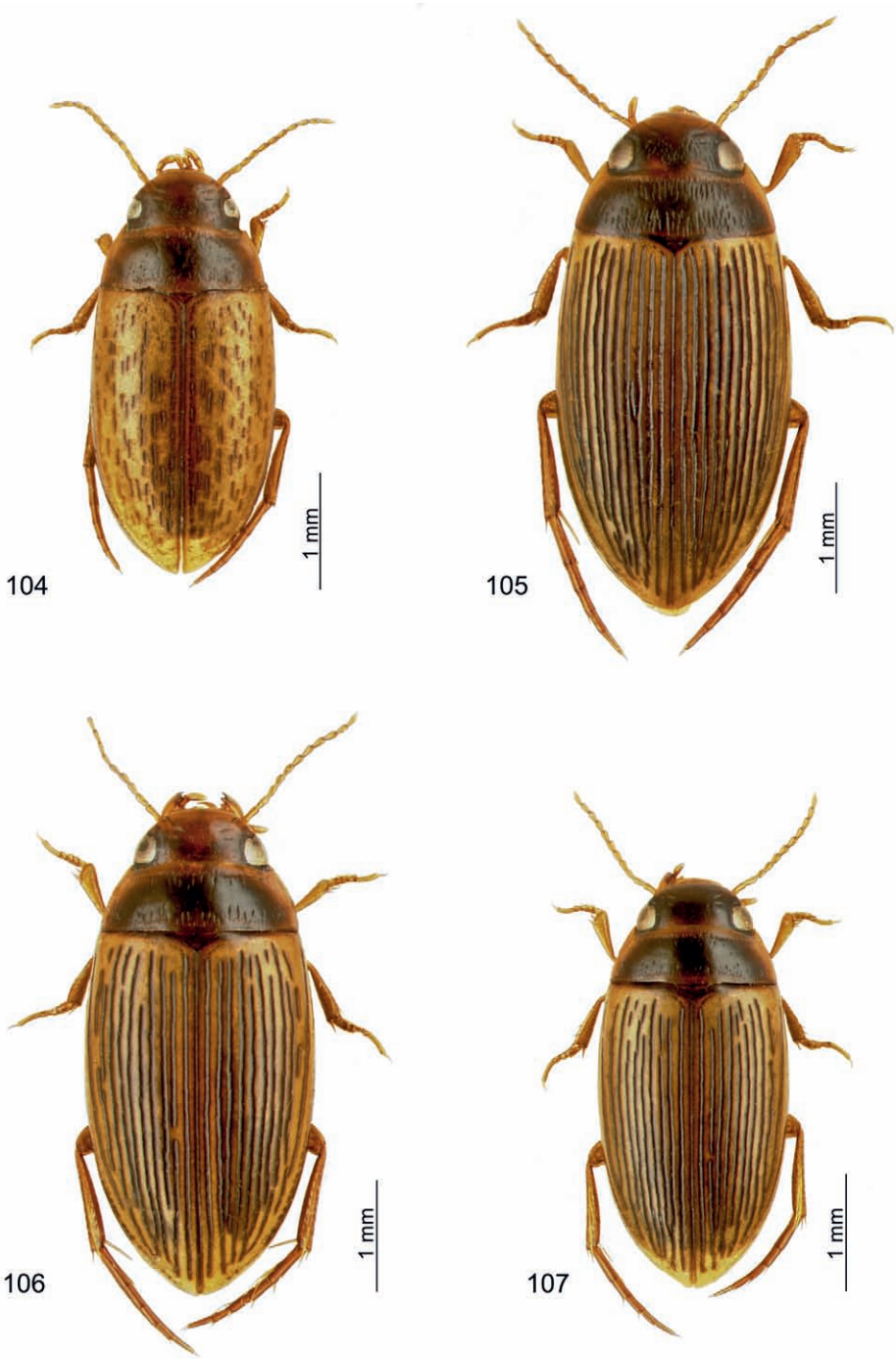
Figs. 92–95: Habitus and coloration of 92) *Exocelina subjecta*, 93) *E. lilianae*, 94) *E. brunoi*, 95) *E. bimaculata*.



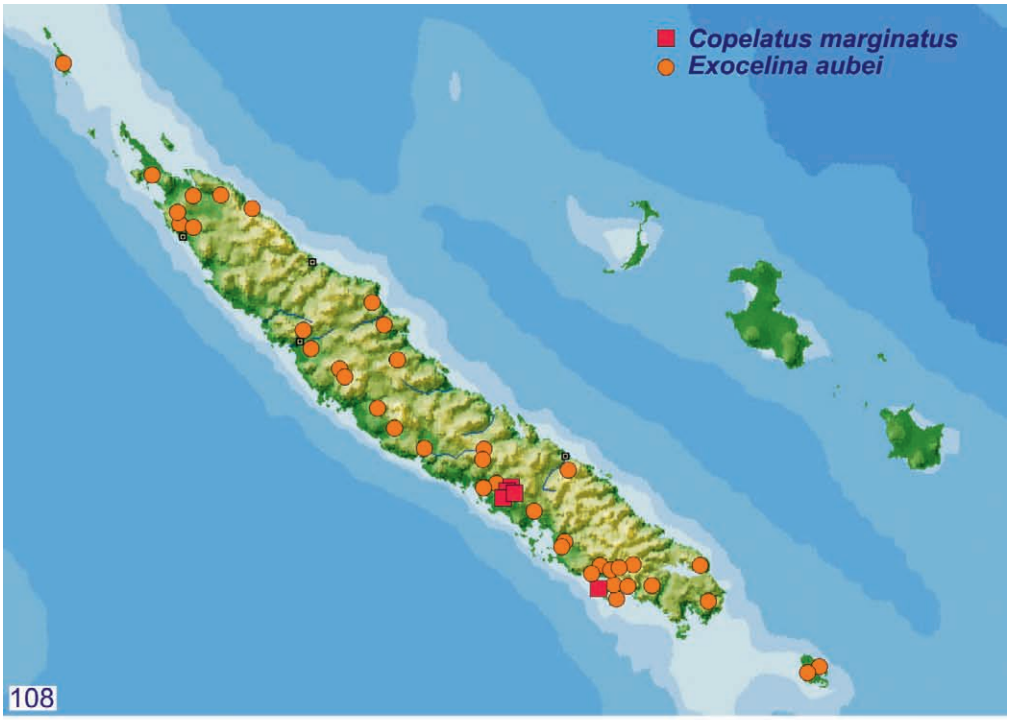
Figs. 96–99: Habitus and coloration of 96) *Exocelina feryi*, 97) *E. novaecaledoniae*, 98) *E. koghis*, 99) *E. ouin*.

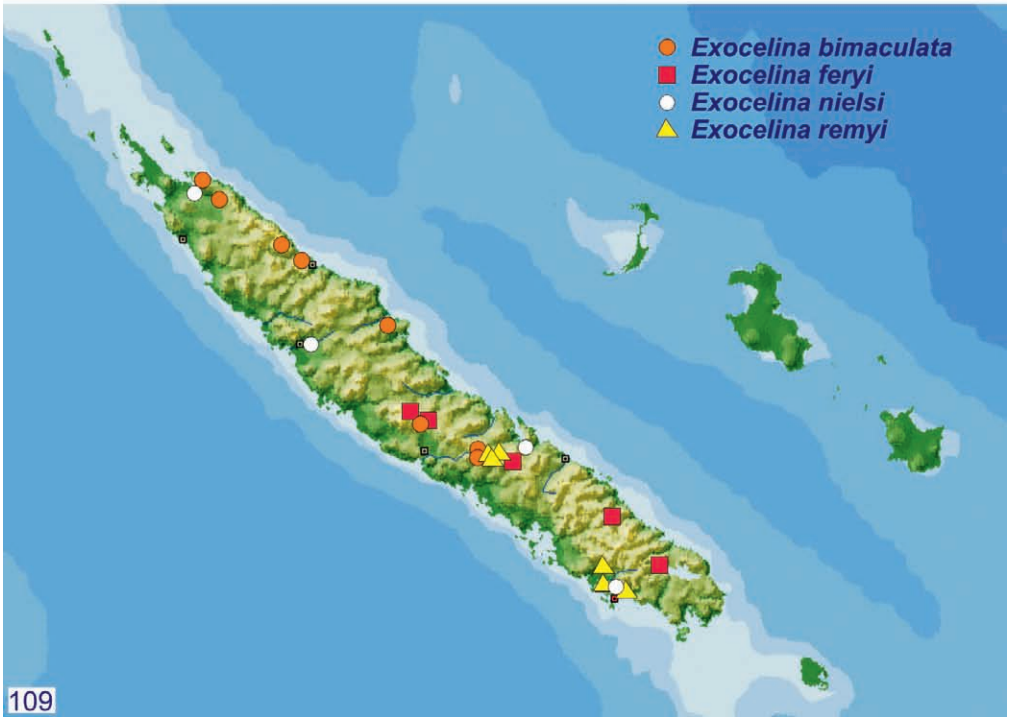


Figs. 100–103: Habitus and coloration of 100) *Exocelina interrupta*, 101) *E. poellabauerae*, 102) *E. gelima*, 103) *E. brownei*.

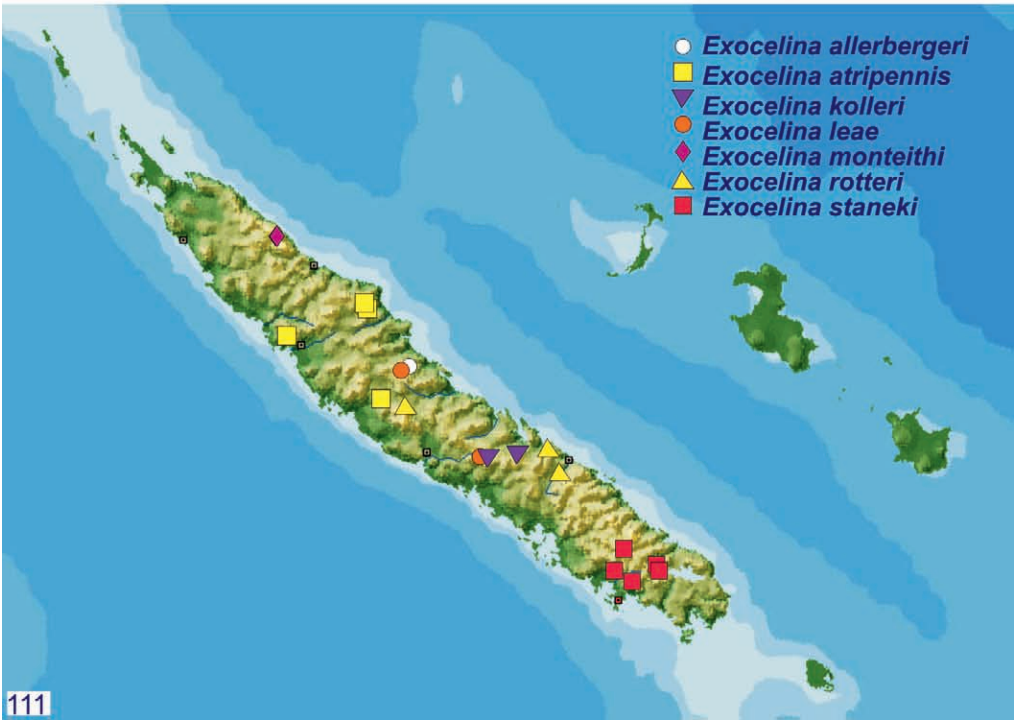


Figs. 104–107: Habitus and coloration of 104) *Exocelina schoelleri*, 105) *E. perfecta*, 106) *E. remyi*, 107) *E. nielsi*.

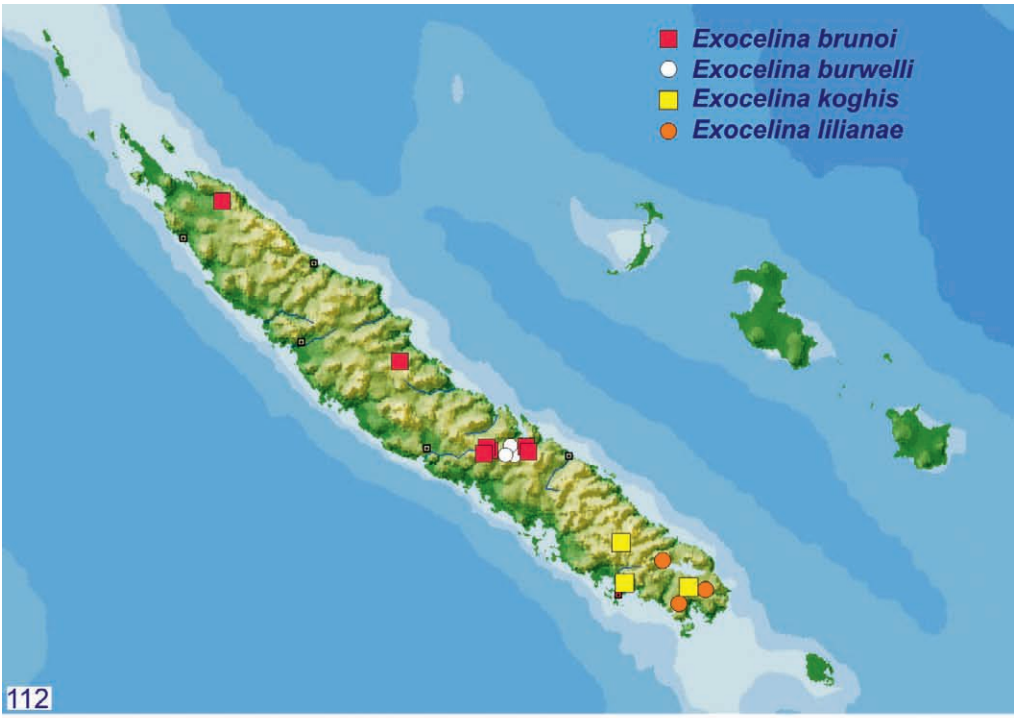


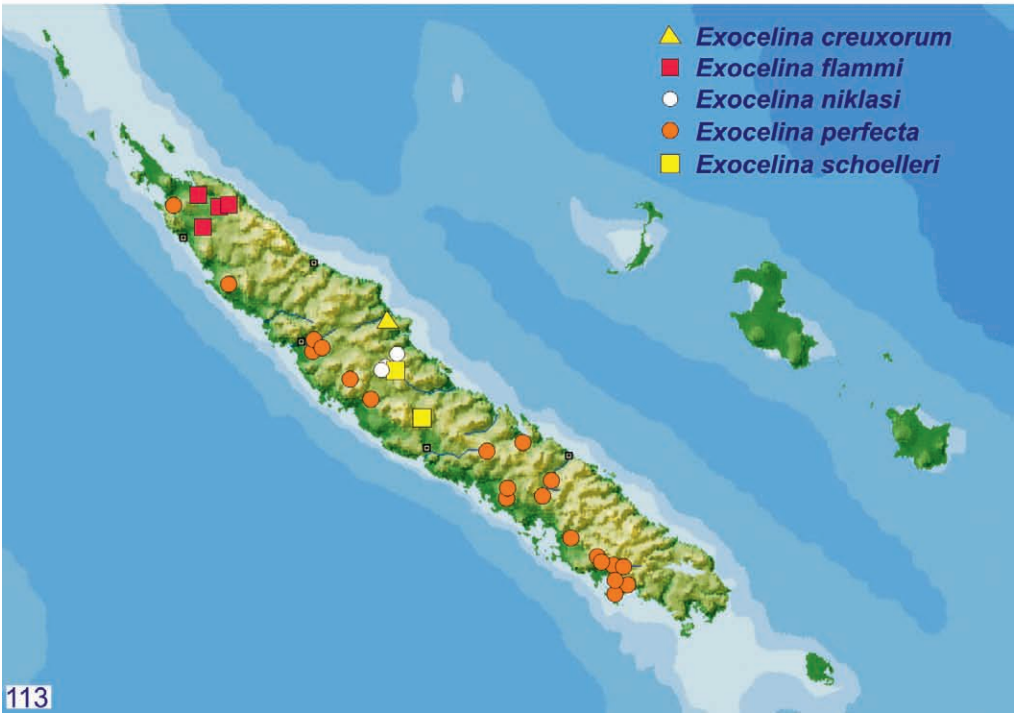


Figs. 108–109: Distribution of 108) *Copelatus marginatus* and *Exocelina aubei*, 109) *E. bimaculata*, *E. feryi*, *E. nielsi* and *E. remyi*.

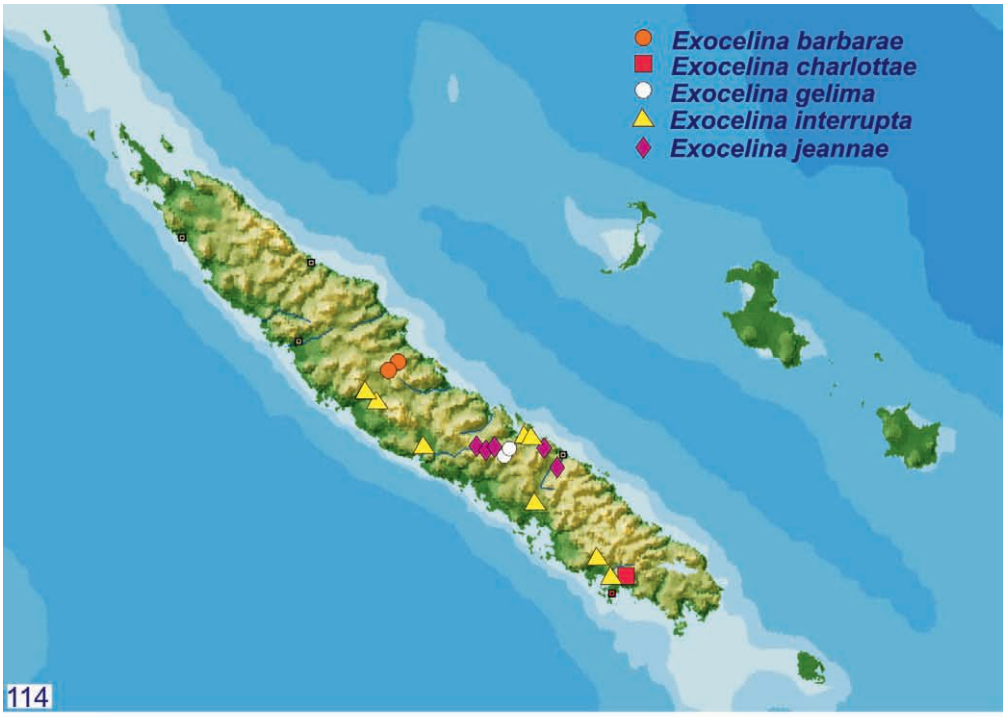


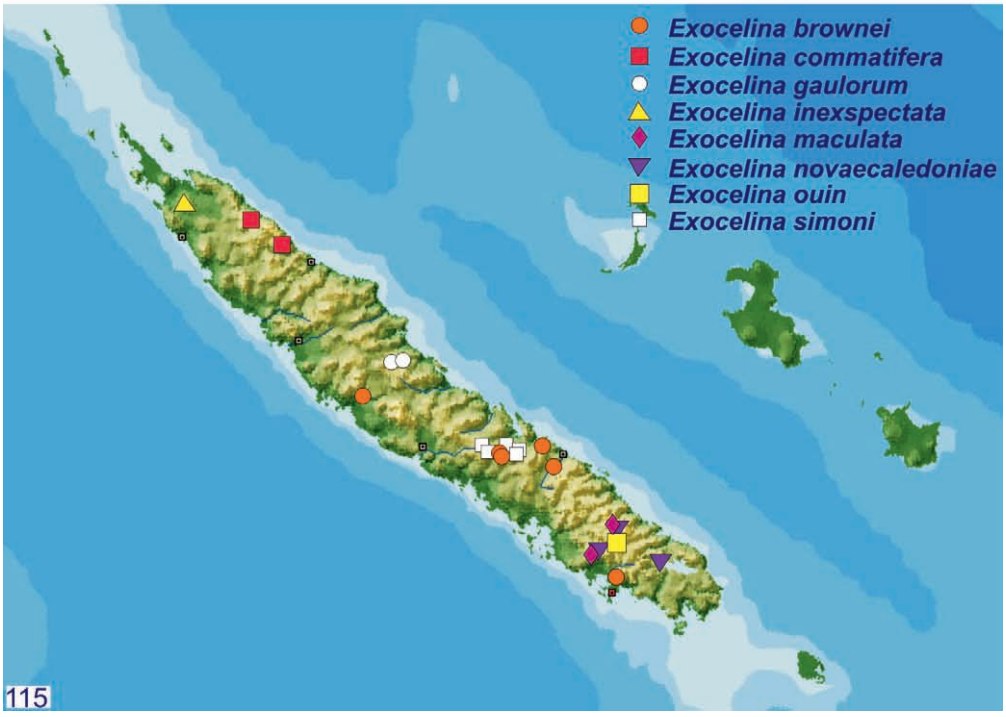
Figs. 110–111: Distribution of 110) *Exocelina poellabauerae* and *E. subjecta*, 111) *E. allerbergeri*, *E. atripennis*, *E. kolleri, E. leae*, *E. monteithi*, *E. rotteri* and *E. staneki*.



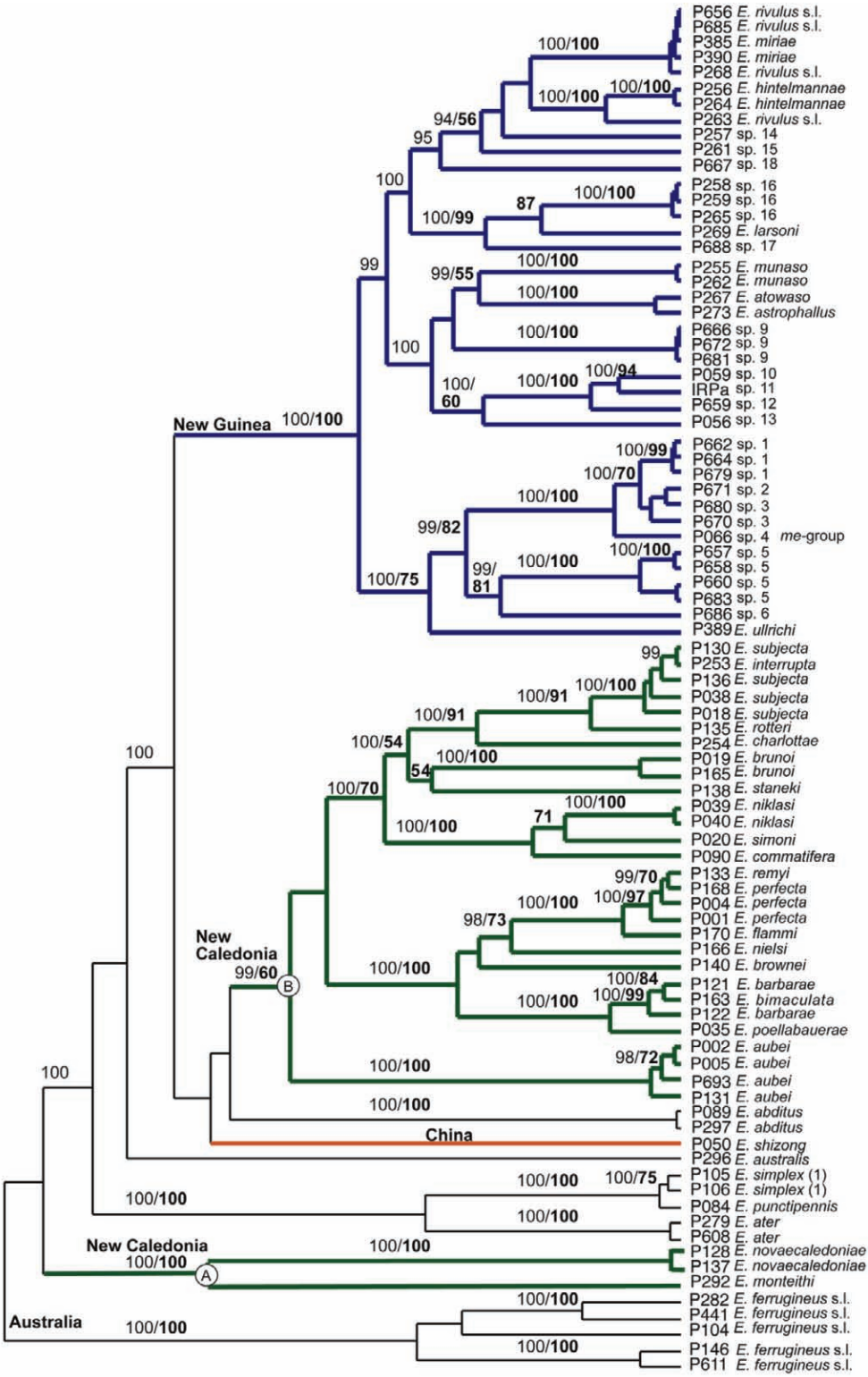


Figs. 112–113: Distribution of 112) *Exocelina brunoi*, *E. burwelli*, *E. koghis* and *E. lilianae*, 113) *E. creuxorum*, *E. flammi*, *E. niklasi*, *E. perfecta* and *E. schoelleri*.





Figs. 114–115: Distribution of 114) *Exocelina barbarae*, *E. charlottae*, *E. gelima*, *E. interrupta* and *E. jeannae*, 115) *E. brownei*, *E. commatifera*, *E. gaulorum*, *E. inexspectata*, *E. maculata*, *E. novaecaledoniae*, *E. ouin* and *E. simoni*.


P656 E. rivulus s.l.
P685 E. rivulus s.l.
P385 E. miriae
P390 E. miriae
P268 E. rivulus s.l.
P256 E. hintelmannae
P264 E. hintelmannae
P263 E. rivulus s.l.
P257 sp. 14
P261 sp. 15
P667 sp. 18
P258 sp. 16
P259 sp. 16
P265 sp. 16
P269 E. larsoni
P688 sp. 17
P255 E. munaso
P262 E. munaso
P267 E. atowaso
P273 E. astrophallus
P666 sp. 9
P672 sp. 9
P681 sp. 9
P059 sp. 10
IRPa sp. 11
P659 sp. 12
P056 sp. 13
P662 sp. 1
P664 sp. 1
P679 sp. 1
P671 sp. 2
P680 sp. 3
P670 sp. 3
P066 sp. 4 me-group
P657 sp. 5
P658 sp. 5
P660 sp. 5
P683 sp. 5
P686 sp. 6
P389 E. ullrichi
P130 E. subjecta
P253 E. interrupta
P136 E. subjecta
P038 E. subjecta
P018 E. subjecta
P135 E. rotteri
P254 E. charlottae
P019 E. brunoi
P165 E. brunoi
P138 E. staneki
P039 E. niklasi
P040 E. niklasi
P020 E. simoni
P090 E. commatifera
P133 E. remyi
P168 E. perfecta
P004 E. perfecta
P001 E. perfecta
P170 E. flammi
P166 E. nielsi
P140 E. brownei
P121 E. barbarae
P163 E. bimaculata
P122 E. barbarae
P035 E. poellabauerae
P002 E. aubei
P005 E. aubei
P693 E. aubei
P131 E. aubei
P089 E. abditus
P297 E. abditus
P050 E. shizong
P296 E. australis
P105 E. simplex (1)
P106 E. simplex (1)
P084 E. punctipennis
P279 E. ater
P608 E. ater
P128 E. novaecaledoniae
P137 E. novaecaledoniae
P292 E. monteithi
P282 E. ferrugineus s.l.
P441 E. ferrugineus s.l.
P104 E. ferrugineus s.l.
P146 E. ferrugineus s.l.
P611 E. ferrugineus s.l.
New Guinea
New Caledonia
China
New Caledonia
Australia
A
B
100/100
100/100
94/56
95
100
100/100
100/100
87
100/100
100/99
99
99/55
100/100
100/100
100
100/100
100/94
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60
100/100
100/99
100/70
100/100
99/82
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98/73
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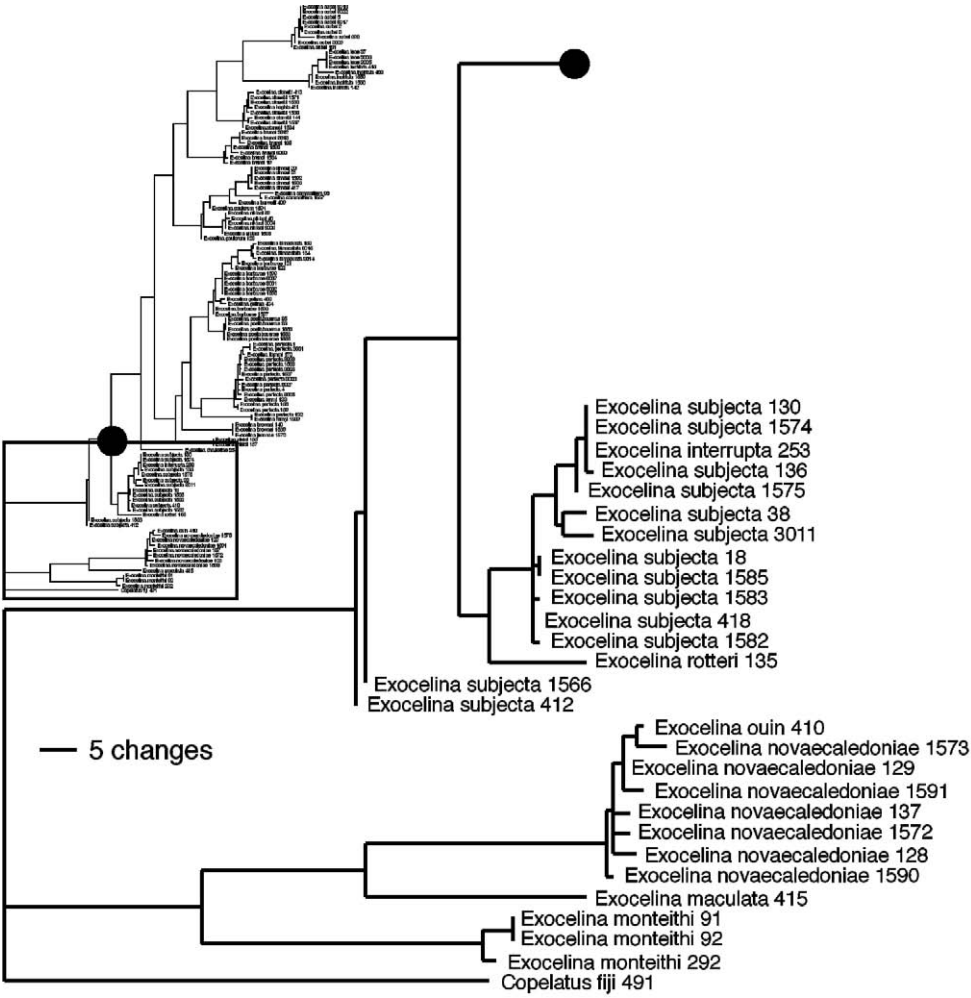

Fig. 117a (see following pages for Fig. 117b–c): Tree to depict clustering of New Caledonian *Exocelina* 3' *cox1* sequences. Each of the parts of Fig. 117 shows different magnified portion of the overall tree which is shown as a miniaturization on the left to outline the overall approximate genetic divergence within our sample. The scale bar depicts the amount of genetic change (= substitutions). This is a neighbour joining tree using uncorrected *p*-distances.

◀ Fig. 116 (opposite page): Phylogenetic relationships of *Exocelina* species inferred from Bayesian analysis of mitochondrial DNA and nuclear gene regions (after BALKE et al. 2007, modified). Bayesian branch lengths were fitted to a clock using Penalized Likelihood in r8s. Numbers above nodes are posterior probabilities / parsimony boostrap values, both values indicating statistic support for this shown topology (values closer or equal 100 are considered strong support). Outgroups are *Aglymbus* cf. *formosulus* ("Afor") and *A. elongatus* ("Aelo"). Nodes A and B mark the two New Caledonian clades of *Exocelina*. Scale bar = one million years, node distance from tip indicates approximate lineage age. Branch colors refer to geographic distributions.

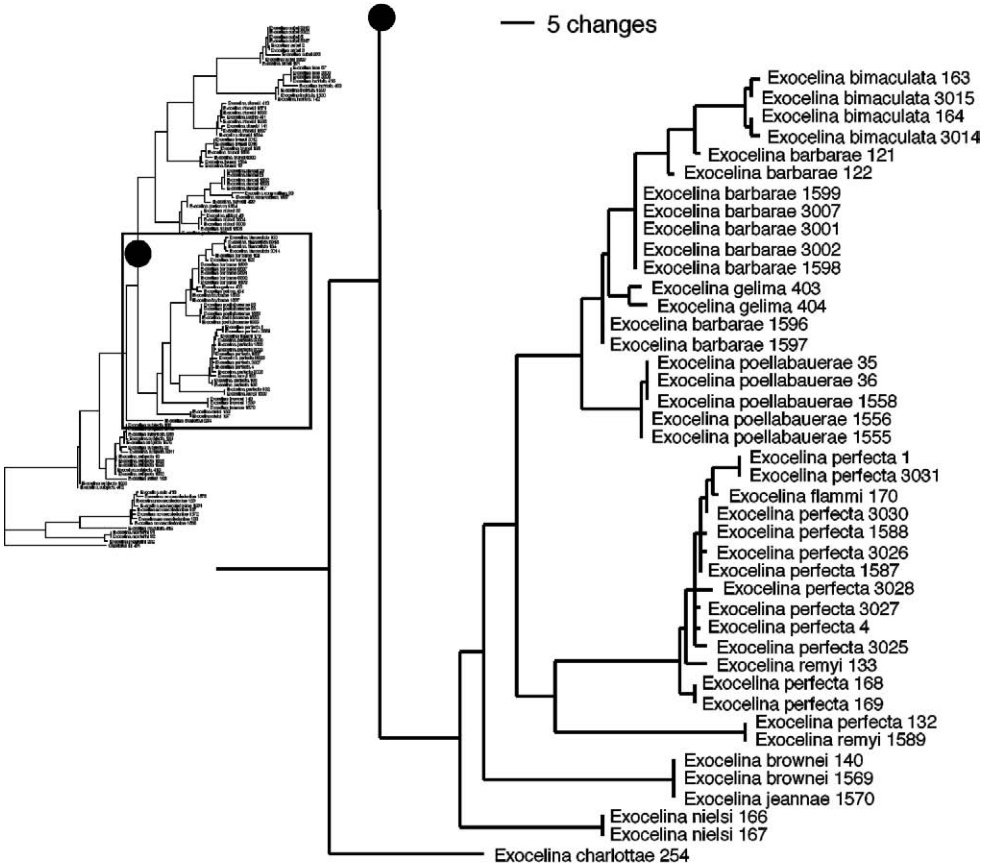

Fig. 117b: see p. 125 for figure caption.

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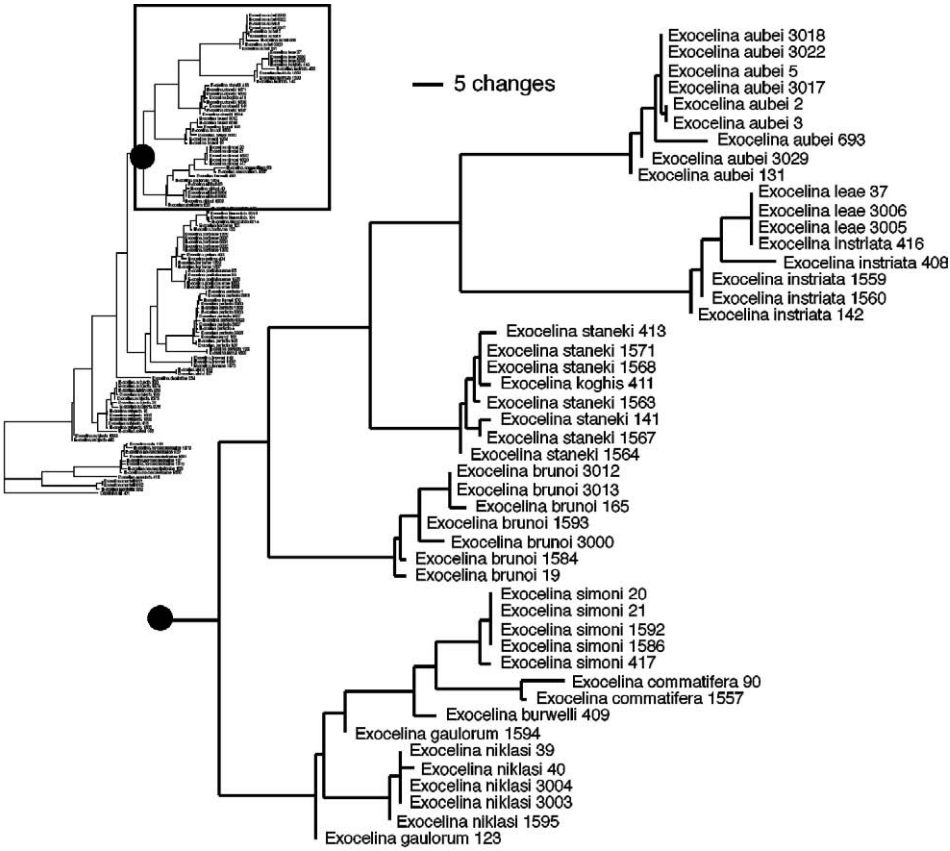

Fig. 117c: see p. 125 for figure caption.

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