

HYDROPHILIDAE:
The genus *Laccobius* ERICHSON
(subgen. *Yateberosus* SATÔ)

(Coleoptera)

E. GENTILI

Abstract

Two new species of *Laccobius* ERICHSON, 1837 (subgen. *Yateberosus* SATÔ) (Coleoptera: Hydrophilidae), *L. serratus* sp.n. and *L. wewalkai* sp.n., are described from New Caledonia (Grande Terre). *Laccobius novaecaledonicus* SATÔ, 1966, hitherto regarded as a junior synonym of *L. elevatus* FAUVEL, 1883, is resurrected. All five New Caledonian species are assigned to the subgenus *Yateberosus* SATÔ, 1966, which is briefly discussed.

Key words: Coleoptera, Hydrophilidae, *Laccobius*, taxonomy, new species, New Caledonia.

Introduction

The genus *Laccobius* ERICHSON, 1837 was first recorded from New Caledonia (Grande Terre) by FAUVEL (1883), who described *L. elevatus*, collected by his friend Emile Deplanche, surgeon of the french navy.

SATÔ (1966) erected a new genus, *Yateberosus*, based on two hydrophilid specimens collected by the members of the Osaka Museum Scientific Expedition to New Caledonia in 1958. SATÔ (1966) regarded his *Yateberosus* as “closely allied to the genus *Berosus* LEACH and the genus *Hemiosus* SHARP”! However, GENTILI (1980) treated *Yateberosus* as a subgenus of *Laccobius*, because of external similarities.

Three species of *Yateberosus* were known so far: *L. elevatus*, *L. maculatus* (SATÔ, 1966), and *L. novaecaledonicus* (SATÔ, 1966). The latter was synonymized with *L. elevatus* by GENTILI (1980).

A larger number of specimens of *Yateberosus* was collected on Grande Terre in the last decade, which greatly helps to improve the knowledge of the subgenus.

Material and methods

More than 400 specimens of *Laccobius* from New Caledonia were examined with a Beck Kassel CBS stereomicroscope. The aedeagi figured were mounted on transparent plastic cards with DMHF (dimethyl hydanthoin formaldehyde resin, soluble in distilled water). They were studied and drawn with a GALILEO LG transmitted light microscope, equipped with a light projection device.

The specimens examined are deposited in the following collections:

BMH	Bishop Museum, Honolulu, Hawaii, USA
CFH	Collection Franz Hebauer, Grafing, Germany
IRSNB	Institut royal des Sciences naturelles et de Belgique, Brussels, Belgium
KSEM	Natural History Museum, University of Kansas, Lawrence, USA
MNHW	Museum of Natural History, Wrocław University, Poland
MSNV	Museo Civico di Storia Naturale, Verona, Italy
NMP	Národní muzeum v Praze, Czech Republic
NMW	Naturhistorisches Museum Wien, Vienna, Austria
OMN	Osaka Museum of Natural History, Japan

List of Localities

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

- 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 2**: Dumbéa, 150 m a.s.l., road to Mt. Koghi, Rue de Forêt, 3.XI.2001. Stream in deep gorge, slightly flowing, edges sandy/gravelly.
- Loc. 2001/NC 3**: Dumbéa, 50 m a.s.l., near road to Mt. Koghi, 3.XI.2001. Slowly flowing stream (max. 2 m wide and 40 cm deep), partly shaded, edge with leaf packs and roots, ground sandy and gravelly.
- 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 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 backflows 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 22**: Col d'Amoss, 350–120 m a.s.l., 11.XI.2001. Small stream.
- 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 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 36**: 5–10 km south of Kouaoua, Creek des Orangers, 180 m a.s.l., 15.XI.2001. Stream (max. 2–4 m wide), in deep creek besides road, partly shaded, with pools (max. 1.5 m deep), ground rocky/gravelly, with slow flowing sections, banks sandy/gravelly, in part with leaves.
- 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 47** (JÄCH & BALKE 2010: Fig. 21): 2 km west of Prony, Goro Nickel Plant, 180 m a.s.l., 19.XI.2001. Water filled doline (towards the middle > 5 m deep), water crystal clear, edge with red soil, reeds and macrophytes.
- 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. 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.
- Loc. 2009/NC 17**: ca. 1 km W Sarraméa, ca. 45 m a.s.l., 21°39'06.2"S/165°49'42.2"E, 28.XI.2009. River, ca. 10 m wide, slowly flowing, with gravel banks, partly shaded by trees.
- Loc. 2009/NC 18a**: ca. 2 km NNE Farino, Refuge de Farino, ca. 270 m a.s.l., 21°38'55"S/165°46'53"E, 29.–30.XI.2009, 3.XII.2009. At light.
- Loc. 2009/NC 19** (JÄCH & BALKE 2010: Fig. 40): ca. 3 km N Farino, near Petite Cascade, ca. 340 m a.s.l., 21°38'09"S/165°46'33"E, 29.XI.2009. River Farino, ca. 5–10 m wide, flowing through forest.

- Loc. 2009/NC 20:** Parc des Grandes Fougères, ca. 5 km NNW Farino, ca. 340 m a.s.l., 21°37'08"S/165°45'37"E, 29.XI.2009. Small river (Me Peou), ca. 5–10 m wide, flowing through primary forest.
- 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 25** (JÄCH & BALKE 2010: Fig. 43): ca. 3 km NW Prony, ca. 120 m a.s.l., 22°18'16"S/166°48'15"E, 2.XII.2009. River, ca. 5–10 m wide, forming large blue colored pools, slowly flowing through shrubland and 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 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.
- Loc. 2009/NC 34** (JÄCH & BALKE 2010: Fig. 49): ca. 10 km NNE Nouméa, ca. 45 m a.s.l., 22°08'10"S/166°29'58"E and ca. 65 m a.s.l., 22°08'18"S/166°30'07"E, 5.XII.2009. River Dumbéa (south branch), ca. 30 m wide, flowing through wide unshaded gravel bed.

***Laccobius* subgen. *Yateberosus* SATÔ, 1966**

Yateberosus SATÔ 1966: 5; GENTILI 1980: 396.

Laccobius subgen. *Yateberosus* SATÔ: HANSEN 1991: 291, 1999: 133; GENTILI 2005: 320.

TYPE SPECIES: *Yateberosus maculatus* SATÔ, 1966.

DIAGNOSIS: *Yateberosus* shares numerous characters with other subgenera of *Laccobius*: e.g. head not nearly vertical in the resting position, antennae eight-segmented (Fig. 1), scutellum nearly equilateral instead of elongate, six visible abdominal sternites, pseudepipleura markedly widened anteriorly, apex of metatrochanters projecting, basal half of profemora pubescent, swimming hairs on dorsal surface of meso- and metatarsi, 2nd and 3rd joints of male foretarsi broadened.

It differs from other subgenera of *Laccobius* in the following characters: antennal cupule strongly asymmetrical (Fig. 1), eyes slightly protruding laterally, pseudepipleura extending from base to apex of elytra, border between epipleura and pseudepipleura nearly straight (Fig. 3), elytral rows punctate-striate, intervals partly convex (Fig. 4), metatibiae straight.

The meso- and metaventral keels are adjoining, a feature strongly developed in *Laccobius serratus* (described below), being also present in the subgenus *Notoberosus* BLACKBURN, 1895 (GENTILI 2005), as well as in *Hydrophilomima* HANSEN & SCHÖDL (*Laccobiini*), and also in representatives of *Hydrophilina* and some genera of *Sphaeridiinae* (e.g. *Coelostomatini*).

PHYLOGENY: The phylogeny of *Laccobius* is still far from being understood, cladistic analyses or DNA sequencing was never carried out and therefore the status of *Yateberosus* and its phylogenetic position remain unclarified.

The New Caledonian species of *Laccobius* are very probably monophyletic.

DISTRIBUTION: All species of *Yateberosus* are endemic to Grande Terre. So far no specimen has ever been collected on any other New Caledonian island.

HABITAT: All species of *Yateberosus* occur in running water, especially in larger streams and rivers, where they can be found in moderately swiftly flowing gravel riffles (M.A. Jäch, personal

communication). For habitat photographs, see JÄCH & BALKE (2010: Figs. 9, 11, 21, 24, 31, 38, 40, 41, 43, 46, 48, 49, 51).

ETYMOLOGY: The name *Yateberosus* derives from River Yaté, the type locality of the type species.

Checklist of *Yateberosus*

<i>Laccobius (Yateberosus) elevatus</i> FAUVEL, 1883	New Caledonia (Grande Terre)
<i>Laccobius (Yateberosus) maculatus</i> SATÔ, 1966	New Caledonia (Grande Terre)
<i>Laccobius (Yateberosus) novaecaledonicus</i> SATÔ, 1966	New Caledonia (Grande Terre)
<i>Laccobius (Yateberosus) serratus</i> sp.n.	New Caledonia (Grande Terre)
<i>Laccobius (Yateberosus) wewalkai</i> sp.n.	New Caledonia (Grande Terre)

Key to species of *Yateberosus*

- 1 Lateral borders of pronotum and elytra crenulate or serrate. Aedeagus as in Figs. 9–11; body length 3.6–4.2 mm *serratus*
- Lateral borders of pronotum and elytra neither crenulate nor serrate. Aedeagus as in Figs. 5–8, 12–17; body shorter than 3.3 mm 2
- 2 Body length 2.8–3.2 mm; ratio elytral length / elytral width: 1.5. Aedeagus as in Figs. 5–6 *maculatus*
- Body length 2.3–2.6 mm; ratio elytral length / elytral width: 1.2–1.3. Aedeagus as in Figs. 7–8, 12–17 3
- 3 Head and pronotum with a fine shagreen and distant punctures. Elytra explanate at lateral sides. Aedeagus as in Figs. 15–17. Body length 2.1–2.6 mm *wewalkai*
- Head and pronotum with a coarse shagreen and dense punctation. Lateral margins of elytra not explanate. Aedeagus as in Figs. 7–8, 12–14. Body length 2.3–2.6 mm 4
- 4 Dorsal side blackish with purplish sheen. Clear preocular spots more or less absent. Anterior claws strongly hooked. Elytral intervals 6 and 7 more convex and elevated than the remaining intervals. Body length 2.5–2.6 mm. Aedeagus as in Figs. 12–14 *novaecaledonicus*
- Dorsal side chestnut or yellowish, with clear preocular spots. Anterior claws not hooked. Elytral intervals 5 and 7 normally more convex and elevated than the remaining intervals. Body length 2.3–2.4 mm. Aedeagus as in Figs. 7–8 *elevatus*

Laccobius (Yateberosus) elevatus FAUVEL, 1883

Laccobius elevatus FAUVEL 1883: 355.

Laccobius (Notoberosus) elevatus FAUVEL: GENTILI 1980: 389; 1988: 40; HANSEN 1999: 133.

Laccobius (Yateberosus) elevatus FAUVEL: GENTILI 2005: 322.

TYPE LOCALITY: New Caledonia, South Province, Yahoúé.

TYPE MATERIAL: **Holotype** ♂ (IRSNB): “Coll. R. I. Sc. N. Belgique \ Nouvelle Calédonie, Yahoúé, X. \ E. Deplanche, ruisseaux 8.me \ Coll. et det. A. Fauvel \ Holotypus ♂, E. Gentili 1980”. The aedeagus is greatly damaged, only tegmen preserved.

ADDITIONAL MATERIAL EXAMINED:

NORTH PROVINCE: 1 ♀ (IRSNB): Koé, 20°48'S 165°16'E, leg. T. Savés (GENTILI 1980); 1 ♀ (MNH): Tchamba (Wão Uni), refuge, night coll. (lamp and beating), 400 m, 21°00.3'S, 165° 14.9'E, 16.I.2007, leg. M. Wanat & R. Dobosz; 1 ♂ (MNH): Aoupinié, camp at road, at light, 820 m, 21°11'S, 165°17'E, 8.II.2004, leg.

M. Wanat; 1 ♀ (BMH): headwaters of River Houailou, 26.X.1958, leg. C.R. Joyce (GENTILI 1980); 1 ♂ (BMH): La Crouen, W of Canala, 150 m, 21°30'S 165°53'E, 20.–22.III.1968, at light, leg. J.L. Gressitt (GENTILI 1988).

3 ♂♂, 1 ♀ (NMW): Loc. 2001/NC 7; 2 ♂♂, 2 ♀♀ (NMW): Loc. 2001/NC 22; 1 ♀ (NMW): Loc. 2001/NC 23; 1 ♂ (NMW): Loc. 2001/NC 33; 12 ♂♂, 7 ♀♀ (MSNV, NMW): Loc. 2001/NC 36.

1 ♀ (NMW): Loc. 2009/NC 30; 30 ♂♂, 22 ♀♀ (MSNV, NMW): Loc. 2009/NC 31.

SOUTH PROVINCE: 1 ex. (CFH): Col d'Amieu, 360 m, 15.III.1994, leg. M. Schöller; 1 ♀ (MSNV): Oua Tom, 21°48'S 165°52'E, 17.IX.1940, leg. F.X. Williams; 42 ♂♂, 30 ♀♀ (KSEM, MSNV): Thio, confluence River Thio and River Nakalé, 21°40'14.8"S, 166°8'50"E, 30 m, 3.IX.2008, leg. A. Gervais "#Q1"; 1 ♂ (KSEM): Thio, River Neumeni at road RM8, 21°39'23.9"S, 166°19'21.7"E, 3.IX.2008, leg. A. Gervais "#Q2-1"; 1 ♂, 1 ♀ (NMP): Paita, 20.III.1999, leg. S. Bilý; 1 ♀ (NMP): Thy, 21.III.1999, leg. S. Bilý; 3 ♂♂, 7 ♀♀ (KSEM, MSNV): Dumbéa, puddle, rout[e] des Dzumac, 2 km N of road RM3, 22°7'11.1"S, 166°26'53.9"E, 177 m, 4.IX.2008, leg. A. Gervais "#R1"; 3 ♂♂, 4 ♀♀ (KSEM): Mont Dore District, River La Coulée, road CR6 3 km N of road RP1, 22°13'14.1"S, 166°36'4"E, 100 m, 27.VIII.2008 and 2.IX.2008, leg. A. Gervais "#H4", "#P1"; 1 ♀ (KSEM): Mont Dore District, stream, road CR5 6 km N of road RP1, 22°11'10.1"S, 166°32'13.1"E, 144 m, 31.VIII.2008, leg. A. Gervais "#M2"; 5 ♂♂, 4 ♀♀ (KSEM, MSNV): Mont Dore District, stream, road CR4 2 km N of road RP1, 22°12'58.5"S, 166°32'54.4"E, 24 m, 20.VII.2009 and 8.IX.2009, leg. A. Gervais "#U1", "#E1"; 5 ♂♂, 4 ♀♀ (KSEM, MSNV): Mont Dore District, Thalweg to River Dumbéa, 22°11'21.3"S, 166°34'39.4"E, 102 m, 9.IX.2008, leg. A. Gervais "#V1"; 2 ♂♂, 2 ♀♀ (KSEM, MSNV): Mont Dore District, Thalweg to River Dumbéa, 22°11'20.4"S, 166°34'19.2"E, 9.IX.2008, leg. A. Gervais "#V2"; 1 ♂, 2 ♀♀ (KSEM): Mont Dore District, River Ti, road CR4 3.5 km N of road RP1, 22°12'31.3"S, 166°32'39.9"E, 84 m, 17.VIII.2008, leg. A. Gervais "#C1"; 1 ♀ (KSEM): Yaté, Lake between Lac des Huit and Grand Lac, 22°15'32.3"S, 166°54'2.5"E, 68 m, leg. A. Gervais 29.VIII.2008 "#K3".

7 ♂♂, 4 ♀♀ (MSNV, NMW): Loc. 2001/NC 1; 5 ♂♂, 6 ♀♀ (MSNV, NMW): Loc. 2001/NC 2; 3 ♀♀ (NMW): Loc. 2001/NC 3; 3 ♂♂, 1 ♀ (NMW): Loc. 2001/NC 45; 1 ♂ (NMW): Loc. 2001/NC 47.

1 ♂, 1 ♀ (NMW): Loc. 2009/NC 17; 1 ♂ (NMW): Loc. 2009/NC 19; 1 ♀ (NMW): Loc. 2009/NC 20; 1 ♂, 1 ♀ (NMW): Loc. 2009/NC 21; 2 ♂♂, 2 ♀♀ (MSNV, NMW): Loc. 2009/NC 22; 1 ♀ (NMW): Loc. 2009/NC 25; 3 ♂♂, 3 ♀♀ (MSNV, NMW): Loc. 2009/NC 27.

DISTRIBUTION (Fig. 18): Widely distributed on Grande Terre.

Laccobius (Yateberosus) maculatus (SATÔ, 1966)

Yateberosus maculatus: SATÔ 1966: 5.

Laccobius (Yateberosus) maculatus (SATÔ): GENTILI 1980: 389, 2005: 321; HANSEN 1999: 133.

TYPE LOCALITY: New Caledonia, South Province, River Yaté.

TYPE MATERIAL: **Holotype** ♀ (OMN): "New Caledonia, South \ Yaté Riv, Oct. 3, 1958, Y. Shibata leg. \ Holotype, *Yateberosus maculatus*, M. Satô".

ADDITIONAL MATERIAL EXAMINED:

NORTH PROVINCE: 1 ♀ (MSNV): headwaters of River Houailou, 26.X.1958, leg. C.R. Joyce; 1 ♂ (BMH): La Crouen, W of Canala, 21°30'S 165°53'E, 12.III.1961, leg. J. Sedlacek (GENTILI 1980).

3 ♂♂ (MSNV, NMW): Loc. 2001/NC 10; 3 ♂♂, 1 ♀ (MSNV, NMW): Loc. 2001/NC 33.

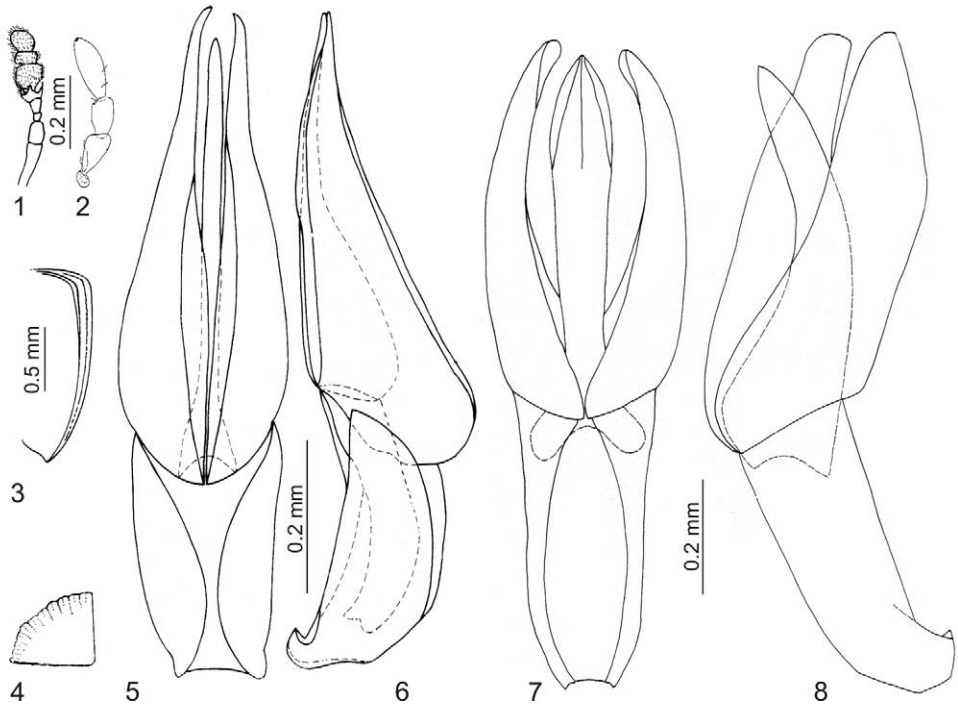
6 ♂♂, 7 ♀♀ (MSNV, NMW): Loc. 2009/NC 31.

SOUTH PROVINCE: 12 ♂♂, 5 ♀♀ (KSEM, MSNV): Thio, River Neumeni at road RM8, 21°39'23.9"S, 166°19'21.7"E, 3.IX.2008, leg. A. Gervais "#Q2-12"; 31 ♂♂, 30 ♀♀ (KSEM, MSNV): Thio, confluence of River Thio and River Nakalé, 21°40'14.8"S, 166°8'50"E, 30 m, 3.IX.2008, leg. A. Gervais "#Q1"; 1 ♂ (KSEM): Mont Dore District, River Ti, road CR4 3.5 km N of road RP1, 22°12'31.3"S, 166°32'39.9"E, 84 m, 17.VIII.2008, leg. A. Gervais "#C1".

1 ♀ (NMW): Loc. 2001/NC 1; 6 ♂♂, 1 ♀ (MSNV, NMW): Loc. 2001/NC 5.

1 ♂, 2 ♀♀ (MSNV, NMW): Loc. 2009/NC 6; 2 ♂♂, 6 ♀♀ (NMW, MSNV): Loc. 2009/NC 17; 2 ♀♀ (NMW): Loc. 2009/NC 18a.

DISTRIBUTION (Fig. 19): Widely distributed on Grande Terre.



Figs. 1–8: Body features of *Laccobius* subgen. *Yateberosus*: 1) *L. novaecaledonicus*, antenna, 2) *L. maculatus*, maxillary palpus, 3–4) *L. elevatus*, 3) epipleuron, 4) elytron, transverse profile, 5–8) aedeagus of 5–6) *L. maculatus*, 5) dorsal view, 6) lateral view, 7–8) *L. elevatus*, 7) dorsal view, 8) lateral view.

***Laccobius (Yateberosus) novaecaledonicus* (SATÔ, 1966)**

Yateberosus novaecaledonicus: SATÔ 1966: 6.

Laccobius (Yateberosus) novaecaledonicus (SATÔ): GENTILI 1980: 389, 2005: 321.

TYPE LOCALITY: New Caledonia, South Province, River Yaté.

TYPE MATERIAL: **Holotype** ♀ (OMN): “New Caledonia, South \ Yaté Riv, Oct. 3, 1958, Y. Tsutsui leg. \ Holotype, *Yateberosus novaecaledonicus*, M. Satô”.

ADDITIONAL MATERIAL EXAMINED:

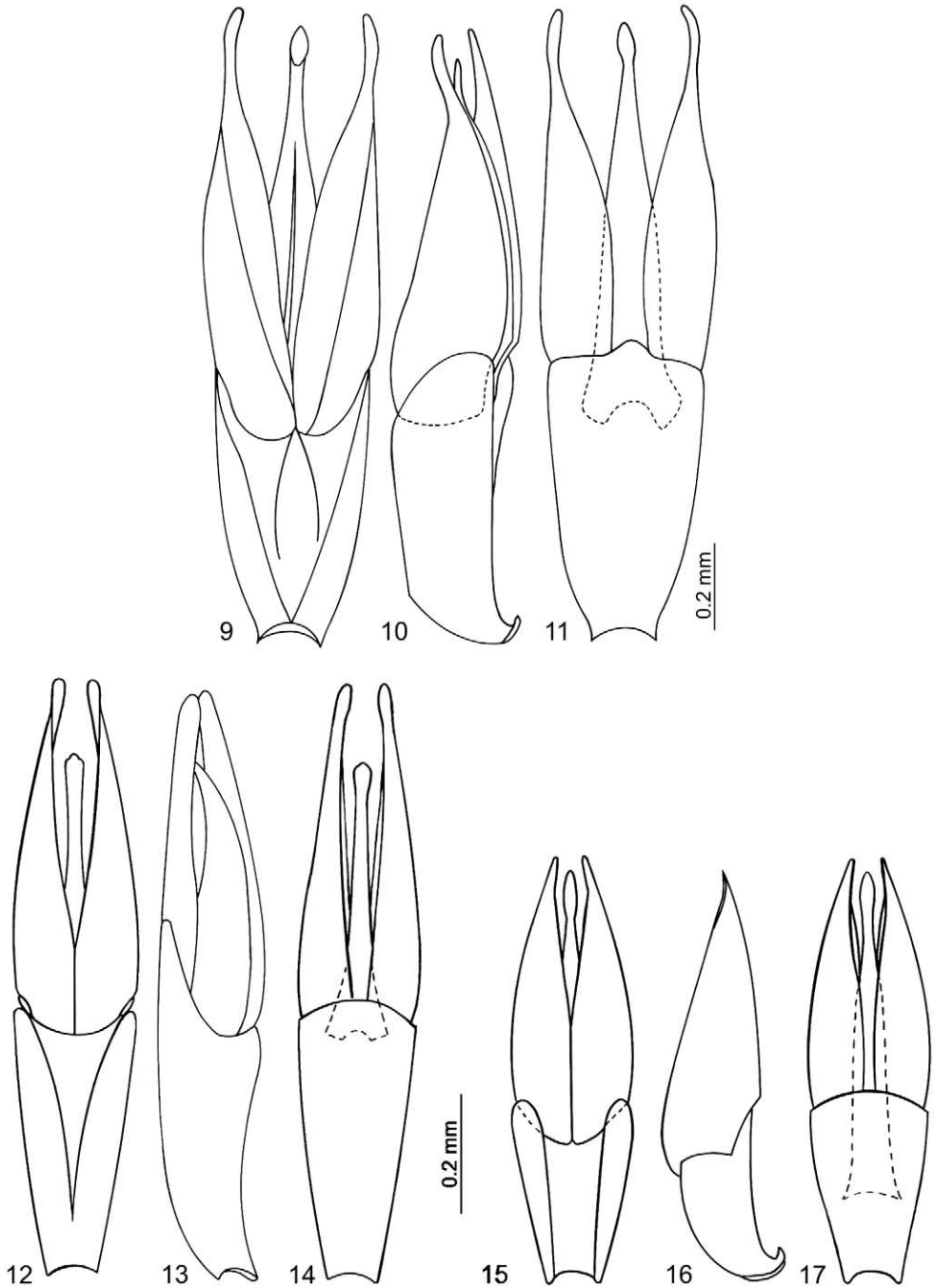
NORTH PROVINCE: 1 ♂ (MNHV): Tchamba (Wâo Uni), refuge, night coll. (lamp and beating), 400 m, 21°00.3'S, 165°14.9'E, 16.I.2007, leg. M. Wanat & R. Dobosz; 1 ♂ (MNHV): Aoupinié, camp at road, at light, 820 m, 21°11'S, 165°17'E, 8.II.2004, leg. M. Wanat.

2 ♂♂ (MSNV, NMW): Loc. 2001/NC 33.

SOUTH PROVINCE: 1 ♂ (NMP): Paita, 20.III.1999, leg. S. Bilý; 1 ♂ (KSEM): Mont Dore District, stream, road CR5 6 km N of road RP1, 144 m, 22°11'10.1"S, 166°32'13.1"E, 31.VIII.2008, leg. A. Gervais “#M2”.

1 ♀ (NMW): Loc. 2001/NC 1; 1 ♂ (NMW): Loc. 2001/NC 2.

5 ♂♂, 1 ♀ (MSNV, NMW): Loc. 2009/NC 19; 10 ♂♂, 1 ♀ (MSNV, NMW): Loc. 2009/NC 20.



Figs. 9–17: Aedeagi of *Laccobius* subgen. *Yateberosus*: 9–11: *L. serratus*, holotype, 9) dorsal view, 10) lateral view, 11) ventral view; 12–14: *L. novaecaledonicus*, 12) dorsal view, 13) lateral view, 14) ventral view; 15–17: *L. wewalkai*, 15) dorsal view, 16) lateral view, 17) ventral view.

DISCUSSION: GENTILI (1980) synonymized this species with *Laccobius elevatus*. The discovery of male specimens revealed that the aedeagi are different (Figs. 12–14). In addition, there are several external distinguishing characters (see key above).

The tegmen of the aedeagus of *L. novaecaledonicus* is slightly shorter than the parameres, which are clearly longer than the median lobe; the latter appears rod-like in dorsal view, slightly inflated apically, more slender than the parameres (e.g. its width at mid-length is 0.5 times the width of each paramere at same level). In contrast, the median lobe of *L. elevatus* is nearly as long and as wide as the parameres.

DISTRIBUTION (Fig. 19): Widely distributed on Grande Terre.

Laccobius (Yateberosus) serratus sp.n.

Laccobius sp.: GENTILI 2005: 321.

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

TYPE MATERIAL: **Holotype** ♂ (NMW): “NEW CALED.: South Prov. PN Rivière[s] Bleue 500-600 m, 20.11.2001 leg. Balke & Wewalka (NC 49/50) \ H O L O T Y P U S *Laccobius serratus* E. Gentili 2010”.

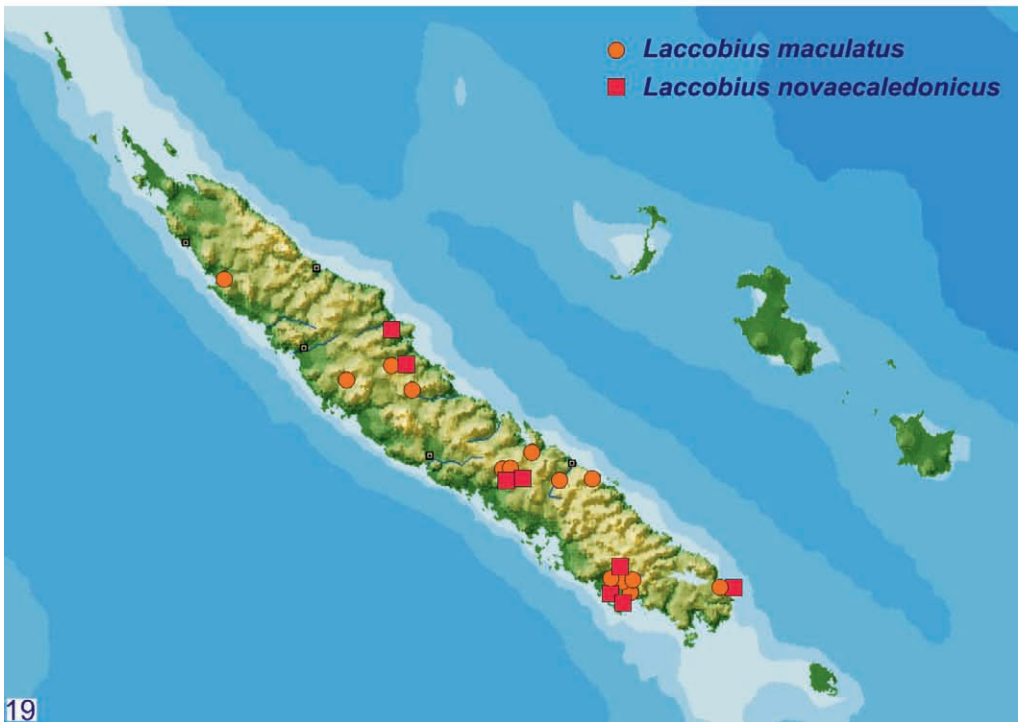
Paratypes: 3 ♂♂, 2 ♀♀ (MSNV, NMW): same locality data as holotype; 1 ♀ (NMW): Dumbéa, road to Mt. Koghi, [1]50 m, 3.XI.2001, leg. M. Balke & G. Wewalka “NC 1”.

3 ♂♂ (MSNV, NMW): Loc. 2009/NC 33.

DESCRIPTION: Total length 3.6–4.2 mm (holotype 3.9 mm), total width 1.8–1.9 mm (holotype 1.8 mm). Elytral index: 1.45. Habitus elongate oval.

Head: Coloration of dorsal face: black with chestnut patches anterior to the fronto-clypeal suture. Labrum wide, anterior margin regularly arched, slightly notched medially; covered with fine punctures, interstices slightly larger than punctures; blackish with chestnut lateral margins. Clypeus with an indentation, contacting labrum; fronto-clypeal suture completely visible; clypeus and frons with punctures larger and denser than on labrum, interstices nearly as large as punctures. Eyes nearly circular in dorsal view, protruding; interocular space nearly three times as wide as diameter of one eye. Periocular groove with metallic reflection, bearing some large punctures. Antennae eight-segmented, cupula (segment 5) asymmetrical. Maxillary palpomere 3 slightly enlarged, palpomere 4 larger than palpomere 3, claviform, symmetrical with truncate apex. Ventral side dark. Mentum concave, deeply impressed anteriorly, minutely granulose; submentum smooth, 1.5 times as long as mentum.

Thorax: Pronotum widening posteriorly; anterior margin strongly curved, center and corners projecting anteriorly; lateral margins crenulate; posterior margin nearly straight. Surface obscure in center and pale near lateral margins, the obscure patch enlarging centrally, fading anteriorly and posteriorly; punctures larger and denser than on head. Prosternum dark, tectiform, with longitudinal keel. Scutellar shield larger than in *L. maculatus*, slightly elongate, dark, with some very small punctures. Lateral margins of elytra denticulate, and indented apically; elytral lateral corners jutting anteriorly; surface with twenty longitudinal striae of punctures, alternately consisting of larger and smaller punctures, and 4–5 protruding ribs; scutellary stria absent; color testaceous with a blackish transverse wavy strip near midlength of elytral disk. Epipleura extending nearly to elytral apex, divided from pseudepipleura by a straight line. Mesoventrite with a complete keel, placed on a jut anteriorly with a leaf-like widening. Metaventrite with a hexagonal jut, anteriorly extended in the shape of a keel joining the mesoventral keel.



Figs. 18–19: Geographical distribution of 18) *Laccobius elevatus*, 19) *L. maculatus* and *L. novaecaledonicus*.



Figs. 20–21: Geographical distribution of 20) *Laccobius serratus* and 21) *L. wewalkai*.

Legs: Profemora with tibial groove, tibiae nearly as long as tarsi; tarsi dilated in male, tarsomere 5 nearly as long as the preceding tarsomeres together; claws strongly hooked. Mesofemora with a tibial groove; tibiae nearly as long as tarsi; tarsi with long setae. Metatibiae straight; tarsi with setae dorsally.

Abdomen: Of the six visible ventrites, the first is strongly pubescent, 2nd and 3rd less pubescent, 4th and 5th nearly glabrous, 6th with dense setae.

Aedeagus: nearly 2/5 of body length, tegmen nearly 3/4 as long as parameres, base of tegmen curling, median lobe shorter than parameres (Figs. 9–11).

DISCUSSION: This species is characterized by some remarkable characters: 1) lateral borders of pronotum crenulate, lateral margins of the elytra serrate or toothed. This feature is also observed in species of Spermopsini and in *Motoneurus* HANSEN (Megasternini), which are not closely related to *Laccobius*; 2) mesoventral keel leaf-like, and the contiguous metaventral keel hexagonal.

DISTRIBUTION (Fig. 20): Southern Grande Terre.

ETYMOLOGY: The epithet of the name refers to the serrate elytral margins.

Laccobius (Yateberosus) wewalkai sp.n.

Laccobius sp.: GENTILI 2005: 322.

TYPE LOCALITY (see JÄCH & BALKE 2010: Fig. 9): New Caledonia, South Province, Dumbéa, 150 m a.s.l. (Loc. 2001/NC 5).

TYPE MATERIAL: **Holotype** ♂ (NMW): “NEW CALED.: South Prov. Dumbea 150 m, 4.11.2001 leg. Balke & Wewalka (NC 5) \ H O L O T Y P U S *Laccobius wewalkai* E. Gentili 2010”.

Paratypes: 1 ♂, 6 ♀ ♀ (MSNV, NMW): same locality data as holotype.

9 ♂♂, 10 ♀♀ (KSEM, MSNV): Mont Dore District, Thalweg to River Dumbéa, 102 m, 22°11'21.3"S, 166°34'39.4"E, 9.IX.2008, leg. A. Gervais “#V1”; 1 ♀ (KSEM): Mont Dore District, Thalweg to River Dumbéa, 22°11'20.4"S, 166°34'19.2"E, 9.IX.2008, leg. A. Gervais “#V2”; 3 ♂♂, 1 ♀ (KSEM, MSNV): Mont Dore District, Thalweg to River Dumbéa, 22°11'19.9"S, 166°34'26.3"E, 9.IX.2008, leg. A. Gervais “#V3”; 1 ♂, 1 ♀ (KSEM): Mont Dore District, 132 m, 22°18'16.3"S, 166°48'13.6"E, 30.VII.2009, leg. A. Gervais “#L1”.

1 ♀ (NMW): Loc. 2009/NC 6; 1 ♂ (NMW): Loc. 2009/NC 25; 1 ♂ (NMW): Loc. 2009/NC 34.

DESCRIPTION: Total length 2.1–2.6 mm (holotype 2.2 mm), total width 1.0–1.3 mm (holotype 1.1 mm). Elytral index: 1.27. Habitus elongate oval.

Head: Coloration of dorsal face dark brown, with two indistinct yellow patches anterior to the lateral branches of the fronto-clypeal suture. Labrum wide, fully visible in dorsal view, anterior margin uniformly curved, with a slight central indentation, minutely shagreened, without punctures. Clypeus shagreened as labrum, posteriorly punctate; fronto-clypeal suture distinct. Frons more coarsely shagreened than clypeus, punctures denser but of the same strength, median suture indistinct. Eyes slightly protruding, nearly circular in dorsal view; interocular space nearly four times as wide as diameter of one eye; periocular groove with metallic reflection, bearing some large punctures. Antennae eight-segmented; cupula (segment 5) asymmetrical. Maxillary palpi with segments 2 and 3 similar to each other, segment 4 claviform and slightly asymmetrical (mesal margin straighter than lateral margin). Coloration of ventral face dark. Mentum rectangular, slightly impressed anteriorly, with a fine and uniform shagreen, impunctate. Submentum shagreened, slightly longer than mentum.

Thorax: Dorsal side of pronotum dark brown on disc, with testaceous yellowish lateral margins posterior to eyes, shagreened and punctate as the frons. Anterior margin of pronotum curved,

center and corners projecting anteriorly; lateral margin evenly curved; posterior margin nearly straight. Ventral side of thorax dark brown to black. Prosternum tectiform, with longitudinal keel. Scutellar shield triangular, nearly equilateral. Elytra testaceous brown with yellowish lateral margins, with 20 longitudinal striae of punctures, alternately consisting of larger and smaller punctures, and ten protruding costae; lateral margins smooth, narrowly explanate at the sides. Elytral epipleura extending nearly to elytral apex; pseudepipleura shorter, divided from epipleura by a straight line, becoming arched only in posterior third. Mesoventrite with a complete keel, protruding in posterior half. Metaventrite covered with hydrofuge pubescence, in center elevated as a hexagonal tablet, bearing anteriorly an indistinct longitudinal keel.

Legs: Profemora setiferous, with tibial grooves; tibiae nearly as long as tarsi; tarsi expanded in male, segment 5 nearly as long as the preceding segments together, claws strongly hooked.

Mesofemora glabrous, with tibial grooves. Metafemora glabrous with tibial grooves; metatibiae straight, nearly twice as long as tarsi.

Abdomen: Of the six visible ventrites, the first three are pubescent, ventrites 4–5 smooth, ventrite 6 punctate.

Aedeagus (Figs. 15–17): nearly 1/3 as long as body length, tegmen scarcely shorter than parameres, which are scarcely longer than median lobe.

DIFFERENTIAL DIAGNOSIS: *Laccobius wewalkai* can be distinguished from the other New Caledonian species by the following characters: 1) aedeagus more slender, median lobe much shorter than parameres, and phallobase nearly as long as parameres; 2) head and pronotum with a fine shagreen and scarce punctures; 3) elytra explanate at the sides (unique among all known *Laccobius*).

DISTRIBUTION (Fig. 21): Southern Grande Terre.

ETYMOLOGY: The new species is dedicated to Dr. Günther Wewalka, specialist of Dytiscidae, who collected many interesting water beetles in various places of the world.

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