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Taxonomic revision of the genus *Caccothryptus* SHARP (Coleoptera: Limnichidae)

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Abstract

The seven known species of the genus *Caccothryptus* SHARP (Coleoptera: Limnichidae: Limnichinae) are revised. Lectotypes are designated for *C. laosensis* (PIC, 1928), *C. maculosus* (PIC, 1923), *C. punctatus* PIC, 1923 and *C. rouyeri* PIC, 1922. Fourteen species are described as new: *C. nepalensis* sp.n. from Nepal, *C. jendeki* sp.n. from India, *C. fujianensis* sp.n. and *C. sinensis* sp.n. from China, *C. auratus* sp.n. from Thailand, *C. malickyi* sp.n. from Vietnam, *C. luzonensis* sp.n., *C. nanus* sp.n., *C. ticaensis* sp.n. and *C. zetteli* sp.n. from the Philippines, *C. schuhi* sp.n. from Java (Indonesia), and *C. jaechi* sp.n., *C. sulawesianus* sp.n. and *C. wooldridgei* sp.n. from Sulawesi (Indonesia). *Caccothryptus laosensis* (PIC, 1928) is synonymised with *C. maculosus* (PIC, 1923). Five species groups are suggested based on external and genital characters: (1) *C. compactus* group, with dimorphic anterior male claws (among other characters); (2) *C. rouyeri* group, with a longitudinal sulcus in the median lobe of the aedeagus; (3) *C. testudo* group, with the median lobe of the aedeagus not longitudinally sulcate; (4) *C. jaechi* group, with a strong denticle in the ventral side of the median lobe of the aedeagus and glandular pores on the 4th and 5th abdominal sternites of males; and (5) *C. zetteli* group, also with glandular pores on the 4th and 5th abdominal sternites of males but without a strong denticle in the ventral side of the median lobe of the aedeagus. The distribution of the species and the species groups is discussed.

Key words: Coleoptera, Limnichidae, Limnichinae, *Caccothryptus*, new species, new synonymy, lectotypes, taxonomy, Oriental Realm.

Introduction

The genus *Caccothryptus* SHARP, as redescribed by HERNANDO & RIBERA (2005), currently includes seven species distributed in the Oriental Region. The genus was erected for *C. compactus* SHARP (1902) from Borneo, with additional species described by CHAMPION (1923) and PIC (1922, 1923, 1928) (under the genus *Macrobyrrhinus*, synonymised by CHAMPION 1923) (see HERNANDO & RIBERA 2005 for a detailed account of the taxonomic history of the genus). HERNANDO & RIBERA (2005) transferred *C. multiseriatus* CHAMPION to the newly erected monotypic genus *Pseudothryptus*, based on differences in external and genital morphology.

In this paper we revise all the type material of the genus, plus unsorted material deposited in the collections of the Naturhistorisches Museum Wien and The Natural History Museum in London. Fourteen species are described as new, and one previously described species is synonymised.

Based on external and genital characters we attempt a division of the genus in species groups, and discuss their distribution.

Acronyms:

BMNH	The Natural History Museum, London
CASS	Chinese Academy of Sciences, Shenyang
CZW	Coll. H. Zettel, Vienna
MNHN	Muséum National d'Histoire Naturelle, Paris
NMW	Naturhistorisches Museum Wien

[hw] Handwritten label



Fig. 1: Habitus of *Caccothryptus maculosus*, East Java.

***Cacothryptus* SHARP, 1902**

Cacothryptus SHARP 1902: 63. Type species: *Cacothryptus compactus* SHARP, by monotypy.

Macrobyrrhinus PIC 1922: 4. Type species: *M. rouyeri* PIC by monotypy. Synonymy in CHAMPION (1923: 222).

REDESCRIPTION: Length 2.5–5.5 mm. Body oval (Fig. 1), elongated; apex of elytra acuminate, depressed in lateral view. Colour brown to black. Body covered with a very dense and regular double pubescence: short recumbent setae (i.e. strongly declined at base and more or less adpressed to the surface), forming a zig-zag design, and long erect setae, but not perpendicular to surface. Colour of pubescence variable depending on angle of illumination.

Head partially inserted in pronotum, which is excavated for its reception. Dorsal margin of eye bordered, in some species forming a small sulcus not reaching posterior edge of eyes, with a small denticle next to insertion of antennae. Frons without sulci. Antennae long and slender, longer than width of pronotum; entirely pubescent; 11-segmented, 1st antennomere small and globular, 2nd to 10th elongated, apex slightly asymmetrical, 11th laterally truncate. Last segment of maxillary palpi truncate.

Pronotum transverse, posterior margin slightly sinuate, lateral and front margins bordered. Surface densely punctured, surface among punctures smooth and shiny. Without excavations for reception of antennae. Scutellum subtriangular, sides slightly arched.

Base of elytra convex, margin of elytra strongly bordered; with traces of irregular striae; surface densely punctured; space between punctures smooth and shiny.

Ventral surface with deep excavations for reception of legs. Thoracic hypomera with a carina separating two surfaces at different levels. Apex of prosternal process (i.e. process of the prothoracic ventrite) blunt and strongly inserted in mesoventrite. Base of epipleura excavated for reception of mesofemora, narrowing from first abdominal segment to apex. Mesoventrite slightly convex, with a longitudinal sulcus weakly impressed medially, surface covered by sparse puncturation. First three abdominal sternites connate, with sparse puncturation, slightly denser on margins. Last abdominal sternite not emarginate (Figs. 2–3). Legs long and slender, posterior margin of femora excavated for reception of tibiae.

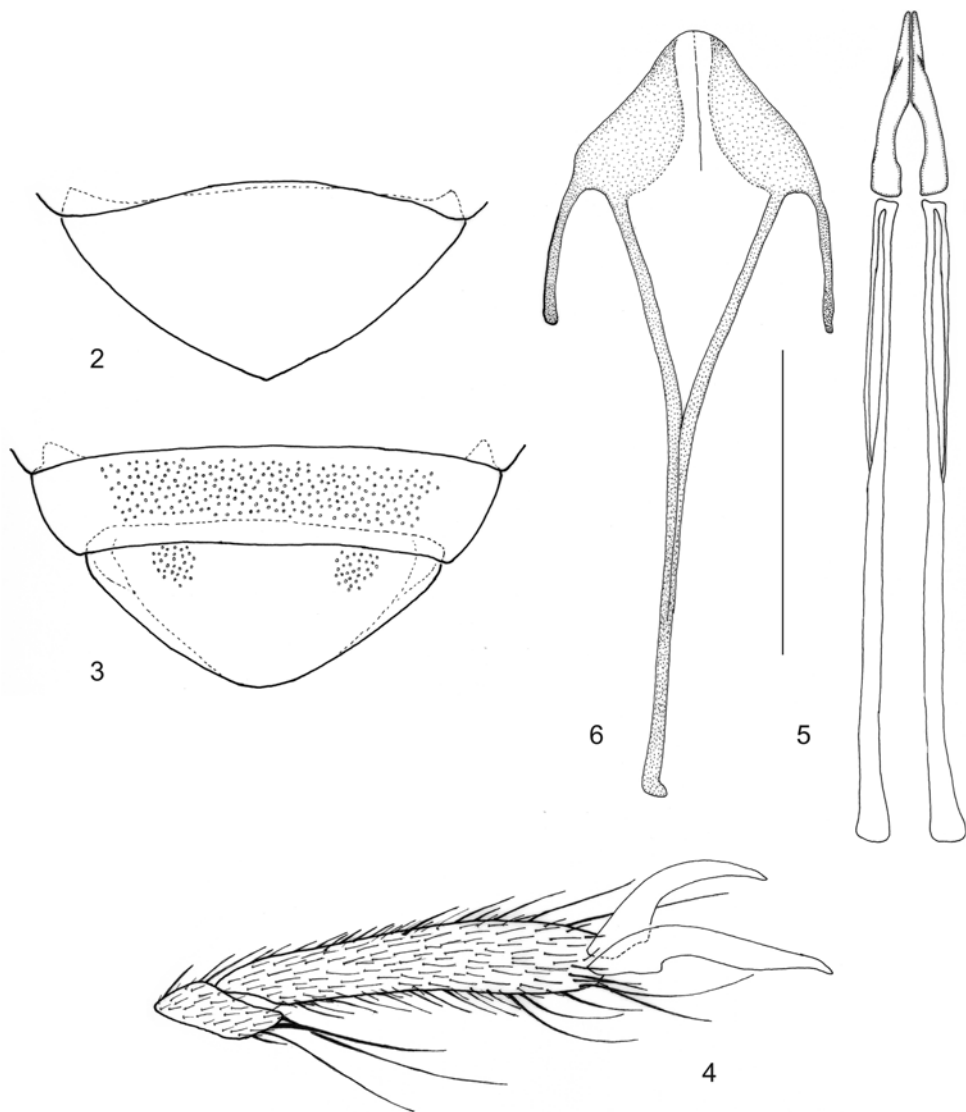
Sexual Dimorphism: Males in some species with asymmetric protarsal claws (Fig. 4). Medial part of 4th sternite of all, and lateral part of 5th sternite of some species, covered by glandular pores (only visible in compound microscope) (Fig. 3). Last abdominal sternite rounded (Fig. 3).

Aedeagus not articulated, strongly sclerotised, elongate, cylindrical. Parameres ventral to median lobe, forming a lamina with an apical emargination (Figs. 7–46). Median lobe as long as or longer than parameres, with a medial longitudinal sulcus of variable length. Base of aedeagus asymmetrical, ductus in a lateral position; struts long, slightly dilated at apex, fused at base. Tegmen fused with base of parameres. Genital segment (9th sternite) with base reduced, shorter than parameres; lamina well sclerotised, with defined edges. Eighth sternite U-shaped, regularly curved.

Females with last abdominal sternite slightly acuminate (Fig. 2). Ovipositor long; gonocoxites with strongly acuminate apex, some species with a small dorso-basal denticle (Fig. 5). Spiculum ventrale as long as ovipositor; manubrium (i.e. 8th sternite) long, distal plaque membranous, anterior margin with series of small setae, with two lateral expansions (Fig. 6).

ECOLOGY: Species of *Cacothryptus* are generally found in water-logged accumulations of dead wood in small forest streams, sometimes at a certain distance from the main water course. They use to fly readily (M.A. Jäch, personal communication, 2002). Numerous specimens have been collected at light.

DISTRIBUTION: The genus is widely distributed in the Oriental Region.



Figs. 2–6: Morphological characteristics of *Caccothryptus*, 2) *C. maculosus*, last abdominal sternite, female; 3) *C. luzonensis*, glandular pores on the 4th and 5th abdominal sternites; 4) *C. maculosus*, dimorphic claws of the protarsi, male; 5) *C. maculosus*, gonocoxites and gonocoxal struts; 6) *C. maculosus*, spiculum ventrale.

DIFERENTIAL DIAGNOSIS: The genus belongs to the subfamily Limnichinae as defined by BRITTON (1971) and WOOLDRIDGE (1975), as it has a transverse metacoxa, tarsi with five segments, lacks an oblique sulcus in the hypomera, and has an excavated ventral surface for the reception of legs. *Caccothryptus* was included in the “*Mandersia* group of genera” by HERNANDO & RIBERA (2005), which is formed by *Euthryptus* SHARP (Neotropical, two described species), *Resachus* DELÈVE (Afrotropical, three described species), *Simplocarina* PIC

(Afrotropical, one described species), *Mandersia* SHARP (Oriental, one described species) and *Pseudothryptus*. This group is probably closely related to two Afrotropical genera, *Tricholimnichus* HERNANDO & RIBERA and *Cyclolimnichus* DELÈVE, from which they can be separated by the lack of a carina between the two levels of the hypomera (present in the *Mandersia* group) and the presence of striae in the posterior part of the pronotum.

They share a non-articulated aedeagus, with laterally or ventrally fused parameres; genital segment symmetrical; median lobe without “spiculum” (= articulated internal piece, present in *Byrrhinus* MOTSCHULSKY); base of pronotum without a double sinuation (also present in *Byrrhinus*); internal posterior margin of pronotum not crenulate; prothoracic hypomera divided by a sulcus or a carina; and last segment of the maxillary palpi with apex round or laterally truncate, never acuminate.

SPECIES GROUPS: Based on the external and male genital morphology five informal species groups can be defined within the genus.

(1) *Caccothryptus compactus* group (Figs. 2, 4–14, 47)

C. compactus, *C. maculosus*, *C. schuhi* sp.n., *C. sulawesianus* sp.n.

Species with anterior claws of males dissimilar (with the internal claw longer and sinuate), abdominal glandular pores present on 4th sternite only, aedeagus with median lobe not denticulate ventrally, without lateral expansions, median lobe divided medially by a longitudinal sulcus of equal length in the dorsal and ventral side, parameres not fused (Table 1).

(2) *Caccothryptus rouyeri* group (Figs. 39, 43, 47)

C. rouyeri.

Species with anterior claws of males of similar shape, abdominal glandular pores present on 4th sternite only, aedeagus with median lobe not denticulate ventrally, very short and broad, with dorsal lateral expansions, median lobe only partially divided medially by a longitudinal sulcus longer dorsally than ventrally, parameres partially fused in an emarginate lamina (Table 1).

(3) *Caccothryptus testudo* group (Figs. 15–30, 47)

C. auratus sp.n., *C. fujianensis* sp.n., *C. jendeki* sp.n., *C. malickyi* sp.n., *C. nepalensis* sp.n., *C. punctatus*, *C. ripicola*, *C. sinensis* sp.n., *C. testudo*.

This group includes species with anterior claws of males of similar shape, abdominal glandular pores present on 4th sternite only, aedeagus with median lobe not denticulate ventrally, long and narrow, without lateral expansions, median lobe only partially divided medially by a longitudinal sulcus longer dorsally than ventrally, parameres not fused and strongly emarginate (Table 1).

(4) *Caccothryptus jaechi* group (Figs. 31–38, 47)

C. jaechi sp.n., *C. nanus* sp.n., *C. ticaoensis* sp.n., *C. wooldridgei* sp.n.

This group includes species with anterior claws of males of similar shape, abdominal glandular pores present on 4th and 5th sternites, aedeagus with median lobe strongly denticulate ventrally, without lateral expansions, median lobe only partially divided medially by a longitudinal sulcus longer dorsally than ventrally, parameres either not fused and strongly emarginate (species of Sulawesi) or partially fused in an emarginate lamina (species from Philippines).

(5) *Caccothryptus zetteli* group (Figs. 3, 40–42, 44–46, 47)

C. luzonensis sp.n., *C. zetteli* sp.n.

This groups includes species with anterior claws of males of similar shape, abdominal glandular pores present on 4th and 5th sternites, aedeagus with median lobe not denticulate ventrally,

without lateral expansions, median lobe only partially divided medially by a longitudinal sulcus longer dorsally than ventrally, parameres either not fused and strongly emarginate or partially fused in an emarginate lamina (Table 1).

Table 1: Species group characteristics.

Species groups	Anterior claws of males	Pores on male sternites	Denticle in ventral part of median lobe	Lateral expansions of median lobe	Longitudinal sulcus in median lobe	Parameres
<i>compactus</i>	dissimilar	4 th	absent	absent	full	separated
<i>rouyeri</i>	similar	4 th	absent	present	half	fused
<i>testudo</i>	similar	4 th	absent	absent	absent	separated
<i>jaechi</i>	similar	4 th , 5 th	present	absent	half	both
<i>zetteli</i>	similar	4 th , 5 th	absent	absent	half	both

Checklist and distribution of the species of *Cacothryptus*

<i>auratus</i> sp.n.	Thailand
<i>compactus</i> SHARP	Indonesia (Borneo and Sumatra), Thailand
<i>fujianensis</i> sp.n.	China (Fujian)
<i>jaechi</i> sp.n.	Indonesia (Sulawesi)
<i>jendeki</i> sp.n.	India (Meghalaya)
<i>maculosus</i> (PIC)	Cambodia, China (Hainan), India (Andaman Islands), Indonesia (Bali, Java, Nias), Laos, Myanmar, Thailand, Vietnam
= <i>laosensis</i> (PIC) (syn.n.)	
<i>malickyi</i> sp.n.	Vietnam
<i>luzonensis</i> sp.n.	Philippines (Luzon, doubtful from Marinduque and Mindoro)
<i>nanus</i> sp.n.	Philippines (Luzon)
<i>nepalensis</i> sp.n.	Nepal
<i>punctatus</i> (PIC)	Vietnam
<i>ripicola</i> CHAMPION	India (Meghalaya, Uttarakhand), Nepal
<i>rouyeri</i> (PIC)	Indonesia (Sumatra)
<i>schuhi</i> sp.n.	Indonesia (Java)
<i>sinensis</i> sp.n.	China (Fujian)
<i>sulawesianus</i> sp.n.	Indonesia (Sulawesi)
<i>testudo</i> CHAMPION	India (Uttarakhand), Nepal
<i>ticaoensis</i> sp.n.	Philippines (Ticao)
<i>wooldridgei</i> sp.n.	Indonesia (Sulawesi)
<i>zetteli</i> sp.n.	Philippines (Luzon)

(1) *Cacothryptus compactus* group***Cacothryptus compactus* SHARP***Cacothryptus compactus* SHARP 1902: 63*Cacothryptus compactus*: WOOLDRIDGE 1990: 90 (lectotype designation)

TYPE LOCALITY: Martapura, Kalimantan, Borneo, Indonesia.

TYPE MATERIAL: **Lectotype** ♂ (BMNH), examined: “*Cacothryptus compactus* / Type. D.S. / Borneo [hw, on the label with the specimen]; BMNH “Type” label, “Martapura / S. E. Borneo. / Doherty 1891”; “Sharp Coll. / 1905-313”; “LECTOTYPE / *Cacothryptus compactus* / Sharp 1902 / By D. Wooldridge 82” [hw]. Aedeagus mounted on a separate label on the same pin. **Paralectotype** ♀ (BMNH): same data as lectotype.

ADDITIONAL MATERIAL EXAMINED:

INDONESIA: 1 ex. (NMW): “N-SUMATRA, 1990 (20) / Bukit Lawang / leg. Jäch, 26.–27.2”; 1 ex. (NMW): “SUMATRA ACEH / Ketambe / 7.-17.X.”; “INDONESIA 1991 / leg. Barries”.

THAILAND: 12 exs. (NMW): “S-THAIL., 10.5.1993 / 13km W Hat Yai, 50m / 6°59'N 100°22'E / Ban Ko Muang-Malicky”; 3 exs. (NMW): “Thailand: Khuraburi distr. / Baan Tumnang, W of Si / Phang Nga NP, 29.11. / 2006, leg. H. Zettel (48)”; 2 exs. (NMW): “THAILAND 2003 / PROV.SURATTHANI / KHAO SOK N.P. 15.1. / leg.: Horst FORSTER”.

DIAGNOSIS: Total length 4.6–5.0 mm. Body black, covered in golden, double pubescence. Legs and antennae dark brown. Without supra-ocular sulcus. Dorsal margin of eyes finely bordered, with a small denticle close to insertion of antennae. Surface of head and pronotum with strong, irregular and dense puncturation; lateral margins of pronotum finely bordered. Elytra with strong, very irregular puncturation, space between punctures smaller than their diameter; elytra with golden pubescence, with poorly defined silvery bands. Glandular pores on 4th abdominal sternite only.

Aedeagus (Figs. 7, 11): Long and robust, cylindrical, regularly curved in lateral view. Apex of median lobe and parameres truncate in lateral view, apex of parameres round in ventral view. Parameres broad, base with an internal denticle.

DISTRIBUTION (Fig. 47): Indonesia (Borneo and Sumatra) and S Thailand.

The specimen from Laos (Luang Prabang) mentioned by CHAMPION (1923: 223) (and included also in PÜTZ 1998) is actually *C. maculosus*.

Cacothryptus maculosus* (PIC)Macrobyrrhinus maculosus* PIC 1923: 3*Macrobyrrhinus laosensis* PIC 1928: 2 (syn.n.)

TYPE LOCALITY: Lac Cobó (?), Vietnam.

TYPE MATERIAL:

Macrobyrrhinus maculosus: **Lectotype** ♂ (MNHN), by present designation, examined: “Lac Cobó? [illegible]”; “Tonkin” [hw]; “Type” [hw]; “TYPE”; “Muséum Paris / Coll. M. Pic”; “*Macrobyrrhinus maculosus* [hw]”; “LECTOTYPE n°1 ♂ / *Cacothryptus maculosus* (Pic) / des. Hernando & Ribera”. **Paralectotype** ♂ (MNHN): glued on the same card as lectotype, with same data and paralectotype label.

Macrobyrrhinus laosensis: **Lectotype** ♀ (MNHN), by present designation, examined: “399” [hw]; “CAMBODGE / Sambua [hw] / iv-1902 / R. Vitalis de Salvaza”; “TYPE”; “Muséum Paris / Coll. M. Pic”; “*Macrobyrrhinus laosensis*” [hw]; “LECTOTYPE ♀ / *Cacothryptus laosensis* (Pic) / des. Hernando & Ribera”.

The only specimen of *Macrobyrrhinus laosensis* in the Pic collection in the MNHN, clearly identified as a type, is in a very bad state, but its external morphology is identical with that of *C. maculosus*. We could not identify the locality mentioned in the label (“Sambua”), although (and despite the species epithet given by Pic) it seems to be in Cambodia. It is, however, remarkable that another specimen collected by R.V. Salvaza 15 years later, this time from Laos, was found in the collections of the BMNH (see below).

ADDITIONAL MATERIAL EXAMINED:

- CHINA: 1 ♂ (NMW): "CHINA: Hainan (188) / 7km W Qiongzong / Baihua Ling, 300m / 16.1.1996, leg. Jäch"; 1 ♀ (NMW): "CHINA: Hainan (202) / E Jiangfeng / 60m, 21.1.1996 / leg. Jäch"; 1 ex. (NMW): "CHINA: Hainan (215) / 15km SW Dongxing / 1,5km W Jianfeng, 70m / 25.1.1996, leg. Jäch".
- INDIA: 1 ♂ (NMW): "S-ANDAMAN, 20-12-1976 / Mongelutonge / leg. Starmühlner ??18". 2 exs. (NMW): "S-Andaman 1976 / NW Port Blair / Starmühlner 19-12".
- INDONESIA: 1 ♂ (NMW): "E-JAVA: 4.10.1995 / ca. 60km SW Banyuwangi / Meru Betiri NP / leg. Schillhammer (11)", 1 ♀ (NMW): "E-JAVA: 8.10.1995 / 50km SE Probolinggo / Gg. Argapuro, 1000m / leg. Schillhammer (13)"; 1 ♂, 1 ♀ (NMW): "BALI, 1.2.1988 / Baturiti / leg. Jäch (10)"; 1 ex. (NMW): "INDONESIEN 1992 / BALI (3), Ubud- / Tegalalang / leg. Jäch 11./12.IV."; 4 exs. (NMW): "S-NIAS, 1990 (6) / Lahusa/Gomo, 0–300m / leg. Jäch, 9.–11.2".
- LAOS: 1 ♂ (BMNH): "Luang Prabang / Hat Tiang / 14-vii-1917 / R.V. de Salvaza".
- MYANMAR: 1 ex. (NMW): "MYANMAR: Sagaing Div. / Alaungdaw Katthapa NP / 8.5.2003 / leg. D. Boukal (MBS 115)", "along Wakya Stream / ca. 400 m / 22°19.173'N / 94°29.654'E".
- THAILAND: 4 exs. (NMW): "NW-THAI: Ban Mae Kap / Nam Mae To, 600m, LF [= light trap] / 98°37'E 18°51'N / 14.3.1992 leg. Malicky"; 1 ex. (NMW): "THAIL. Juli 1990 / 150 km NW Bangkok / 90m, leg. Thielen / 10 km W Han-Kha / Lichtfang [= Wiener light trap]"; 1 ex. (NMW): "THAILAND / 5.-10.9.1991 / Mae Ping. Licht [= light trap] / leg. Malicky"; 2 exs. (NMW): "THAILAND: 17./18.11.1995 / Phrae Prov., Huai Kaet / 50km NE Phrae / leg. Zettel (17b)"; 2 exs. (NMW): "THAILAND II.1989 / 240km NW Bangkok / 25km NW Lan Sak, 110m / Lichtfalle [= light trap] leg. Thielen".
- VIETNAM: 58 exs. (NMW): "S-VIETNAM / 40km NW An Khe / Buon Luoi, 620-750m"; "14°10'N-108°30'E / 28.3.-12.4.1995 / Pacholatko & Dembicky"; 3 exs. (NMW): "S-VIETNAM / Nam Cat Tien Nat.Park / 1.–15. 5. 1994 / Pacholatko & Dembicky".

DIAGNOSIS: Habitus as in Fig. 1. Length 4.5–5.4 mm. Body colour black or dark brown, covered in golden pubescence, with loosely defined reddish bands; legs and antennae dark brown. Without supra-ocular sulcus. Dorsal margin of eyes finely bordered, with a small denticle close to insertion of antennae. Head surface with fine and dense puncturation. Pronotum sides finely bordered, surface fine and less dense than head. Puncturation of elytra dense and coarse, with irregular rows; space between punctures smaller than their diameter. Glandular pores on 4th abdominal sternite only.

Aedeagus (Figs. 8, 12): Similar to that of *C. compactus*, but without denticle in internal side of parameres. Apex of parameres in lateral view clearly truncate, ventral emargination broad and regularly rounded.

DISTRIBUTION (Fig. 47): Cambodia, China (Hainan Is.), India (Andaman Islands), Indonesia (Bali, Java, Nias), Laos, Myanmar, Thailand, Vietnam.

REMARKS: This species is very similar externally to *C. compactus*, from which it can be distinguished by the more transverse pronotum, the less dense and finer puncturation of the head, the less coarse elytral punctures, and the morphology of the aedeagus.

Cacothryptus schuhi sp.n.

TYPE LOCALITY: Cibodas Botanical Garden, Gede-Pangrango Nat. Park, W Java, Indonesia.

TYPE MATERIAL: **Holotype** ♂ (NMW): "INDONESIA: W Java / Gede-Pangrango Nat.P. / Cibodas Bot. Garden / 1400m / lg.Schuh 23.8.1994" (aedeagus glued on transparent card). **Paratypes**: 2 ♀ ♀ (NMW): same data as holotype.

DIAGNOSIS: Length 5.1–5.2 mm. Body elongated, castaneous, legs and antennae brown: elytral apex acuminate. Head surface with fine and dense puncturation; sides of pronotum finely bordered, very transverse; surface with very fine and dense puncturation, elytra very depressed in lateral view, humeral callus almost imperceptible, elytral pubescence simple, castaneous with golden patches; puncturation very fine, scarce, elytra with very regular rows of punctures. Glandular pores on 4th abdominal sternite only.

Aedeagus (Figs. 10, 14): Only slightly curved in lateral view, apex of median lobe recurved, pointed, parameres very narrow, apex slightly dilated, straight in lateral view, with truncate apex.

DISTRIBUTION (Fig. 47): So far known only from Java, Indonesia.

ETYMOLOGY: Named after the collector of the type series.

REMARKS: A very characteristic species, with an external and genital morphology very different from the other species of the group.

Cacothryptus sulawesianus sp.n.

TYPE LOCALITY: Eremerasa, Sulawesi, Indonesia.

TYPE MATERIAL: **Holotype** ♂ (NMW): “S-SULAWESI 1992 / Eremerasa (37) / N Bantaeng / leg. Schödl 2.V.”. **Paratypes**: 5 exs. (NMW): same data as holotype; 1 ex. (NMW): same data as holotype, but “leg. Jäch 2.V.”; 3 exs. (NMW): “S-SULAWESI 1992 / Malino-Manipi / 700m (31) / leg. Jäch 1.V.”; 2 exs. (NMW): same data, but “leg. Schödl 1.V.”; 1 ♂ (NMW): “S-SULAWESI 1992 / Malino, Takapala / Wasserfall [= waterfall] (29) / leg. Jäch 30.IV.” (aedeagus glued on transparent card); 2 exs. (NMW): “S-SULAWESI 1992 / N Bulukumba / (35) / leg. Jäch 2.V.”.

DIAGNOSIS: Length 4.0–4.5 mm. Externally very similar to *C. compactus* and *C. maculosus*. Pronotum more transverse, elytral puncturation fine, almost imperceptible at apex. Spaces between punctures similar or larger than their diameter. Glandular pores on 4th abdominal sternite only.

Aedeagus (Figs. 9–13): Broad and robust in lateral view, median lobe short, with distal half narrower. Parameres only slightly curved, apex acuminate.

DISTRIBUTION (Fig. 47): So far only known from Sulawesi, Indonesia.

ETYMOLOGY: Named after the known distribution of the species.

REMARKS: *Cacothryptus sulawesianus*, *C. compactus* and *C. maculosus* form a well-defined species complex, with a very similar external morphology (although with clear differences in the morphology of the aedeagus).

Additional material of the *Cacothryptus compactus* group

We have studied several single females externally similar to *C. compactus*, although with some morphological differences. They most likely represent four different new species, although, because of the lack of males it is not possible to ascertain their taxonomic identity.

Species 1: 1 ♀ (NMW): China, Yunnan, 100 km W of Baoshan, Gaoligongshan nat. res.14.–21.VI.1993, E. Jendek & O. Šauša leg.

Species 2: 2 ♀♀ (NMW): NW Thailand, Doi Inthanon, 1200 m, Bang Khun Klang 98°32'E, 18°32'N, 1989, H. Malicky & P. Chantaramongkol leg.

Species 3: 1 ♀ (BMNH): N Myammar, Nam Tamai, 4000 ft., 1.II.1931, F. Kingdon Ward leg.

Species 4: 1 ♀ (NMW): Bhutan, Wangdi Phodrang Province, 48 km SSE Wangdi Phodrang, Neychey Chhu, ca. 550 m, 27°08'26"N 90°04'14"E “(23)”, 25.XI.2005, M.A. Jäch leg.

(2) *Caccothryptus rouyeri* group***Caccothryptus rouyeri* (Pic)***Macrobyrrhinus Rouyeri* Pic 1922: 4*Caccothryptus rouyeri* (Pic), DELÈVE 1971: 372

TYPE LOCALITY: Sumatra, Indonesia (Pic 1922).

TYPE MATERIAL: **Lectotype** ♂, by present designation (MHNP): “♂”; red “TYPE” label; illegible locality label; second illegible label; “Museum Paris / Coll. M. Pic”; “*Macrobyrrhinus Rouyeri* gn.n.” [hw]; “J. Delève det.; 1971 / *Caccothryptus rouyeri* (Pic)” [hw.]; aedeagus glued on transparent card; lectotype label.

ADDITIONAL MATERIAL EXAMINED:

INDONESIA: 1 ♂, 1 ♀ (NMW): “N-SUMATRA: 17.2. / Huta Padang, 400m / ca. 99°14'E 2°49'N / leg. Malicky 1994”.

DIAGNOSIS: Length 4.6–4.8 mm. Body elongate, black, legs and antennae dark brown, covered in golden pubescence. Dorsal border of eyes very weak, without denticle. Punctuation of head very dense and fine. Sides of pronotum finely bordered, surface with denser and coarser punctuation than on head. Punctuation of elytra fine and dense, forming very irregular rows. Glandular pores on 4th abdominal sternite only.

Aedeagus (Figs. 39, 43): basal half of the median lobe straight in lateral view, apical third forming an open angle; very short and broad median lobe, strongly acuminate in lateral view. Apex of the parameres short and explanate.

DISTRIBUTION (Fig. 47): Known only from Sumatra, Indonesia.

REMARKS: Species with a very characteristic morphology of the aedeagus.

(3) *Caccothryptus testudo* group***Caccothryptus auratus* sp.n.**

TYPE LOCALITY: Bang Khun Klang, Doi Inthanon, NW Thailand.

TYPE MATERIAL: **Holotype** ♂ (NMW): “NW-THAILAND / Doi Inthanon, 1200m / Bang Khun Klang / 98°32'E 18°32'N”; “1989 / Malicky & / Chantaramongkol”; aedeagus glued on transparent card.

DIAGNOSIS: Length 3.7 mm. Body dark brown, covered in golden double pubescence. Lateral margins of pronotum and elytra reddish, legs and two first antennomeres yellowish, 3rd to 11th antennomeres brown. Eyes not prominent, with a strong border and a small denticle near insertion of antennae. Surface of head with fine and sparse punctuation. Pronotum with coarse and sparse punctuation, spaces between punctures twice their diameter; sides finely bordered. Elytra with coarse and dense punctuation, with poorly defined irregular rows of punctures. Glandular pores on 4th abdominal sternite only.

Aedeagus (Figs. 16, 20): Similar to that of *C. ripicola*, with apex of median lobe bend backwards.

DISTRIBUTION (Fig. 47): So far only known from the type locality.

ETYMOLOGY: Named in reference to the golden appearance of the insect, due to the pubescence.

REMARKS: The species is close to *C. ripicola*, from which it can be differentiated by the coarser punctuation of the elytra, with more defined irregular rows of punctures. The aedeagus of *C. ripicola* is less bent backwards, with a longer and rounder apex.

***Cacothryptus fujianensis* sp.n.**

TYPE LOCALITY: Ziyungdong Shan, Yong'an, Xiyang, Fujian, China.

TYPE MATERIAL: **Holotype** ♂ (CASS): "CHINA: FUJIAN, Yong'an / 5 km SW Xiyang, 550m / Ziyungdong Shan, 25.1.1997 / leg. Ji & Wang (CWBS 256)".

DIAGNOSIS: Length 4.2 mm. Body oval, reddish-testaceous, including appendices; strongly convex. Both types of pubescence less dense. Eyes with a strong margin, with a short, robust denticle close to insertion of antennae. Punctuation of head coarse, sparse, spaces between punctures larger than their diameter; punctuation on pronotum as coarse as on head, but sparser; lateral margins slightly arched, strongly bordered. Elytral punctures deep and coarse, very dense, occasionally contiguous, forming irregular rows. Glandular pores on 4th abdominal sternite only.

Aedeagus (Figs. 26, 30). Similar to that of *C. malickyi*, with lower edge of median lobe in lateral view slightly curved, apex of parameres in ventral view broad, external margin regularly curved; internal edge of emargination of parameres with short, broad denticles; median lobe wide, with broad lateral expansions.

DISTRIBUTION (Fig. 47): So far only known from the type locality.

ETYMOLOGY: Named after the type locality.

REMARKS: Species apparently close to *C. malickyi*, from which it can be separated by the colour of the body and appendages, the general shape (more convex, apex of the elytra less acute), the much stronger eye margin, the less transverse pronotum, the punctuation of the pronotum and elytra, and the aedeagus.

***Cacothryptus jendeki* sp.n.**

TYPE LOCALITY: Nokrek Nat. Park, West Garo hills, Meghalaya, India.

TYPE MATERIAL: **Holotype** ♂ (NMW): "NE India Meghalaya state / West Garo hills, / NOKREK Nat. Park / 9-17.V.1996", "alt 1100±150m / GPS N25°29.6' / E90°19.5' (WGS 84) / E. Jendek & O. Šouša [Šauša] leg.". **Paratype** ♀ (NMW): same data as holotype.

DIAGNOSIS: Length 5.0–5.3 mm. Body black, oval. Legs and antennae brown. Eye margin weak, with a small denticle near insertion of antennae; without supra-ocular sulcus. Eyes not prominent. Punctuation on head coarse, dense; denser and coarser anteriorly; space between punctures narrower than their diameter. Pronotum slightly narrower than base of elytra, lateral margins regularly curved, finely bordered; punctuation less coarse and dense than on head, spaces between punctures as wide as diameter. Elytral pubescence castaneous, with golden bands. Elytra with irregular and weakly impressed rows of fine punctures. Glandular pores on 4th abdominal sternite only.

Aedeagus (Figs. 18, 22): Slightly curved in lateral view, apex of median lobe very wide in lateral view, with a strong angle in ventral side; apex truncate in dorsal view. Apex of parameres strongly acuminate.

DISTRIBUTION (Fig. 47): So far only known from the type locality.

ETYMOLOGY: Named after the collector of the type specimens.

REMARKS: Species apparently close to *C. fujianensis* and *C. malickyi*.

***Cacothryptus malickyi* sp.n.**

TYPE LOCALITY: Tam Dao, North Vietnam.

TYPE MATERIAL: **Holotype** ♂ (NMW): “N-VIETNAM: Tam Dao / 21°28'N 105°38'E / 19.5.-13.6., 800-1000m / leg. Malicky, 1995”; aedeagus glued on transparent card.

DIAGNOSIS: Length 4.3 mm. Body black, oval. Legs and antennae brown. Eye margin weak, with a small denticle near insertion of antennae; without supra-ocular sulcus. Eyes flat, not protruding. Punctuation on head coarse, space between punctures approximately as large as their diameter. Pronotum slightly narrower than base of elytra, lateral margins regularly curved, strongly bordered; punctuation less coarse than on head, spaces between punctures approximately twice their diameter. Elytral pubescence castaneous, with golden bands. Elytra with irregular rows of fine but well impressed punctures. Glandular pores on 4th abdominal sternite only.

Aedeagus (Figs. 25, 29): Slightly curved in lateral view, apex of median lobe truncate, with a straight lower margin; apex recurved in dorsal view. Apex of parameres strongly acuminate, inner edge with small angulose expansions; tips broadly acuminate.

DISTRIBUTION (Fig. 47): So far only known from the type locality.

ETYMOLOGY: Named after the collector of the type specimen.

REMARKS: Species apparently close to *C. fujianensis*.

Cacothryptus nepalensis sp.n.

TYPE LOCALITY: Mure, Arun valley, eastern Nepal.

TYPE MATERIAL: **Holotype** ♂ (NMW): “E-NEPAL, Arun Valley / Mure 2050m / 8.6.1992 / leg. Probst”; aedeagus glued on transparent card.

ADDITIONAL MATERIAL EXAMINED:

NEPAL: 1 ♀ (NMW): “Nepal „4”: Langtan Area / O Dhunche; small brook; N big / road bridge 28°06'N 85°18'E / 13.11.2003, leg. FREITAG (24)”.

DIAGNOSIS: Length 4.6 mm. Body black, elongate; legs and antennae dark brown. Head with coarse, sparse punctures; spaces between punctures similar to their diameter. Without supra-ocular sulcus; eye margin weak, with a small denticle near insertion of antennae. Punctuation on pronotum fine, sparse; sides finely bordered. Elytra with irregular rows of fine punctures. Glandular pores on 4th abdominal sternite only.

Aedeagus (Figs. 24, 28): Median lobe in lateral view with small broad denticles in ventral margin. Apex of parameres in lateral view strongly sinuate, hook-shaped. Median lobe lanceolate in ventral view, with lateral expansions. Apex of parameres acuminate, with a very broad emargination.

DISTRIBUTION (Fig. 47): So far known with certainty only from the type locality.

ETYMOLOGY: Named after the type locality.

REMARKS: Species very close to *C. testudo*, with a weaker punctuation, a less transverse pronotum, and a slightly shorter erect pubescence. The aedeagus is however clearly distinct.

Cacothryptus punctatus (PIC)

Macrobryrrhinus punctatus PIC 1923: 3

TYPE LOCALITY: Vietnam.

TYPE MATERIAL: **Lectotype** ♀ n° 1 (MNHN), by present designation, examined: illegible label; “Type” [hw]; “TYPE” red label; “Muséum Paris / Coll. M. Pic”; “M. punctatus n.sp.” [hw] [the specimen lacks the head];

“Lectotype / *Caccothryptus punctatus* (Pic) / Hernando & Ribera des.”. **Paralectotype** ♀ n° 2 (MNHN): glued on the same card as lectotype, with same data and paralectotype label.

DIAGNOSIS: Length 3.8 mm. Body black, covered by double silvery pubescence, with poorly defined reddish bands. Legs and antennae reddish. Surface of head with coarse, dense puncturation, with a chagrinat appearance. Pronotum very transverse, sides finely bordered, with coarse but less dense puncturation than on head. Elytra with irregular rows of coarse punctures, stronger on the sides, with erect sparse long pubescence. Glandular pores on 4th abdominal sternite only.

Male unknown.

DISTRIBUTION (Fig. 47): So far only known from Vietnam. In Pic (1923) the specimens are said to be from “Tonkin”, but this could refer both to the Gulf of Tonkin area, in the north of Vietnam, or to the whole of Vietnam, commonly known as “Tonkin” in that time.

REMARKS: By the external morphology this species seems close to *C. ripicola* and *C. auratus*, from which it can be differentiated by the coarse, well-defined rows of punctures in the elytra. The pubescence of *C. punctatus* is also less dense, and golden in colour in *C. auratus*. Body shape less convex than in *C. ripicola*.

Caccothryptus ripicola CHAMPION

Caccothryptus ripicola CHAMPION 1923: 223

TYPE LOCALITY: Khaula, Almora, Uttarakhand, India.

TYPE MATERIAL: **Lectotype** ♂ (BMNH), examined: Blue round lectotype label; blue round syntype label; red round type label; “Khaula / 4500 ft. Almora / India H. G. C.”; “Brit. Mus. / 1923-24.”; “*Caccothryptus* / *ripicola* / Champ.”; “*Caccothryptus* [hw] / *ripicola*, H. G. C. [hw] / Type [hw]”; “E. M. M. 1923. / Det. G. C. C.”; “LECTOTYPE / *Caccothryptus* / *ripicola* / Champion / by D. P. Wooldridge”. **Paralectotypes:** 1 ♀ (BMNH): same data as lectotype, with paralectotype label; 1 ♀ (BMNH): “Haldwani Div., / Kumaon, / India. H.G.C.”; “*Caccothryptus* [hw] / *ripicola* [hw]”; “*Caccothryptus* / *ripicola* / Champ.”; “E. M. M. 1923. / det. G. C. C.”; “Brit. Mus. / 1923-24.”; with paralectotype label.

ADDITIONAL MATERIAL EXAMINED:

INDIA: UTTARAKHAND: 7 exs. (BMNH): “Halwani Dist., / Kumaon / India. / H. G. C.”; **MEGHALAYA:** 7 exs. (NMW): “NE India Meghalaya state / West Garo hills, / NOKREK Nat. Park / 9-17.V.1996”, “alt 1100±150m / GPS N 25°29.6' / E 90°19.5' (WGS 84) / E. Jendek & O. Šouša [Šauša] leg.”.

NEPAL: 1 ♂ (BMNH): “NEPAL / Kaski District / Suikhet Khola @ Phedi / 28°17'N 83°52' / 26 Apr 2000 / coll. G. W. Courtney”; 1 ♀ (BMNH): “Nepal / Kaski District / Yandi Khola / above Ghatte / 28°17'N 83° 51'E / 26 Apr 2000 / G. W. Courtney”.

DIAGNOSIS: Length 4.0–4.2 mm. Body colour black, with yellowish appendages, covered in double silvery pubescence, with poorly defined reddish bands. Eyes not prominent, finely bordered, with a small denticle near the insertion of antenna. Surface of head with fine and dense puncturation, with a chagrinat appearance. Sides of pronotum finely bordered, surface with coarse puncturation, spaces between punctures similar to their diameter. Elytra with fine and dense puncturation, without irregular rows. Glandular pores on 4th abdominal sternite only.

Aedeagus (Figs. 15, 19): Slightly curved in lateral view, apex of median lobe truncate and bend backwards, spatuliform. Parameres regularly narrowing towards blunt apex, with a deep emargination in lateral view.

DISTRIBUTION (Fig. 47): India (Meghalaya, Uttarakhand) and Nepal.

REMARKS: The species is characteristic because of the lack of irregular rows of punctures on the elytra.

***Cacothryptus sinensis* sp.n.**

TYPE LOCALITY: Fuzhou, Fujian, China.

TYPE MATERIAL: **Holotype** ♂ (BMNH): "CHINA / Foochow [= Fuzhou] / 10-14 vii 1936 / M. S. Yang / Pres. by / Comm. Inst. Ent. / B.M. 1981-315". **Paratype** ♀ (BMNH): same data as holotype.

DIAGNOSIS: Length 3.8–3.9 mm. Body black, covered in golden pubescence, with poorly defined silvery bands; legs and antennae dark brown. Eyes not prominent, with strong dorsal border. Pronotum transverse, with dense coarse puncturation; sides strongly bordered. Elytra with very dense and coarse puncturation; with irregular rows and sparse long pubescence. Glandular pores on 4th abdominal sternite only.

Aedeagus (Figs. 17, 21): Basal part straight in lateral view, apical part bend in an open angle. Median lobe longer than parameres, with a very acute apex in lateral view; apex truncate in ventral view, internal margin denticulate, with two angulose expansions in the medial part. Parameres broad and deeply emarginate in ventral view, with a blunt apex.

DISTRIBUTION (Fig. 47): So far only known from the type locality.

ETYMOLOGY: Named in reference to the known distribution.

REMARKS: Species similar to *C. fujianensis* in external morphology, from which it can be differentiated by its smaller size, less prominent eyes, with a stronger dorsal border, more transverse pronotum, puncturation of pronotum and elytra coarser and denser, short pubescence less dense, and the morphology of the aedeagus. This is the only species in the group with the apex of the parameres rounded in lateral view.

***Cacothryptus testudo* CHAMPION**

Cacothryptus testudo CHAMPION 1923: 222

Cacothryptus testudo: WOOLDRIDGE 1990: 90 (lectotype designation)

TYPE LOCALITY: Almora, Kumaon, Uttarakhand, India.

TYPE MATERIAL: **Lectotype** ♂ (BMNH), examined: lectotype label, male label; "Cacothryptus / testudo Ch [hw]"; "E.M.M. 1923. / Det. G. C. C."; "Brit. Mus. / 1923-24."; "W. Almora, / Kumaon. / India. H.G.C."; "Cacothryptus / testudo, / Champ."; "LECTOTYPE / Cacothryptus / testudo / Champion / by Wooldridge"; aedeagus mounted in a transparent label. **Paralectotype** ♀ (BMNH): same data as lectotype, with paralectotype label.

ADDITIONAL MATERIAL EXAMINED:

NEPAL: 1 ♂, 1 ♀ (NMW): "NEPAL centr. / Birethanti-Goropani / 4. - 9.6.1992 / leg. Ivo Jenis"; 2 ♂♂, 5 ♀♀ (NMW): "NEPAL centr. / Godawari / 16. - 17.5.1992 / leg. Ivo Jenis"; 2 exs. (NMW): "E-NEPAL, Arun Valley / Sakurate-Mure / 2000m, 7.6.1988 / leg. Lebisch & Probst"; 1 ex. (NMW): "E. NEPAL: KOSI / Val. Induwa Kola / 2000-2600m, 16-18.IV. / Löbl - Smetana 1984"; 1 ♀ (NMW): "C-NEPAL: 6.11.1993 / Sindhupalchowk Dist. / Bahrabish, Bhotekoshi / leg. Moog et al."; 1 ♀ (NMW): "C-NEPAL, Cosaigonda / Halambu [Helambu], 1300m / 1.-16.5.1989 / leg. Pashang".

DIAGNOSIS: Length 4.5–5.2. Body shape elongate, elytra parallel sided on middle part, apex acuminate. Body dark brown; legs and antennae dark brown. Upper eye margin well developed, with a small denticle close to insertion of antennae; without supra-ocular sulcus. With double pubescence, elytra with short and recumbent hairs forming a transverse design. Sides of pronotum regularly arched, finely bordered. Puncturation of head very coarse and dense, spaces between punctures smaller than their diameter; surface of pronotum with coarse and sparse puncturation, spaces between punctures generally larger than their diameter; surface of elytra with fine and sparse punctures, forming irregular rows. Glandular pores on 4th abdominal sternite only.

Aedeagus (Figs. 23, 27): Parameres in lateral view not strongly arched, apex acuminate with internal margin sinuate; apex of median lobe round and dilated. Apex of parameres truncate in ventral view, with an acute expansion in internal edge; apex of median lobe acuminate, with a small preapical denticle.

DISTRIBUTION (Fig. 47): NW India, Nepal.

(4) *Cacothryptus jaechi* group

Cacothryptus jaechi sp.n.

TYPE LOCALITY: Wakan, between Amurang and Motoling, N Sulawesi, Indonesia.

TYPE MATERIAL: **Holotype** ♂ (NMW): "N-SULAWESI 1992 / Wakan (10) / Amurang-Motoling / leg. Jäch 18.IV". **Paratype** ♀ (NMW): same data as holotype.

DIAGNOSIS: Length 2.8–3.1 mm. Body black, covered by golden pubescence with poorly defined reddish bands. Legs and antennae brown. Head with a shallow supra-ocular sulcus, with sparse fine puncturation. Pronotum transverse, sides strongly bordered, puncturation finer and less dense than on head. Elytra with irregular rows of coarse punctures, with dense pubescence, with very long erect setae. Glandular pores on 4th and 5th abdominal sternites.

Aedeagus (Figs. 31, 35): Distal part of the median lobe very thin in lateral view, basal part with two rows of small denticles. Median lobe broad and with round apex in ventral view. Parameres short, with round apex.

DISTRIBUTION (Fig. 47): So far only known from the type locality.

ETYMOLOGY: Named after Manfred A. Jäch, water beetle expert, who collected the specimens.

REMARKS: This species is similar to *C. wooldridgei*, from which it can be differentiated by the morphology of the aedeagus.

Cacothryptus nanus sp.n.

TYPE LOCALITY: Busai Falls, 1 km W Malilipot, Albay, 40 km N Legaspi, Luzon, Philippines.

TYPE MATERIAL: **Holotype** ♂ (NMW): "PHILIPPINES: Luzon, Albay / 40km N Legaspi, 23.2.1998 / 1km W Malilipot, Busai Falls / leg. H. Zettel (143)"; aedeagus glued on transparent card.

DIAGNOSIS: Length 2.6 mm. Body colour brown, covered by golden pubescence with poorly defined silvery bands. Legs and antennae brown. Supra-ocular sulcus shallow, puncturation coarse and dense. Pronotum transverse, sides strongly bordered, puncturation fine and sparse. Elytra with irregular rows of coarse punctures and very long erect pubescence. Glandular pores on 4th and 5th abdominal sternites.

Aedeagus (Figs. 34, 38): Median lobe with two rows of strong acute denticles in lateral view, reaching the subapical region; apex elongate, round. Parameres forming a long, narrow and slightly emarginate lamina in ventral view, covering almost completely the median lobe.

DISTRIBUTION (Fig. 47): So far only known from the type locality.

ETYMOLOGY: Named in reference to the small size of the species.

REMARKS: Species similar to *C. ticaoensis*, from which it can be differentiated by the less transverse pronotum, finer and less dense puncturation, and the morphology of the aedeagus.

***Cacothryptus ticaoensis* sp.n.**

TYPE LOCALITY: Mag-Kapit spring, W San Fernando, Ticao Island, Philippines.

TYPE MATERIAL: **Holotype** ♂ (NMW): "PHILIPPINES: Ticao Isl. / W San Fernando, Mag-Kapit / spring, 27.2.1998 / leg. H. Zettel (148)".

ADDITIONAL MATERIAL EXAMINED:

PHILIPPINES: 1 ♀ (NMW): River Libertad, Panay Island, 21.I.1994, leg. F. Seyfert.

DIAGNOSIS: Length 2.6–2.7 mm. Head and pronotum black, elytra dark brown, legs and antennae brown. Body covered by golden pubescence, with poorly defined silvery bands. Supra-ocular sulcus shallow, puncturation dense and coarse. Pronotum transverse, sides strongly bordered, puncturation as coarse as on head, but less dense. Elytra with irregular rows of coarse punctures, with a very long erect pubescence. Glandular pores on 4th and 5th abdominal sternites.

Aedeagus (Figs. 33, 37): Median lobe with two rows of strong acute denticles in lateral view, not reaching the subapical region; apex short and blunt. Parameres forming a long, narrow and slightly emarginate lamina in ventral view, covering almost completely the median lobe.

DISTRIBUTION (Fig. 47): Philippines: Island of Ticao, possibly also on the island of Panay.

ETYMOLOGY: Named after the island on which the holotype was found.

REMARKS: Species similar to *C. nanus*, from which it can be differentiated by the morphology of the aedeagus. The external morphology of a female from Panay is very similar to that of *C. ticaoensis*, although with shorter pubescence. Due to the difficulty of separating the species of this group based on external morphology, its taxonomic identity cannot be established with confidence.

***Cacothryptus wooldridgei* sp.n.**

TYPE LOCALITY: Gunung Ambang, N Sulawesi, Indonesia.

TYPE MATERIAL: **Holotype** ♂ (NMW): "N-SULAWESI 1992 / Gunung Ambang / NSG (13) / leg. Jäch 20.IV."; aedeagus glued on transparent card. **Paratype** ♀ (NMW): same data as holotype.

DIAGNOSIS: Length 2.8–3.3 mm. Body colour brown, covered in golden pubescence, with poorly defined reddish bands. Legs and antennae pale brown. Head with supra-ocular sulcus shallow, surface with coarse and dense puncturation. Pronotum transverse, sides strongly bordered; puncturation finer and less dense than on head. Elytra with irregular rows of fine punctures, erect pubescence short, slightly recumbent. Glandular pores on 4th and 5th abdominal sternites.

Aedeagus (Figs. 32, 36): Distal part of median lobe broad in lateral view, basal part with two very apparent rows of small denticles; median lobe narrow in ventral view. Parameres long, with truncate apex.

DISTRIBUTION (Fig. 47): So far only known from the type locality.

ETYMOLOGY: Named after David P. Wooldridge (1931–2002), who made an extensive contribution to the knowledge of Limnichidae, especially of the New World.

REMARKS: Species similar to *C. jaechi*, from which it can be differentiated by the morphology of the aedeagus.

(5) *Cacothryptus zetteli* group*Cacothryptus luzonensis* sp.n.

TYPE LOCALITY: Quezón NP, Luzon, Philippines.

TYPE MATERIAL: **Holotype** ♂ (NMW): “leg. Preuler (11a) / PHILIPPINEN - Luzon / 30km E Lucena City / Quezon NP 23.11.1992”; aedeagus glued on transparent card. **Paratype** ♀ (NMW): same data as holotype, but “leg. Jäch (11)”.

ADDITIONAL MATERIAL EXAMINED:

PHILIPPINES: 1 ♀ (NMW): Mindoro, Hidden Paradise “(10)”, 20 km W Calapan, 20.–21.XI.1992, leg. M.A. Jäch; 5 exs. (NMW): Marinduque, 1 km N Sihi, Malinao, spring “(139)”, 16.II.1998, leg. H. Zettel.

DIAGNOSIS: Length 2.8–3.1 mm. Body colour dark brown, covered by golden pubescence with poorly defined silvery bands. Legs and antennae brown. Supra-ocular sulcus very shallow, puncturation fine and sparse. Pronotum transverse, sides finely bordered, puncturation fine and sparse. Elytra with irregular rows of coarse punctures, less marked on disk; erect pubescence very sparse. Glandular pores on 4th and 5th abdominal sternites.

Aedeagus (Figs. 42, 46): Median lobe without rows of denticles in lateral view. Parameres only slightly emarginate in dorsal view, apex truncate.

DISTRIBUTION (Fig. 47): Island of Luzon, dubious from the islands of Mindoro and Marinduque (all in the Philippines).

ETYMOLOGY: Named after the island in which the type specimens were found.

REMARKS: Very similar to *C. zetteli*, although clearly differentiated by the morphology of the aedeagus.

The specimens from Marinduque have a slightly less coarse puncturation on the head, the median lobe of the aedeagus is longer and the parameres wider in ventral view, with a less rounded apex (Figs. 41, 45), but due to the lack of clear diagnostic differences and the lack of enough material to assess intraspecific variability we provisionally consider these specimens as belonging to *C. luzonensis*. The female from Mindoro is externally identical to the material from Marinduque.

Cacothryptus zetteli sp.n.

TYPE LOCALITY: Mt. Makiling, Los Baños, Laguna, Luzon, Philippines.

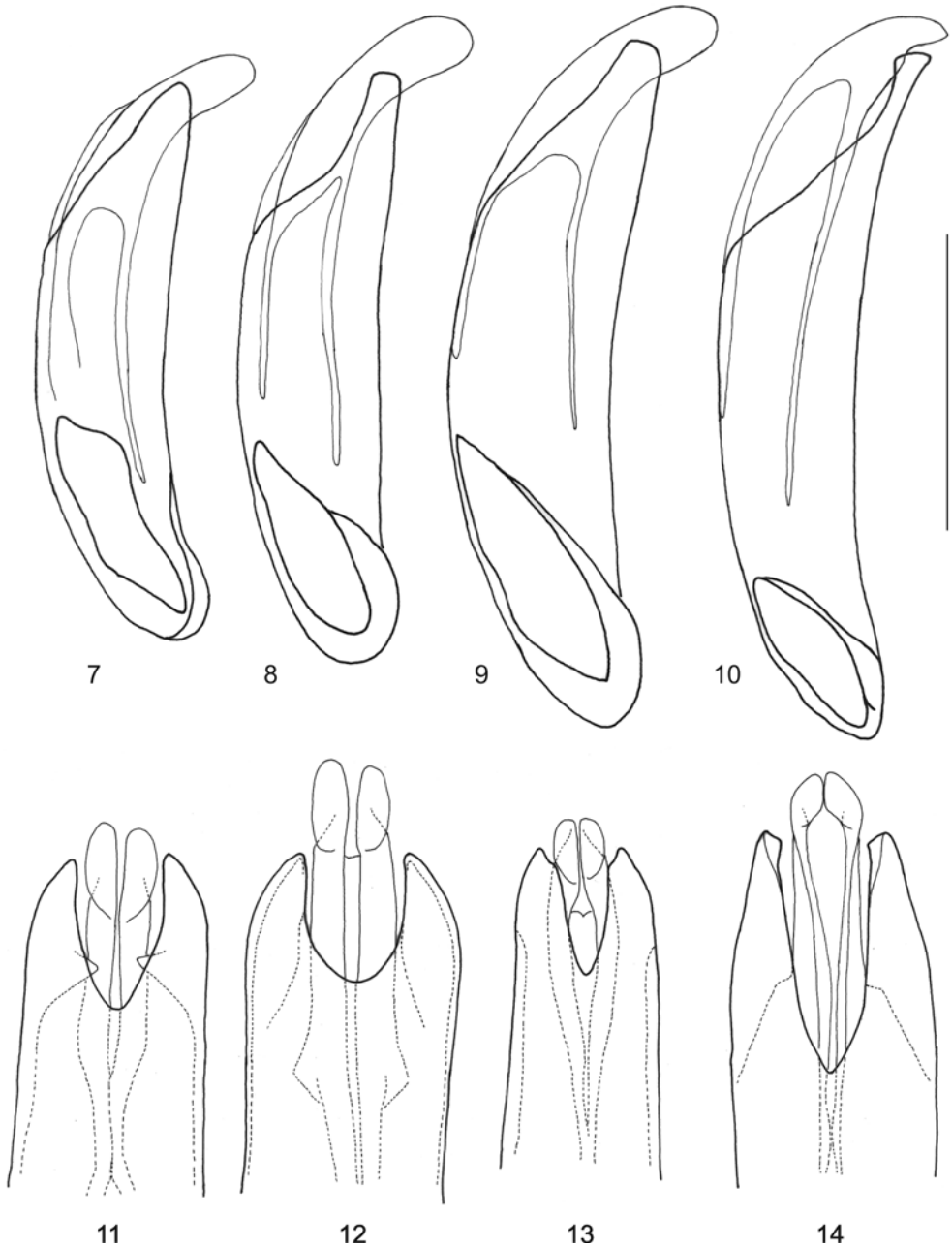
TYPE MATERIAL: **Holotype** ♂ (NMW): “PHILIPPINES: Luzon, Laguna / Los Baños, Mt. Makiling / Flat Stones, 10.2.1998 / leg. H. Zettel (132)”; aedeagus glued on transparent card. **Paratype** ♂ (CZW): “Philippines: LZ [Luzon], Mount. Pr. / Chico River, Gonogon / 1100 m, 21.2.1999 / leg. H. Zettel (184)”, “Coll. Zettel” [HW red label]; aedeagus glued on transparent card.

DIAGNOSIS: Length 3.4 mm. Body colour black, covered by golden pubescence with poorly defined silvery bands. Legs and antennae dark brown. Supra-ocular sulcus very shallow, puncturation fine and sparse. Pronotum less transverse, sides finely bordered, puncturation fine and sparse. Elytra with irregular rows of coarse punctures, erect pubescence very sparse. Glandular pores on 4th and 5th abdominal sternites.

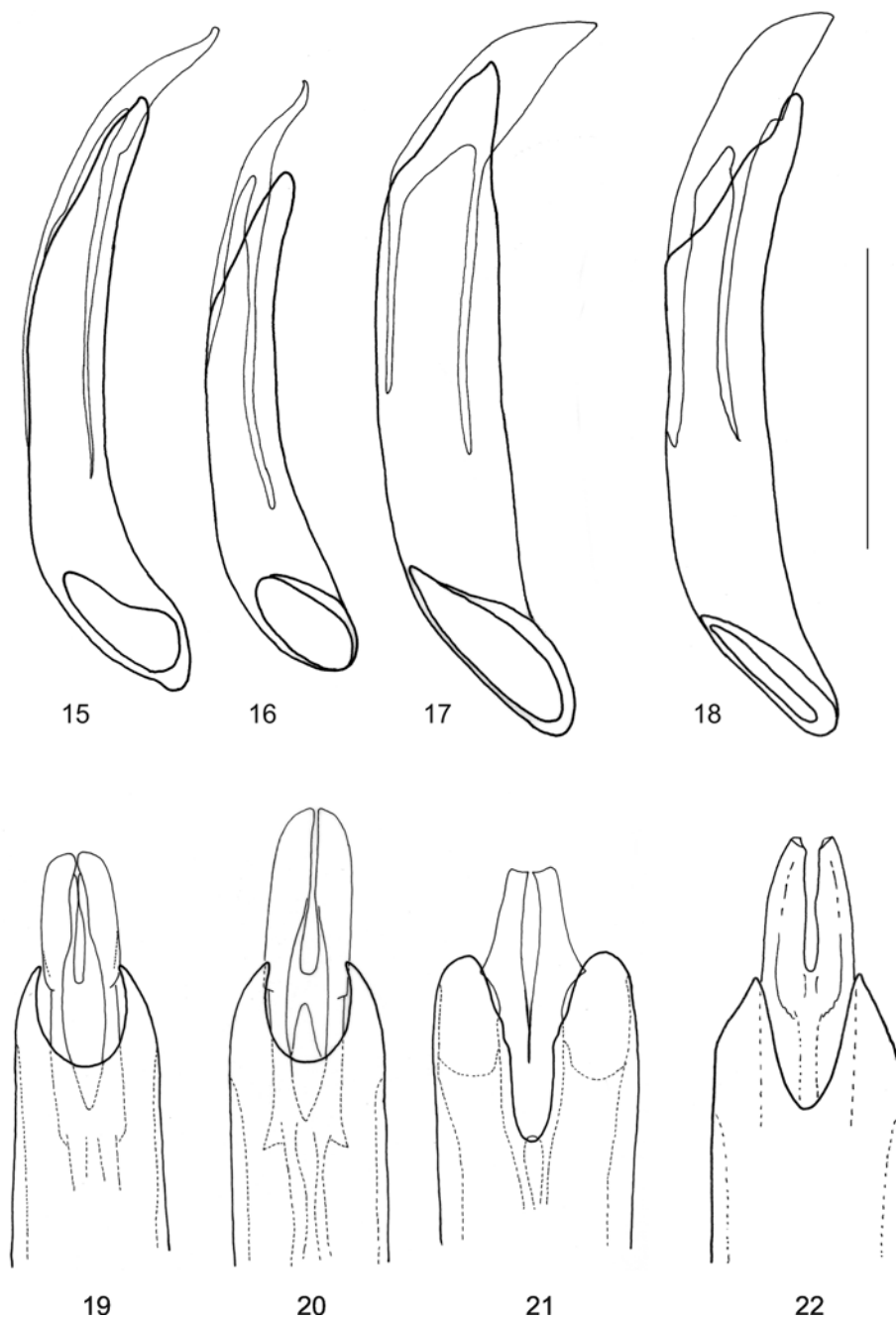
Aedeagus (Figs. 40, 44): Median lobe without rows of denticles in lateral view. Parameres strongly emarginate in dorsal view, apex round, asymmetric.

DISTRIBUTION (Fig. 47): So far only known from the type locality.

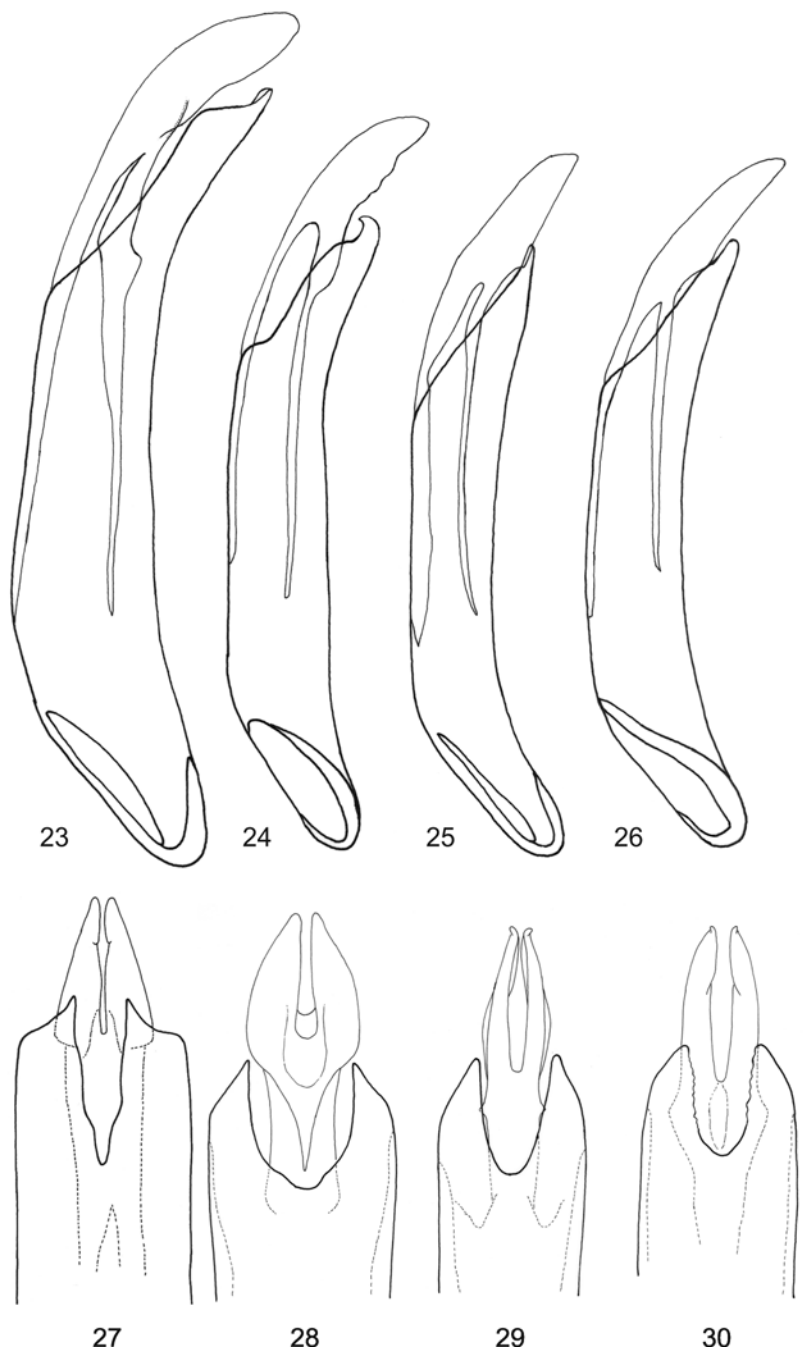
ETYMOLOGY: Named after H. Zettel, who collected the type specimens, as well as many other interesting Limnichidae in the Philippines.



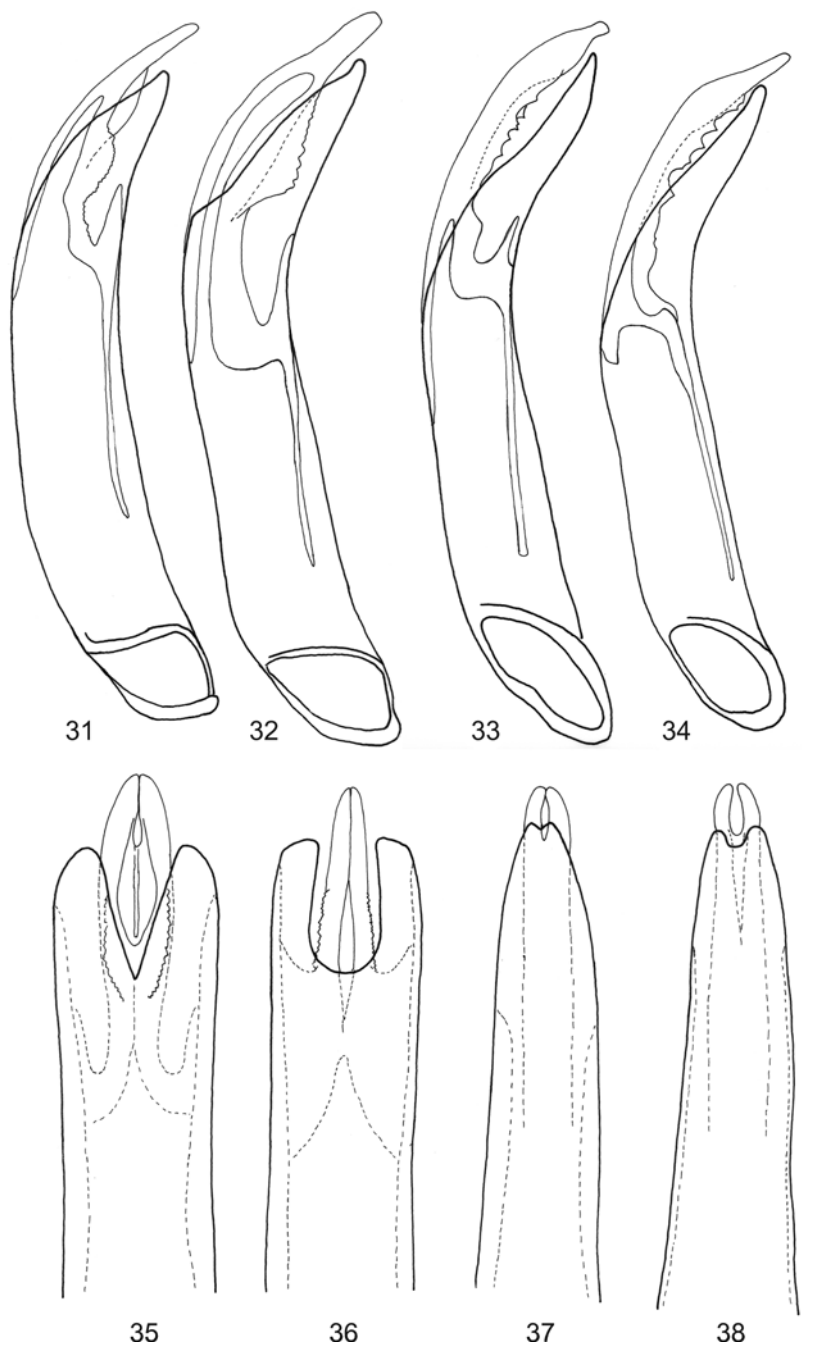
Figs. 7–14: *Caccothryptus compactus* group, male genitalia in lateral and ventral view of 7, 11) *C. compactus*; 8, 12) *C. maculosus*; 9, 13) *C. sulawesianus*; 10, 14) *C. schuhi*. Scale bar, 0.5 mm.



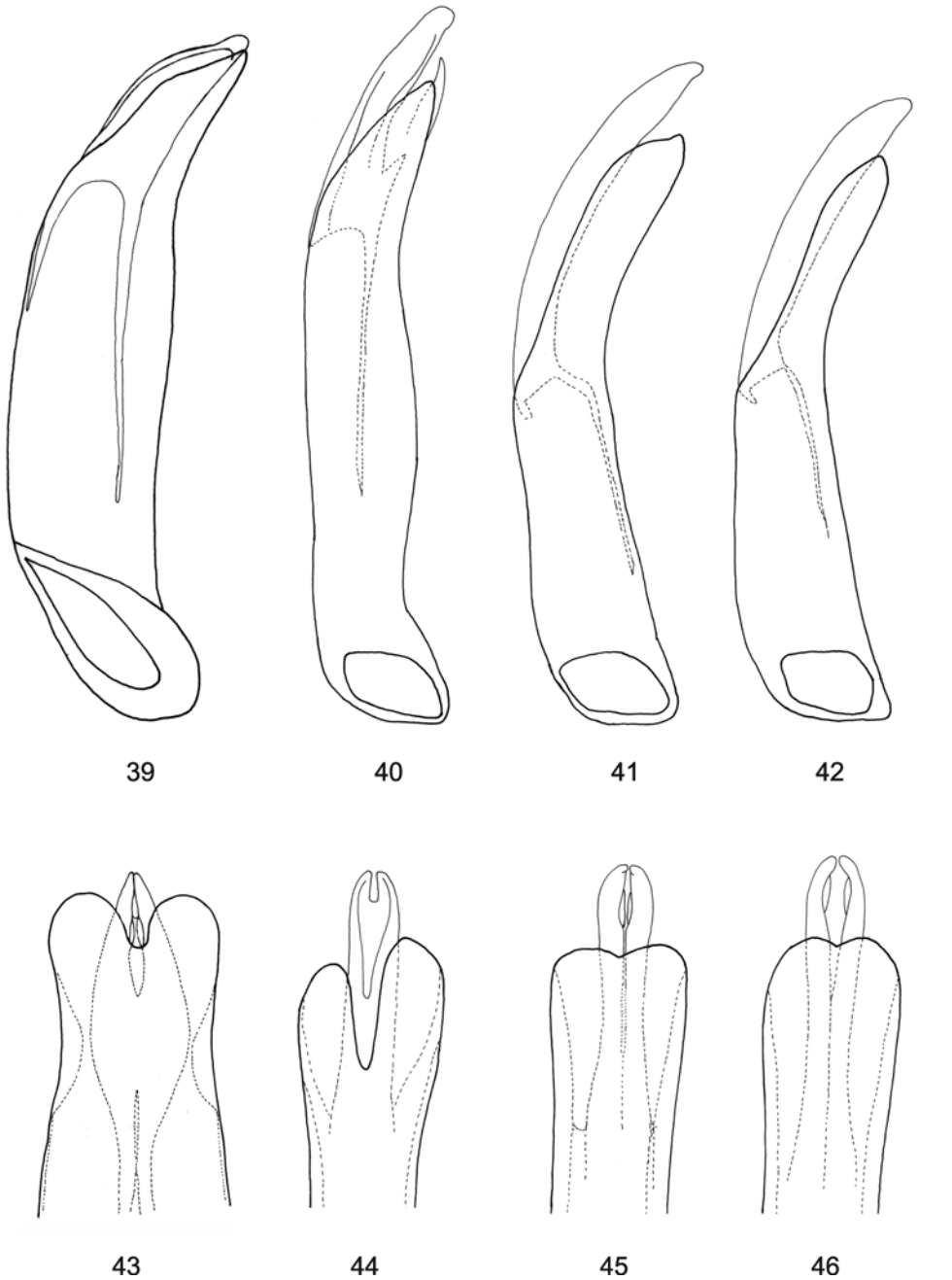
Figs. 15–22: *Cacothryptus testudo* group, male genitalia in lateral and ventral view of 15, 19) *C. ripicola*; 16, 20) *C. auratus*; 17, 21) *C. sinensis*; 18, 22) *C. jendeki*. Scale bar, 0.5 mm.



Figs. 23–30: *Caccothryptus testudo* group, male genitalia in lateral and ventral view of 23, 27) *C. testudo*; 24, 28) *C. nepalensis*; 25, 29) *C. malickyi*; 26, 30) *C. fujianensis*. Scale bar, 0.5 mm.



Figs. 31–38: *Cacothryptus jaechi* group, male genitalia in lateral and ventral view of 31, 35) *C. jaechi*; 32, 36) *C. wooldridgei*; 33, 37) *C. ticaensis*; 34, 38) *C. nanus*. Scale bar, 0.25 mm.



Figs. 39–46: *Caccothryptus zetteli* and *rouyeri* groups, male genitalia in lateral and ventral view of 39, 43) *C. rouyeri*; 40, 44) *C. zetteli*; 41, 45) *C. luzonensis* (Marinduque); 42, 46) *C. luzonensis* (Luzon). Scale bar, 0.50 mm (Figs. 39, 43), 0.25 mm (Figs. 40–42, 44–46).

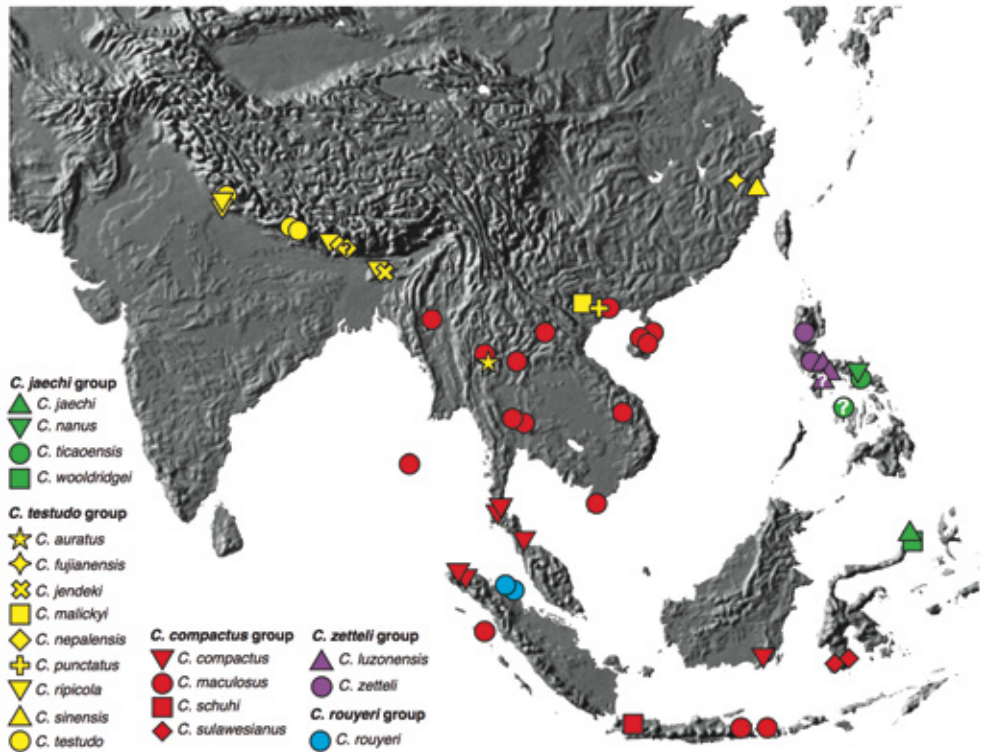


Fig. 47: Known geographical distribution of the species of *Caccothryptus*.

Additional material of the *Caccothryptus zetteli* group

We have studied two single females externally similar to species of the *C. zetteli* group from different Philippine islands. They most likely represent two different new species, although because of the lack of males it is not possible to ascertain their taxonomic identity.

Species 1: 1 ♀ (CZW): Philippines, Camarines Sur, 20 km E Naga, 5 km E Carolina, Mt. Isarog, nr. Malabsay Falls, 4.III.1999, H. Zettel leg. “(192)”.

Species 2: 1 ♀ (CZW): Philippines, Negros Or., Canlaon City, Mapud, Sudlon Falls, 25.I.2007, H. Zettel leg. “(452)”.

Discussion

We increase the number of known species of the genus *Caccothryptus* from six (plus one synonymy) to twenty. This number is, however, very likely to increase when more material becomes available. For most of the species, very few specimens were available for study, with several of the newly described species known only from the holotype. The description of new species based on a limited range of specimens is always problematic, but given the well-defined differences both in external morphology and the male genitalia it seems justified.

Caccothryptus seems to be widespread in the Oriental Region with the exception, so far, of Sri Lanka and most of the Indian Subcontinent (Fig. 47). The Sunda Islands and the Philippines

seem to be especially diverse. The species groups defined here according mostly to the morphology of the males have a good geographical structure. The species of the *C. testudo* group are distributed in the northern Oriental Region, south of the Himalayas to SE China (Fujian) and south to north Thailand and Vietnam, where they overlap with some species of the *C. compactus* group. The latter is distributed through Southeast Asia with the exception of the Philippines, where two species groups are found: two species of the *C. zetteli* group in the northern islands, and further south and in the extreme north of Sulawesi the species of the *C. jaechi* group. Finally, the only known species of the *C. rouyeri* group is restricted to Sumatra. Most species of the genus have restricted distributions, although due to the scarcity of material this is difficult to assess. Only *C. maculosus* seems to be widespread through continental Southeast Asia and the Sunda and Andaman Islands.

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References

- BRITTON, E.B. 1971: A new intertidal beetle (Coleoptera: Limnichidae) from the Great Barrier Reef. – *Journal of Entomology* (B) 40: 83–91.
- CHAMPION, G.C. 1923: Some Indian Coleoptera (12). – *Entomologist's Monthly Magazine* 59: 219–224.
- DELÈVE, J. 1971: Contribution à l'étude des Dryopoidea XXIII: De quelques Ptilodactylidae et Limnichidae (Coleoptera) asiatiques de la collection M. Pic (Muséum de Paris). – *Bulletin et Annales de la Société Royal d'Entomologie de Belgique* 107: 352–376.
- HERNANDO, C. & RIBERA, I. 2005: *Pseudothryptus*, a new genus of Limnichidae (Coleoptera) for *Cacothryptus multiseriatus*. – *Entomological Problems* 35: 131–135.
- PIC, M. 1922: Nouveautés diverses. – *Mélanges Exotico-Entomologiques* 36: 32 pp.
- PIC, M. 1923: Nouveautés diverses. – *Mélanges Exotico-Entomologiques* 39: 32 pp.
- PIC, M. 1928: Nouveautés diverses. – *Mélanges Exotico-Entomologiques* 52: 36 pp.
- PÜTZ, A. 1998: Limnichidae: I. Check list and bibliography of the Limnichidae of China and neighbouring countries (Coleoptera), pp. 337–339. – In Jäch, M.A. & Ji, L. (eds.): *Water Beetles of China*. Vol. II. – Wien: Zoologisch-Botanische Gesellschaft in Österreich and Wiener Coleopterologenverein, 371 pp.
- SHARP, D. 1902: Descriptions of Oriental Limnichini (Coleoptera, Fam. Byrrhidae). – *Entomologist's Monthly Magazine* 38: 61–64.
- WOOLDRIDGE, D.P. 1975: A key to the New World genera of the beetle family Limnichidae. – *Entomological News* 86: 1–4.
- WOOLDRIDGE, D.P. 1990: Lectotype designations for some Oriental Limnichidae (Coleoptera: Dryopoidea). – *The Coleopterists Bulletin* 44 (1): 89–93.

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