

Taxonomic notes on the genus *Cyphochilus* (Coleoptera: Scarabaeoidea: Melolonthinae) (part 3) with description of three new species from Indochina

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Abstract. *Cyphochilus backy* sp. nov., *C. dongkinh* sp. nov., and *C. genevieveae* sp. nov. are described after the study of 795 specimens from Indochina. These species are largely distributed in Thailand, Laos, and Vietnam, marginally in southern China and Myanmar. They were confused until today with *C. tonkinensis* Brenske, 1903 for which the lectotype is designated. The parameres and distribution of the four species treated are illustrated. The use of *Cyphochilus dongkinh* sp. nov. as human food is documented in northern Laos.

Key words. Systematics, taxonomy, lectotype designation, geographic distribution, China, Thailand, Laos, Vietnam, Myanmar, Arthropoda, Scarabaeidae, edible insects.

INTRODUCTION

The members of the genus *Cyphochilus* Waterhouse, 1867 are quite exceptional among Melolonthinae having relatively uniform external morphology in contrast with a much diversified morphology of paramera. This offers an extraordinary reading lens to easily identify of species and formulate hypothesis on interspecific relationships based on morphological affinities. The first use of paramera for the identification of a species was by Frey (1971) followed by Nomura (1977). Since 2000, I started gathering specimens of the genus *Cyphochilus*, documenting the types of all species described. Thus, 19 new species were described and the paramera of their sibling species illustrated (Sabatinelli 2020a, b). Current study presents the results of the study of about 795 specimens from Indochina belonging to the Section 2 of genus as defined by Waterhouse (1867) for the species with mesoventrum unarmed, to which I would add, with elevated elytral striae. Up today, these specimens were confused in the collections as *C. tonkinensis* Brenske, 1903. This study shows that under this name four different species are confused of which three are new for the science. To define this group of sibling species, the lectotype of *C. tonkinensis* is designated and redescribed.

MATERIAL AND METHODS

The following Codens set by Evenhuis (2007) identify the collections housing the examined material:

- HNHM – Hungarian Natural History Museum, Budapest, Hungary;
- IECA – Institute of Entomology, Czech Academy of Sciences, České Budějovice, Czech Republic (ex coll. Aleš Bezděk);
- ISNB – Institut Royal des sciences naturelles, Brussel, Belgium;
- MHNG – Muséum d'histoire naturelle, Genève, Switzerland;
- MNHN – Muséum national d'Histoire naturelle, Paris, France;
- MSNG – Museo Civico di Storia Naturale “Giacomo Doria”, Genova, Italy;
- MTDC – Museum für Tierkunde, Dresden, Germany;

NHMB – Naturhistorisches Museum, Basel, Switzerland;
 NHRS – Museum of Natural History, Stockholm, Sweden;
 NMPC – National Museum, Prague, Czech Republic;
 NMW – Naturhistorisches Museum, Wien, Austria;
 PCAR – Andreas Reichenbach private collection, Leipzig, Germany;
 PCMN – Milan Nikodým private collection, Prague, Czech Republic;
 PCOM – Olivier Montreuil private collection, Fleury-les-Aubrais, France;
 SMNS – Staatliches Museum für Naturkunde, Stuttgart, Germany;
 ZFMK – Zoologisches Forschungsinstitut und Museum A. Koenig, Bonn, Germany;
 ZMAN – Zoological Museum University of Amsterdam, Netherlands;
 ZMHB – Museum für Naturkunde, Berlin, Germany;
 ZMUH – Zoologisches Institut und Zoologisches Museum, Universität von Hamburg, Germany.

Labels of the specimens are cited verbatim; individual labels are separated by a double slash “//”; different rows by a single slash “/”; (P) – preceding data are printed; (H) – preceding data are handwritten; remarks and comments are indicated in square brackets “[]”; specimen lots are separated by double slash and long dash “// –”. Type specimens held by the MHNG have a register number with the format MHNG-ENTO-#####.

Morphological terminology follows Torre-Bueno et al. (1989). Body length was measured from the anterior margin of clypeus to the apex of elytra. Aedeagi were dissected and cleaned manually without any chemical treatment, then glued to a cardboard pinned under each specimen from which they were removed. A Leica DFC425 camera in conjunction with a Leica M205-C stereo microscope was used to produce source images, which were subsequently processed using the software Zerene Stacker, and adjusted and grouped in plates using Adobe Photoshop. For the new species, due the relative uniformity of the external morphology, only the characters useful for the differentiation are indicated while I refer to the generic description of *C. tonkinensis* for integrating their full description.

Characters, measurements, mensural procedures, and ratios are as follows:

BL: Body length, measured from anterior margin of clypeus to apex of elytra, in dorsal view;
 BW: Body width, measured across the elytral humeri, in dorsal view;
 BWX: Greatest body width, measured across the elytral maximal width, in dorsal view;
 CW/L: Clypeal ratio, derived from width measured along clypeo-frontal suture divided by medial length of clypeus;
 F/O: Interocular ratio, derived from minimum frons width across eyes divided by transverse compound eye diameter in dorsal view;
 A2–7L/CL: Antennal ratio, derived from length of basal antennomeres 2–7 divided by antennal club length;
 PnW/L: Pronotal ratio, derived from pronotal greatest width divided pronotal length along midline, in dorsal view.

TAXONOMY

Cyphochilus Waterhouse, 1867

TYPE SPECIES. *Melolontha candida* Olivier, 1789 by subsequent designation (Medvedev 1951: 231).

DIAGNOSIS. The following combination of characters distinguishes *Cyphochilus* from the other related genera of Melolonthinae in order of importance: labrum strongly asymmetric, decamerous antennae, antennal club of 3 antennomeres longer in the males than in females, upper part of the body covered with scales, apical palpomere of maxillary palps narrow, elongate without any callus or excavation on its outer surface, claws long and with basal tooth; parameres strongly asymmetric. Actually the asymmetry of the labrum alone, defines the members of the genus *Cyphochilus* among all Scarabaeoidea.

REMARKS. Considering the species described in the present work, 48 species belong to the genus *Cyphochilus*. The genus is distributed in the Oriental part of the Palaearctic Region, as defined by Löbl and Smetana (2006) and marginally, in the very northern part of the Oriental Region. A synthetic history of the genus, full bibliographic references and an updated catalogue of species are provided by Sabatinelli (2020b) while the morphological affinities with other genera are discussed in Sabatinelli (2020a).

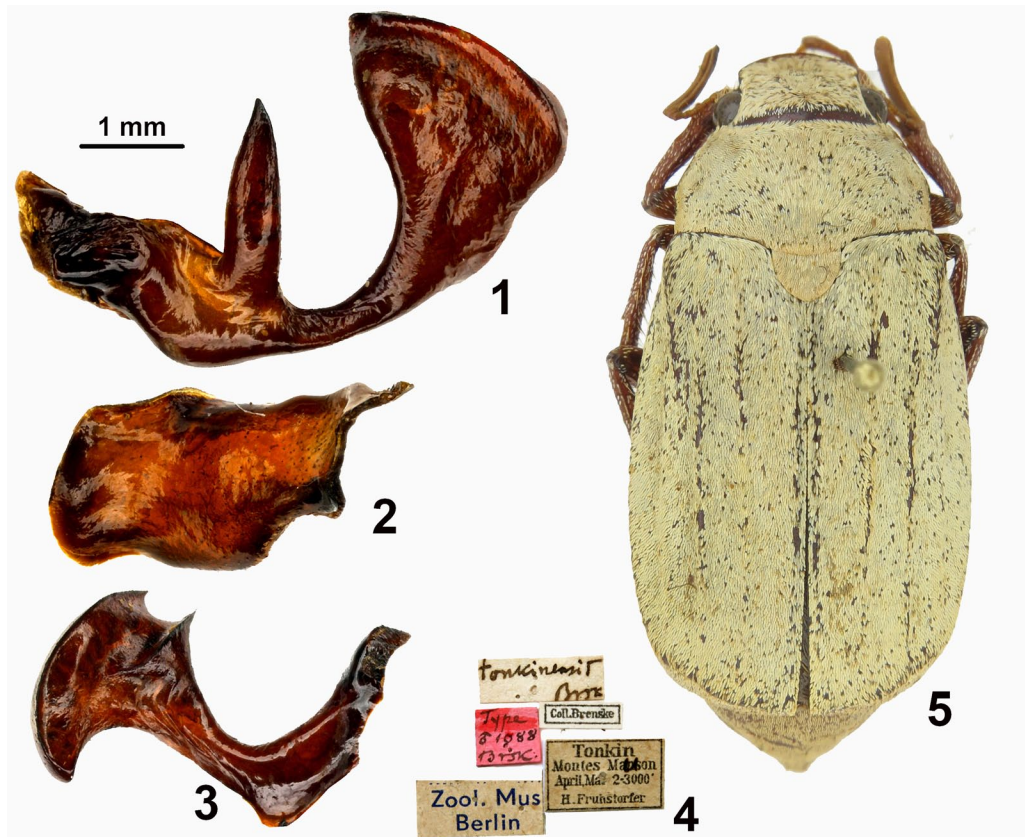
***Cyphochilus tonkinensis* Brenske, 1903**
(Figs. 1–5, 22–23)

Cyphochilus tonkinensis Brenske, 1903: 381.

TYPE LOCALITY. “Tonkin, Montes Mauson”.

TYPE MATERIAL. **Lectotype** (by present designation) ♂ in ZMHB; // *tonkinensis* / Brsk (H) // Type / 1088 / Brsk (H) // Coll. Brenske (P) // Tonkin [Lang Son Province, Lộc Bình District] / Montes Mauson [Mount Mẫu Sơn 21°45'12"N, 106°57'00"E] / April-Mai 2-300 m / H. Fruhstorfer (P) // **Lectotypus** ♂ / *Cyphochilus tonkinensis* Brenske, 1903 / des. G. Sabatinelli 2020 (T on red) // (Fig. 4). – **Paralectotype** ♀ in ZMHB: same data as for lectotype.

ADDITIONAL MATERIAL EXAMINED (77 specimens). **Vietnam: Lang Son Province:** ISNB, 3 ♂♂, 1 ♀; // Tonkin / Montes Mauson / April-Mai 2-300 m / H. Fruhstorfer (P) // Coll. R. I. Sc. N. B. / Nord / Vietnam (P on yellow) // *Cyphochilus similis* Ley [never described] / det. T. Ley 1916 (H&P) // Type (P on red) // – ISNB, 1 ♀; // Chapa / H^{te}. Tonkin / (1000m. alt.) (H) // 1913 / Vitalis de Salvaza (H) // Coll. R. I. Sc. N. B. / Nord / Vietnam (P on yellow) // Type (P on red) // – MHNG, 5 ♂♂, 2 ♀♀; NMPC, 1 ♂ (sub. *apicalis* det. Frey 1968); HNHM, 2 ♂♂; MNHN, 11 ♂♂, 4 ♀♀; // Tonkin / Montes Mauson / April-Mai 2-300 m / H. Fruhstorfer (P) // – MHNG, 11 ♂♂; // Vietnam, Lang son / Mt. Mauson,



Figs. 1–5. *Cyphochilus tonkinensis* Brenske, 1903. Dissected paramera: 1 – right paramere; 2 – median lobe, apical part toward right; 3 – left paramere; 4 – original labels; 5 – habitus of lectotype ♂ (BL: 24.3 mm).

19.VI.2011 (P) // – NMW, 3 ♂♂; // Tonkin / Than Moi [Lang Son Prov.] / June-July / H. Fruhstorfer (P) // – **Bắc Kạn Province**: ISNB, 3 ♂♂; // Tonkin / Ngán Son / Bắc Kạn [Prov.] / coll. De Riencourt (H) // Coll. R. I. Sc. N. B. / Nord / Vietnam (P on yellow) // – Not attributed to a province: NHRS, 1 ♂; // Tonking (P) // Coll. Jäger (P) // – **China: Guangxi Zhuang Autonomous Region**: NMPC, 23 ♂♂, 3 ♀♀; MHNG, 3 ♂♂, 1 ♀; // China, Guangxi A. R. [Autonomous Region], 5.IV.2013 / Shiwandashan [Shiwan Dashan] National Forest Park / (forested river valley, at light) / 21°54.4'N, 107°54.2'E, 290–360 m / M. Fikáček, H. Hájek, J. Růžička leg. (P) // – Not attributed to a region: MNHN, 1 ♂; // South China (H) // ex Musaeo / H.W. Bates / 1892 (P) // *apicalis* Wat. (H) //.

REDESCRIPTION. **Lectotype** ♂ (Fig. 5). Body: subcylindrical; BL: 24.3 mm, BW: 9.7 mm, BWX: 11.8 mm situated at midpoint of elytra; integument brown including legs and appendices; upper surface covered with dirty-white scales not forming spots nor stripes but more densely aggregated along external margins of elytra; pygidium and abdomen without metallic reflex.

Head: clypeus semi-circular and transverse (CW/L: 2.82), laterally not continuous with canthus, flat, separated from frons by suture, with anterior margin reflected; frons flat and large, making eyes relatively small (F/O: 4.73), lateral margin near eyes not elevated; vertex concave; antenna decamerous; antennal club trimerous, twice longer than preceding antennomeres 2–7 (A2–7/CL: 0.52); footstalk with third and fourth antennomeres subequal in length; claws not cleft at apex, large at base and with basal tooth beneath, lower margin entire, dorsal margin uniformly curved; apical maxillary palpomere narrow (five times longer than large), not excavated; labrum deeply sinuate, strongly asymmetric; mentum transverse, with Y-shaped carina; eyes not prominent.

Pronotum transverse (PnW/L: 1.86), with lateral margin angulated in the middle, entire, not serrated, without seate, anterior and posterior margins not margined; mesoventrum not produced between mesocoxae; metaventrum with long hairs; metepisternum narrow, more than three times longer than wide with metepimera small.

Wings developed in both sexes.

Elytra with well-developed humeral callus and four elevated costae, in addition to sutural one, not reaching the apex of elytra where the surface is strongly angulate toward the pygidium.

Abdominal ventrites with uniform scales, not aggregated at the lateral margins, connate, with sutures absent in middle; ventrite VI not retracting under V one; distal margin of the ventrite VIII sinuate; last spiracle located on suture between visible ventrite V and propygidium; pygidium triangular, convex, with a narrow base and apex mucronate.

Legs: anterior coxae transverse, not prominent and contiguous to each other; mesofemur not enlarged; protibiae 2-toothed; with internal spur, located lower than basal external tooth; external margin of protibiae not transparent; meta- and mesotibiae without complete transverse carina only externally with a tubercle; dorsal margin of metatibiae without teeth or spines; tarsomeres thick and short, sparsely setaceous beneath and with sparse minute scales above; basimetatarsomere shorter than second; metacoxae not close to the mesocoxae.

Aedeagus: endophallus membranous; parameres separated by a median lobe much shorter than right paramere (Fig. 2); parameres asymmetric; right paramere with medial apophysis elongate and slender, straight and blade-like, shorter than broad distal part (Fig. 1); left paramere angulated in the middle, enlarged apically and with a subapical dorsal acute spine (Fig. 3).

Variability in males. BL: 23.3–25.4 mm (\bar{x} =24.5, n =35). Some well-preserved specimens have vestiture of the upper part of the body with very dense scales; some specimens present a vestigial third basal tooth at the protibiae. Over 35 males specimens studied, five have a vestiture of yellowish scales instead of white.

Females. Body ovate; BL: 24.8–25.3 mm; BW: 9.6; BWX: 12.8; antennal club ovate, shorter than preceding antennomeres (A2–7/CL: 1.13); protibiae 3-toothed; wings and humeral callus as developed as in males; metacoxae not close to the mesotibiae as in males; ventrite VIII deeply excavate to accommodate the apical ventral part of the pygidium; pygidium relatively convex

with a larger base than in males, marginal apex pointed dorsally and excavate ventrally (Figs. 22, 23).

DIFFERENTIAL DIAGNOSIS. Several specimens of relatively large *Cyphochilus* with elytra with elevated striae, from Northern parts of Thailand, Laos and Vietnam, have been attributed to *C. tonkinensis*. In reality, the aedeagus morphology allows for a distinction of four species: *C. tonkinensis*, *C. backy* sp. nov., *C. dongkinh* sp. nov. and *C. genevieveae* sp. nov. The first three species mentioned have very close morphological affinities while the latter appear more distant morphologically. *Cyphochilus tonkinensis*, *C. backy* sp. nov. and *C. dongkinh* sp. nov. share a very peculiar feature: in the females, the pygidium is very convex and its apex fit deeply into the sinus of the distal margin of the abdominal ventrite VIII (Figs. 18–23). In addition, the paramera of *C. tonkinensis*, *C. backy* sp. nov. and *C. dongkinh* sp. nov. have a well-developed median lobe separating the parameres that are ending with different shapes and bearing on dorsal margin different types of apophysis or spines. Considering these characters, it is possible to attribute to this informal group of species the following *Cyphochilus* species for which I already studied the typical series: *C. apicalis* Waterhouse, 1867 (from China, Fujian), *C. insulanus* Moser, 1918 and (from Taiwan), *C. ochraceus* Moser, 1915 (from China, Shandong). Other three new species of this group have been preliminarily identified from China and will be the object of another publication when more material will be available to confirm the finding.

It should be noted that in the material from ISNB there is a specimen labelled as “*Cyphochilus similis* Ley – Type” that however was never described.

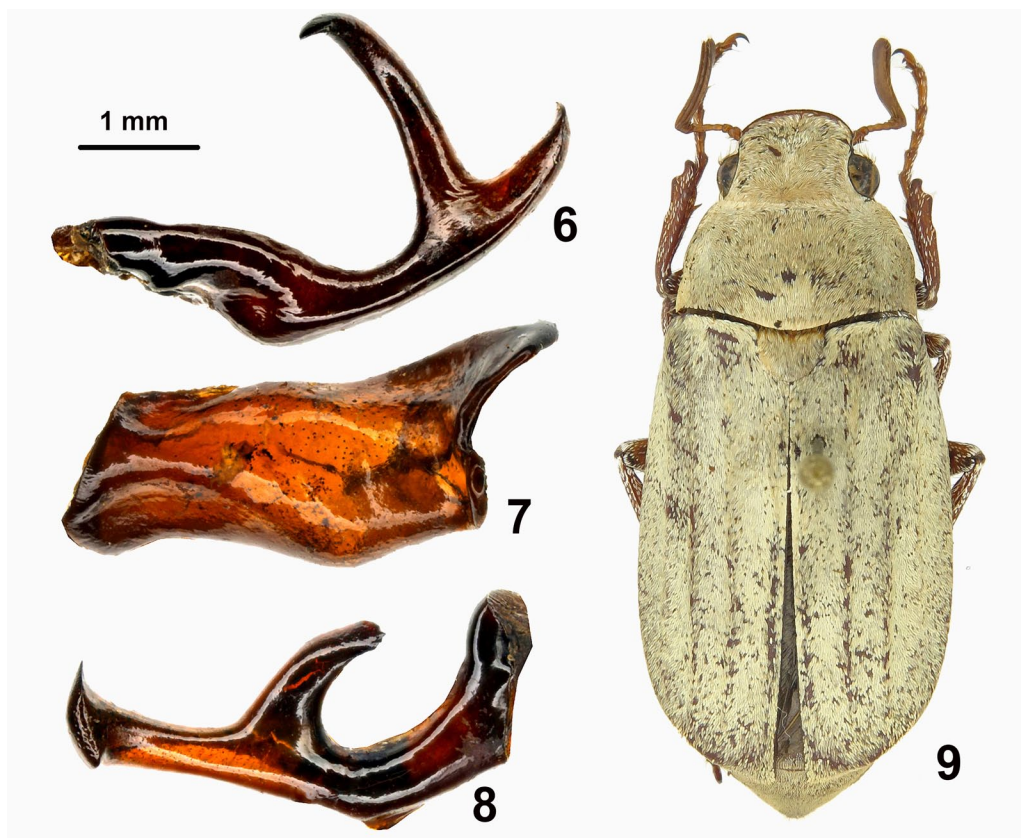
TYPE LOCALITY AND DISTRIBUTION. *Cyphochilus tonkinensis* was described on a series of specimens collected by members of the French Tonkin Expeditionary Corps during the colonization of Indochina, in the Mount Mầu Sơn (21°45'12"N, 106°57'00"E) where the French built a military base and a cluster of residential houses. Mount Mầu Sơn name refers to a mountain in Lộc Bình District, Lạng Sơn Province, in northeastern Vietnam. It is located about 170 km northeast of the Hanoi and about 30 km east of Lạng Sơn City close to the border between Vietnam and China. The highest peak of Mount Mầu Sơn reaches about 1,600 m above sea level. This species has a relatively limited distribution (500 km east-west) across the border between northeast Vietnam (Lạng Sơn and Bắc Kạn provinces) and southwest China (Guangxi Region, Fang Chenggang Prefecture) (Fig. 26). In these mountains, there are growing tropical monsoon forests with many varieties of tropical and subtropical plants. The Shiwanda Mountain is also an important climatic boundary in southwestern Guangxi.

***Cyphochilus backy* sp. nov.**

(Figs. 6–9, 18–19)

TYPE LOCALITY. H[†]. Tonkin [= Vietnam], NO de [of] Bao-Lac [Bảo Lạc in Cao Bằng Province].

TYPE MATERIAL. **Holotype** ♂ in MHNG; // # MHNG-ENTO-85062 // // H[†]. Tonkin [Vietnam] / NO de Bảo Lạc [Cao Bằng Province] / Dr. Battarel / 1897–1898 (P black border) // Holotypus ♂ / *Cyphochilus / backy mihi* / G. Sabatinelli, 2020 (T on red) // – **Paratypes** (29 specimens). **Vietnam: Cao Bằng Province:** ISNB, 1 ♂; MTDC, 1 ♂; ZMHU, 1 ♂; // H[†]. Tonkin / NO de Bảo Lạc / Dr. Battarel / 1897–1898 (P black border) // Coll. R.I.S.N.B. / Nord Vietnam / ex Oberthur / coll. Ley (P&M on yellow) // [sub] *tonkinensis* Brenske // – NMW, 1 ♂; MHNG, 1 ♂; // Vietnam, Cao Bằng Prov. / SW Pia Ouac Nat. Park / Phja Den vill., ca. 1000 m (P) // 22°33'46.7"N 105°51'46.6"E / 1–17.V.2019 at light / leg. Brunke & Schillhammer (17) (P) // – MHNG, 1 ♂; // Vietnam, Cao Bằng prov., 1400 m // Nguyen Binh distr. Pia Ouac nat. res. / 14–16.VI.2012, leg. E. Orbach (P) // – ZFMK, 1 ♂; // Indo-Chine (P) // 9–57, ex coll. / R. Oberthur (P on blue) // – **Hà Giang Province:** ISNB, 1 ♂; MNUH, 1 ♀; // H[†]. Dong-Van [Hà Giang Province] / Cap.^{nc} Gadel / 1898 (P black border) // Coll. R.I.S.N.B. / Nord Vietnam / ex Oberthur / coll. Ley (P&M on yellow) // – MHNG, 8 ♂♂, 10 ♀♀; // H[†]. Dong-Van / Cap.^{nc} Gadel / 1898 (P black border) // [sub] *tonkinensis* Brenske // – MTDC, 1 ♂; // Haut Tonkin / Dong-Van (P) // 17077 (H) // – **CHINA: Yunnan Province:** NMPC, 2 ♂♂; MHNG, 1 ♂; // China, SE – Yunnan / 1300–1600 m, Maguan



Figs. 6–9. *Cyphochilus backy* sp. nov. Dissected paramera: 6 – right paramere; 7 – median lobe, apical part toward right; 8 – left paramere; 9 – habitus of holotypus ♂ (BL: 24.3 mm).

[County] / Wenshan karst region [Prefecture] / 23°11–15′N, 104°18–25′E / 18–19.V.1995 / L. + R. Businský leg. (P) // ex coll. D. Král / National Museum / NMPC, Czech Republic (P) // . All above specimens labelled as: // Paratypus ♂ or ♀ / *Cyphochilus / backy mihi* / G. Sabatinelli, 2020 (T on red) // .

DESCRIPTION. Holotype ♂ (Fig. 9). Body: subcylindrical, BL: 24.3 mm, BW: 9.7 mm, BWX: 12.8 mm situated at distal part of elytra; integument reddish brown; dorsal surface with ochraceous scales densely aggregated at the apex of elytra.

Head: CW/L: 2.82; anterolateral edges of clypeus largely rounded; frons large, making eyes relatively small (F/O: 4.73); antennal club twice longer than antennomeres 2–7 (A2–7/CL: 0.52).

Pronotum transverse (PnW/L: 1.86), strongly convex; apical angles right and lateral angles obtuse.

Elytra with four elevated costae, in addition to sutural one, not reaching the marginal apex. Thoracic ventra with short, white setation and scales; mesoventrum not developed nor visible between the mesocoxae.

Abdominal ventrites with sparse scales except the median part of the ventrite VIII; pygidium convex with apical margin mucronate.

Legs: protibiae tridentate with basal teeth vestigial; the two apical teeth close each other. Aedeagus: parameres separated by a median lobe as long as left paramere (Fig. 7); right paramere with medial apophysis elongate and slender, much longer than distal part, falcate, distally acute (Fig. 6) more close to the apical part than in *C. dongkinh* sp. nov. (Fig. 6 versus Fig. 10); left paramere angulated with medial apophysis stocky, slightly shorter than the distal part, arcuate and distally truncate much developed than in *C. dongkinh* sp. nov. (Fig. 8 versus Fig. 12).

MALE PARATYPES. BL: 23.0–25.4 mm ($x=24.5$, $n=16$). In the male specimens, the colour of scale vestiture of the upper part of the body varies between ochraceous to dirty-white.

FEMALE PARATYPES. Body ovate; BL: 19.7–21.5 mm; BW: 8.5; BWX: 10.6; antennal club ovate, shorter than preceding antennomeres 2–7 (A2–7/CL: 1.19), protibiae 3-toothed. In the female specimens, the colour of scale vestiture of the upper part of the body is more snow-white than in the males. Pygidium convex with apex deeply sinuate and reflected (Figs 18–19)

DIFFERENTIAL DIAGNOSIS. *Cyphochilus backy* sp. nov. is morphologically close related to *C. tonkinensis* and *C. dongkinh* sp. nov. (see above) from which it is almost indistinguishable by the external morphology. However, the shape of parameres make its identification very easy (Figs. 6–8 versus Figs. 1–3 and 10–12). The shape of pygidium is diagnostic for the three species above mentioned: very convex and with apex deeply sinuate in *C. dongkinh* sp. nov. (Figs. 20, 21), less convex and with apex sinuate in *C. backy* sp. nov. (Figs. 18, 19), just convex and with apex pointed in *C. tonkinensis* (Figs. 22, 23).

ETYMOLOGY. Bac Ky in Vietnamese language designs the Northern Region of Vietnam; noun in apposition.

TYPE LOCALITY AND DISTRIBUTION. The typical locality Bảo Lạc is a rural district of Cao Bằng Province in the Northeast region of Vietnam. This species shows a relatively limited distribution (east-west about 200 km) in an area across the border between northern Vietnam (Hà Giang and Cao Bằng provinces) and southern China (Yunnan, Wenshan Prefecture, Maguan County) where is sympatric with *C. dongkinh* sp. nov. (Fig. 26).

Cyphochilus dongkinh sp. nov.

(Figs. 10–13, 20–21)

TYPE LOCALITY. N. Vietnam, Vinh Phuc Prov., Tam Dao Nat. Park, 1000 m.

TYPE MATERIAL. **Holotype** ♂ in MHNG; // #MHNG-ENTO-85059 // N. Vietnam – Vinh Phuc Prov. / Tam Dao Nat. Park, 1000 m / 14.VIII.2011, leg. M. Pejcha (P) // Holotypus ♂ / *Cyphochilus / dongkinh mih* / G. Sabatinelli 2020 (T on red) // **Paratypes** (536 specimens). **Vietnam: Lào Cai Province:** ISNB, 2 ♂♂; // Coll. R. I. Sc. N. B / Nord Vietnam (P on yellow) // Chapa [Sa Pa village, Lào Cai Province] / Tonkin (H) // Mai 1916 / Vitalis de Salv. (H) // Type (P on red black border) // *vitalisi* Ley / Tonkin (H on big label with black margin // – MNUH, 1 ♂; // Tonkin / Chapa / 17.IV.1918 / Jeanvoine [leg.] (P&H) // – NMW, 7 ♂♂; // Vietnam: Lai Chau [sic] Prov. / NW Sa Pa, ca. 1900 m / 200 m SW Tram Ton Pass / 22°21'4"N 103°46'24"E / 24.VI.2017 (9) (P) // Vietnam expedition 2017 / NMW, CNC / H. Schillhammer, R. Schuh / D. Zimmermann, A. Brunke / H. Douglas (P) // – PCAR, 2 ♂♂; // North Vietnam / Ta Phin, 10 km NNW / Sapa, ca. 1700 m / III.2012, leg. Binh Nguyen (P on yellow) // – MHNG, 1 ♂; // 11–16.V.1990 Sa Pa / Hoang Lien Son distr. [Lào Cai Province] / N Vietnam, 1600 / Jan Horák leg. (P) // – PCAR, 2 ♂♂; // N. Vietnam, Lào Cai prov. / Sapa distr., Ta Phin, 2316 m / V.2013, leg. Binh Nguyen (P on yellow) // – MHNG, 1 ♂; // Vietnam, Lai Chau Prov. / NW Sa Pa, ca. 1900 m / 200 m SW Tram Ton Pass / 22°21'4"N 103°46'24"E (P) // Vietnam expedition 2017 / NMW, CNC / H. Schillhammer, R. Schuh / D. Zimmerman, A. Brunke / H. Douglas // [sub] *tonkinensis* Brenske (P) // – **Vĩnh Phúc Province:** NMPC 28 ♂♂, 9 ♀♀ // Vietnam bor. / Tam Dao / V.–VI.1990 / Plch Richard leg. (P) // ex coll. Richard Plch / National Museum / Prague, Czech Republic // – MHNG, 7 ♂♂, 4 ♀♀; // N. Vietnam, Vĩnh Phúc Prov. / Tam Dao, V.1988, leg. Strnad // [sub] *tonkinensis* Brenske (P) // – NHMB, 1 ♂, 1 ♀; NMPC, 1 ♂, 1 ♀; // Vietnam Tam Dao / Vĩnh Phúc pr. / 3–11.VI.1985 / J. Picka lgt (P) // – NHMB, 1 ♂; // N. Vietnam 1985 / pr. Vinh Phu / Tam Dao 3.V.–11.VI. / V. Švihla leg. (P) // – PCMN, 4 ♂♂, 2 ♀♀; MHNG, 10 ♂♂, 10 ♀♀; // Vietnam N, 15.V.–16.VI. / 75 km NW from Hanoi / Tam Dao 1991 / E. Jendek leg. (P) // – PCMN, 1 ♂; // N Vietnam 20.V / Tamdao 1991 / leg. Křeček (H) // – PCMN, 2 ♂♂; // Vietnam / Hanoi env. / 4.15.V.1990 / Svoboda leg. (P) // – PCMN, 1 ♂; NMW, 3 ♂♂; NHMB, 13 ♂♂, 4 ♀♀;

MHNG, 6 ♂♂, 5 ♀♀; // Vietnam N 1989 / Tam Dao 12–24.V. / Vinh Phúc prov. / Strnad Jan lgt. (P) // – PCMN, 1 ♂, 2 ♀♀; MHNG, 2 ♂♂; PCMN, 1 ♀; // N Vietnam (Tonkin) / pr. Vinh Phu 1990 / Tam Dao 6–9.V. / Vit Kubáň leg. (P) // – NHMB, 3 ♂♂, 1 ♀; NMPC, 3 ♂♂, 2 ♀♀; // N Vietnam (Tonkin) / pr. Vinh Phúc 1990 / Tam Dao 17–21.V. / Vit Kubáň leg. (P) // – PCMN, 1 ♂, 1 ♀; // Vietnam bor. / Tam Dao / Petrželka lg. (P) // – NMPC, 2 ♂♂, 1 ♀; // N. Vietnam // [sub] *tonkinensis* Brenske // Tonkin – / Tamdao pr. Vinh Phúc / 2–11.VI.1985 (P) / Vit. Kubáň leg. // – NMPC, 3 ♂♂, 1 ♀; NHMB, 1 ♂; // N. Vietnam 900 m / Tamdao 1324. / A. Olexa V.1989 (P) // NHMB, 1 ♂; // N. Vietnam – Tonkin – / Tamdao pr. Vinh Phu / 2–11.VI.1985 (P) / Vit. Kubáň leg. // – NMPC, 3 ♂♂, 1 ♀; // Vietnam, Tam Dao / Vinh Phu pr. / N. Hradský leg. (P) // ex coll. D. Král / National Museum / NMPC, Czech Republic (P) // – MHNG, 4 ♂♂; // N Vietnam 1985 / Tam Dao, 3–11.VI / 900–1400 m / J. Jelínek leg. (P) // – NMW, 1 ♂; // Vietnam Nord / prov. Vinh-Phu / Tam Dao 6–20.V.1990 / M. Kalabza & Z. Košťál lgt. (P) // – NHMB, 8 ♂♂, 1 ♀; // N Vietnam (Tonkin) / pr. Vinh Phu 1990 / Tam Dao 6–9.V. / P. Pacholátok leg. (P) // – NHMB, 1 ♂; // Tam Dao 20–27.VI. / N. Vietnam A. Olexa 1990 (P) // – NMPC, 1 ♀; // 17–21.V.1990 Tam Dao / Vinh Phu distr. / N. Vietnam, 900 m / Jan Horák leg. (P) // – NMPC, 1 ♀; // Vietnam, Tam Dao / 27.V.–2.VI.1986 / Vinh phu prov. / lgt. J. Rybníček (P) // – ISNB, 1 ♂; // Coll. R. I. Sc. N. B / Nord Vietnam / Tam-Dao Tonkin / Alt. 1100–1300 m / R. Ley coll. et det. / Le Moulit vendit (P) // *Cyph. / vitalisi* Ley / det. R. Ley. 1916 (H) // – PCAR, 1 ♂; // Vietnam Nord / prov. Vinh-Phu / Tam Dao 6–20.V.1990 / M. Kalabza & Z. Košťál lgt. (P) // – MHNG, 10 ♂♂, 10 ♀♀; CPMN, 2 ♀♀; // Vietnam N, 15.V.–16.VI. / 75 km NW from Hanoi / Tam Dao 1991 / Jendek leg. (P) // – SMNS, 3 ♂♂; // Vietnam, prov. Vinh Phu / Tam Dao, 900 m 20–27.V.1995 / ex coll. Mus. Moskau (P on yellow) // – SMNS, 1 ♂, 1 ♀; // Vietnam: Tamdao / 80 m N of Hanoi / prov. Vinh Phu 900 m / 15–17.IV.1986 (P on yellow) // – NHMB, 1 ♂; // N Vietnam / Tam Dao / 19.V.1995 / S. Koyama (H) // – NHMB, 2 ♂♂; // Vietnam Tam Dao / Vinh phu pr. / 3–16.VI.1985 / Navrátil lgt (P) // Freiwilliger / Museumsverein / NHMB 1987 (P on yellow) // – NMW, 2 ♂♂, 2 ♀♀; // Vietnam Tam dao / 27.V.–2.VI.1986 / Vinh phu prov. / lgt J. Rybníček (P) // – NMPC, 1 ♂; // N Vietnam, 900 m / Tam dao, V.1991 / Vin Phu dist. / Duong Tut Tu leg. (P) // ex coll. D. Král / National Museum / NMPC, Czech Republic (P) // – PCAR, 1 ♀; // N. Vietnam, Tam Dao / 18.VI.2012, 400–900 m / leg. Hoa Binh Nguyen (P on yellow) // [sub] *tonkinensis* Brenske // – PCAR, 1 ♀; // N. Vietnam, Tam Dao / Vinh Phúc prov., 1010 m / 21°27.588'N 105°38.475'E / IV.2014, Hoa Binh legit (P on yellow) // – PCAR, 1 ♂, 1 ♀; // N. Vietnam prov., Vinh Phuc / Tam Dao Nat. Pk. 23.VI.2011 / 21°27.23'N 105°38.58'E / 965 m, leg. Hoa Binh Nguyen (P on yellow) // – **Hà Giang Province:** NMW, 1 ♂; // leg. local / Vietnam N, Hà Giang Pr. / Hà Giang env. / VI–VII.2009, 1500–1700 m (P) // – MHNG, 1 ♂; // H'. Dong-Van / Cap.^{ne} Gadel / 1898 (P black border) // – **Quang Nam Province:** PCAR, 2 ♂♂; // North Vietnam, Quang / Nam prov., Ba Na Hills / Mt Res. 25 km W Da Nang / III.2012, leg. Binh Nguyen (P on yellow) // – **Thái Nguyên Province:** PCAR, 1 ♂; // N. Vietnam, Thai / Nguyen Prov., Tam / Dao, 28.IX.2011 / leg. H. Binh Nguyen (P on yellow) // – **Myanmar: Mandalay Region:** MHNG, 3 ♂♂; // Myanmar, Mandalay / Kyaukpadaung / 10.VI.2009 (P) // [bought from Li Jingke] – **Laos: Houaphan Province:** MHNG, 1 ♂; // Laos, 15.V.2001 / Ban Kangpabong (P) // – MHNG, 1 ♂; // NE Laos, Semenua [Sam Nua] / 27.V.1992, leg. Y. Miyake (P) // – MHNG, 2 ♂♂, 2 ♀♀; // Laos, Houaphan prov. / Ban Saleuy 35 km S Sam Nua / 28.V.–10.VI.2013, 1500–1600 m (P) // – MHNG, 4 ♂♂; // NE Laos, Houa Phan prov. / 35 km S Xam Neua, Phu Phan Mt. / Ban Saleuy, 1200–1700 m / 10.V.2006, leg. M. Pejcha (P) // – MHNG, 1 ♂; // NE Laos, Houa Phan prov. / 30 km S Xam Neua, Phu Phan Mt. / 20°13'N, 103°59'E, 2000 m / 15.V.2004, leg. P. Krest (P) // – NMPC, 25 ♂♂, 2 ♀♀; MHNG, 1 ♂; // Laos-NE, Hua Phan prov. / 20°13'09–19°N, 103°59'54" – / 104°00'03E, 1480–1510 m / Phou Pane Mt. 22.IV.–14.V. / 2008, Vit Kubáň leg. (P) // – MHNG, 2 ♂♂; // Laos NE, Hua Phan prov. / 28 km SE Vieng Xai (by road) / Ban Kangpabong env. / 20°19'N, 104°23'E / J. Bezděk leg. 14–18.V.2001 (P) // – MHNG, 10 ♂♂, 1 ♀; // LAOS NE: Hua Phan prov. / Ban Saluei [Saleuy], Phu Pan [Phan] Mt / 1500–1200 m / D Hauck lgt., 26.IV.–11.V.2001 (P) // – ZFMK, 26 ♂♂, 10 ♀♀; // NE-Laos, Hua Phan prov. Ban / Saleui, Phou Pan (Mt.) ~20°12'N / 104°01'E; 1300–1900 m; 07.IV.– / 25.V.2010; leg. C. Holzschuh / Ankauf ZFMK Bonn 2011 (P) // – ZFMK, 116 ♂♂, 58 ♀♀; // NE-Laos, Hua Phan prov. Ban / Saleui, Phou Pan (Mt.) ~20°12'N / 104°01'E / 11.IV.– / 10.V.2012, 1300–1900 m / leg. C. Holzschuh / ZFMK Ankauf [purchase] Bonn 2012–2013 (P) // – PCOM, 1 ♂; // Laos, 1500 m, Ban Saleuy / Mt Phouphan, / 16.V/05.VI.2016, M. Tingaud leg. (P) // – **Luangnamtha Province:** MHN, 5 ♂♂, 5 ♀♀; // Laos, Luang Nam / Tha [Luangnamtha] prov. Bo Tien / 20.V.–6.VI.2009 (P) // – **Phongsali Province:** MHNG, 28 ♂♂, 1 ♀; // Laos, Phongsali province / Muang Koa district / Ban Philanglan, May 2014 (P) // – **Xiangkhouang Province:** MHNG, 11 ♂♂, 3 ♀♀; // NE Laos, 1500 m / Xing Khang, 20.V.1996 (P) //

All above specimens labelled as // Paratypus ♂ or ♀ / *Cyphochilus / dongkinh mihi* / G. Sabatinelli, 2020 (T on red) //

DESCRIPTION. Holotype ♂ (Fig. 13). Body: subcylindrical slightly enlarged toward apex of elytra; BL: 27.2 mm, BW: 10.2 mm, BWX: 13.7 mm; integuments dark brown; dorsal surface with ochraceous uniformly distributed not densely aggregated along the sides of pronotum neither the apical part of elytra.

Head: CW/L: 3; anterolateral edges of clypeus largely rounded, lateral margins of clypeus divergent posteriorly; frons large, making eyes relatively small (F/O: 5.4); antennal club twice longer than antennomeres 2–7 (A2–7/CL: 0.5).

Pronotum transverse (PnW/L: 1.8), strongly convex; apical angles right and lateral angles obtuse.

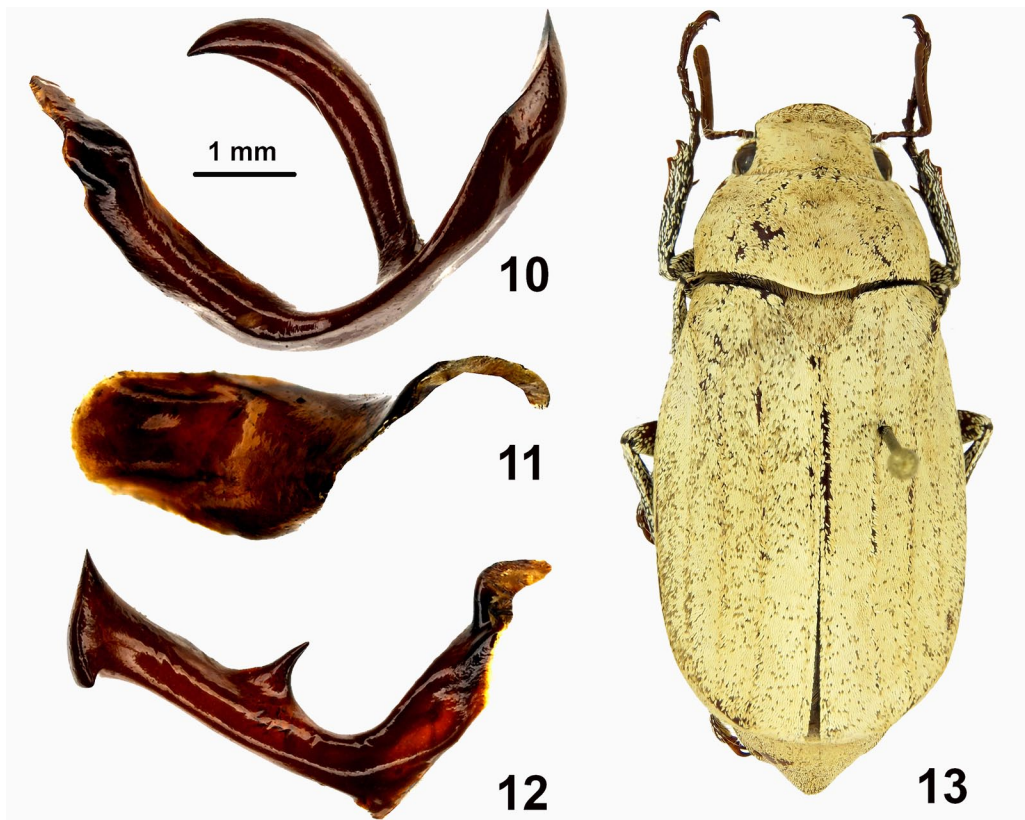
Elytra with four elevated costae, in addition to sutural one, not reaching the marginal apex. Thoracic ventra with short, white setation and scales; mesoventrum not developed and not visible between mesocoxae.

Abdominal ventrites with sparse scales except the median part of the ventrite VIII; pygidium convex with apical margin mucronate.

Legs: protibiae bidentate, the two apical teeth close each other.

Aedeagus: parameres separated by a median lobe as long as the left paramere, excavated in the half distal (Fig. 11) to accommodate the big medial apophysis of the right paramere; right paramere with medial apophysis elongate and slender, falcate, distally acute, longer than the distal part (Fig. 10); left paramere angulated with medial apophysis short as acute spine, much shorter than the distal part (Fig. 12).

MALES PARATYPES. BL: 23.5–27.8 mm (\bar{x} =25.6, n =70). In the male specimens, the colour of scale vestiture of the upper part of the body varies between ochraceous to snow-white.



Figs. 10–13. *Cyphochilus dongkinh* sp. nov. Dissected paramera: 10 – right paramere; 11 – median lobe, apical part toward right; 12 – left paramere; 13 – habitus of holotypus ♂ (BL: 27.2 mm).

FEMALES PARATYPES. Body ovate; BL: 20.5–27.0 mm; BW: 8.6; BWX: 11.3; antennal club ovate, shorter than preceding antennomeres 2–7 (A2–7/CL: 1.1); protibiae 3-toothed. In the female specimens, the colour of scale vestiture of the upper part of the body is more frequently more snow-white than in the males. Pygidium strongly convex (Figs. 20–21).

DIFFERENTIAL DIAGNOSIS. *Cyphochilus dongkinh* sp. nov. can be readily separated from all other congeners by the unique form of the parameres while the external morphology is very similar to *C. tonkinensis* and *C. backy* sp. nov.

ETYMOLOGY. Đông Kinh is the name of Hanoi during the Lê Dynasty. The corruption of this name was used in 1883 for the French colonial Tonkin protectorate, a constituent territory of French Indochina. Noun in apposition.

TYPE LOCALITY AND DISTRIBUTION. The type locality Tam Đảo is a rural district of Vĩnh Phúc Province in the Red River Delta region of northern Vietnam. *Cyphochilus dongkinh* sp. nov. is relatively largely distributed across north Laos (Houaphan, Luangnamtha, Phongsaly and Xiangkhouang Provinces) and Vietnam (Lào Cai, Vĩnh Phúc, Hà Giang, Quang Nam and Thái Nguyên Provinces). There is also an eccentric record of this species from Myanmar (Mandalay Region), however, the specimens were bought from a Chinese dealer who was trading also *Cyphochilus* specimens from Laos and Vietnam and this isolated record need to be confirmed as well as for the isolated southernmost record in the Quam Nang Province of Vietnam also from specimens bought from a Vietnamese insect dealer. *Cyphochilus dongkinh* sp. nov. is sympatric with *C. genevievae* sp. nov. in Laos Houaphan (Ban Saleuy) and Phongsaly (Muang Khua) Provinces and in Vietnam Vĩnh Phúc Province (Tam Dao), with *C. tonkinensis* in Vietnam Lào Cai Province (Sa Pa) and with *C. backy* sp. nov. in Vietnam Hà Giang Province (Dong Van) (Fig. 26).

REMARKS. *Cyphochilus dongkinh* sp. nov. is also the most abundant species of this group in North Laos and Vietnam. As documented by M. Tingaud in April 2012 at Ban Saleuy (Laos), specimens of *Cyphochilus dongkinh* sp. nov. are collected at night by the local populations and eat in soups with vegetables (Fig. 27). This genus should be added to the List of edible insects of the world (Jongema 2017).

It should be noted that in the material from ISNB there is a specimen labelled as type of *Cyphochilus vitalisi* Ley that however was never described.

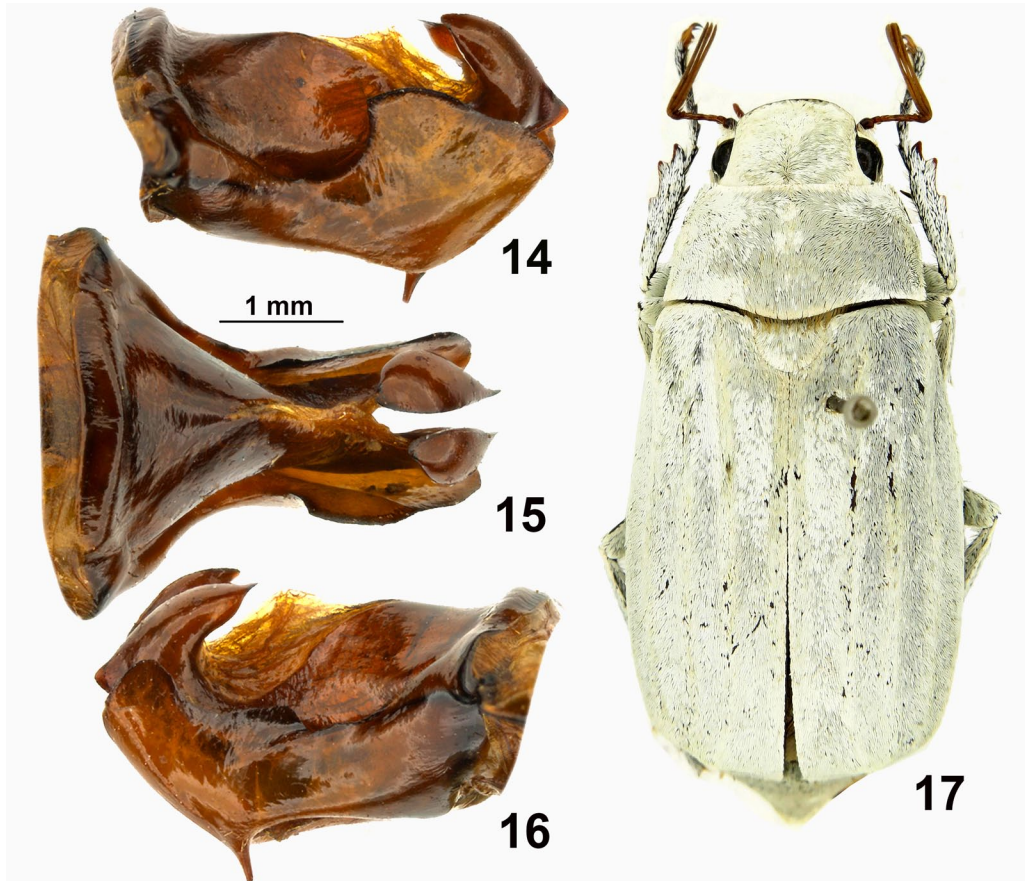
Cyphochilus genevievae sp. nov.

(Figs. 14–17, 24–25)

TYPE LOCALITY. North Thailand, Chiang Rai, Wiangpapao.

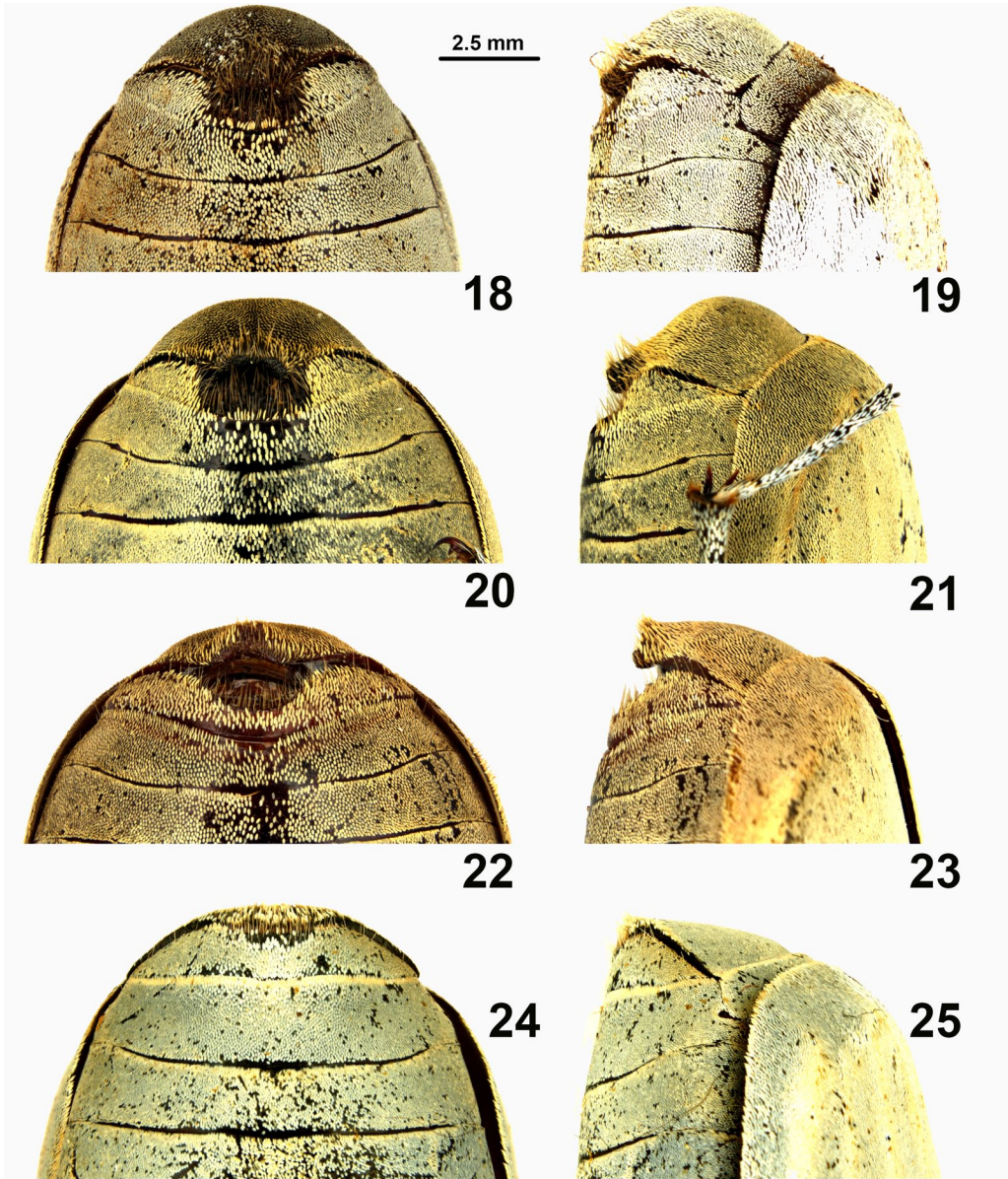
TYPE MATERIAL. **Holotype** ♂ in MHNG; // #MHNG-ENTO-85061 // North Thailand / Chiang Rai, Wiangpapao [also as Wiang Pa Pao] / 18.VI.1992 / Ferrero-Minetti leg. (P) // Holotypus ♂ / *Cyphochilus / genevievae mihi* / G. Sabatinelli, 2020 (T on red) // **Paratypes** (149 specimens). **Thailand: Chiang Mai Province:** PCMN, 2 ♂♂; // Thailand / Chiang Mai / VIII.1991 (H) // – PCMN, 2 ♂, 1 ♀; // Thailand / Chiang Mai / 25.IV.1994 (H) // – HNHM, 1 ♂; // N Thailand / Chiang Mai Prov. / 1996 aug. / Coll. Wong Tet Fatt (P) // – NHNG, 1 ♂; // N Thailand – Chiang Mai / Mae ai, near Fang, V.1991 (P) // – PCAR, 4 ♂♂; // N Thailand – Chiang / Mai 1999 leg. H. / Lehmann + S. Steincke (P on yellow) // – PCAR, 4 ♂♂; // Thailand – Chiang / Mai, Fang V.2009 / loc. coll. via Richter (P on yellow) // – MHNG, 3 ♂♂, // N Thailand / Fang [Chiang Mai Prov.], 10.V.1991 (P) // – **Chiang Rai Province:** MHNG, 2 ♂♂; // North Thailand / Chiang Rai, Wiangpapao [Wiang Pa Pao] / 18.VI.1992 / Ferrero-Minetti leg. (P) // – MHNG, 1 ♂; // 17.V.1993 Thailand // Wiang Pa-Pao (H) // – **Nan Province:** PCAR, 3 ♂♂; // Thailand Nan Prov. / 19.V.1991 leg. H. Leh- / mann & S. Steincke (P on yellow) // – **Myanmar: Mandalay Region:** BMNH; 1 ♂; Maymyo [Mandalay: Pyin Oo Lwin]; leg. H. L. Andrewes. – **Laos: Houaphan Province:** IECA, 3 ♂♂; // Laos NE: Hua Phan [Houaphan] prov. / Ban Saluei [Ban Saleuy], Phu Pan [Phan] Mt / 20°15'N, 104°02'E / 2000 m, 26.IV.–11.V.2001 / leg. J. Bezděk (P) // – IECA, 1 ♂; MHNG 1 ♂; // Laos NE: Hua Phan prov. / 20°13'09"N, 103°59'54"E – / 103°00'03"E 1480–1510 m, Phou Pane Mt, 22.IV.–14.V. / 2008 / Vit Kubáň leg. (P) // – IECA, 2 ♂♂; // Laos NE: Hua Phan Prov. / Ban Saluei, 1300–2000 m / Phu Phan Mt env. / 20°13'N, 103°59'E / 26.IV.–11.V.2001 / leg. J. Bezděk, 6-18-IV.2004 (P) // – PCMN, 2 ♂♂; MHNG 1 ♂; // Laos NE: Hua Phan prov. / Ban

Saluei, Phu Pan Mt / 1500–1200 m / D. Hauck lgt., 26.IV.–11.V.2001 (P) // – NMW, 2 ♂♂; // NE Laos, Houaphan pr. / Ban Saluei, alt. 1500 m / 30 km S of Xam-Neua / 103°53'33"E, 20°13'39"N / 6–17.V.2004, P. Kresl lgt. (P) // – MHNG, 67 ♂♂, 10 ♀♀; // NE Laos – 1500 m / Xing Khang [?], 20.V.1996 (P) // – MHNG, 2 ♂♂, 2 ♀♀; // Laos, Houaphan pr. / Ban Saleui, 35 km S Sam Nua [Xam Neua] / 28.V.–10.VI.2013, 1500–1600 m (P) // [sub] *tonkinensis* Brenske // – ZFMK, 8 ♂♂, 7 ♀♀; // NE-Laos, Hua Phan prov. Ban / Saleui, Phou Pan (Mt.) ~20°12'N / 104°01'E / 11.IV.–/10.V.2012, 1300–1900 m / leg. C. Holzschuh / ZFMK Ankauf Bonn 2012–2013 (P) // – ZFMK, 12 ♂♂, 2 ♀♀; // NE-Laos, Hua Phan prov. Ban / Saleui, Phou Pan (Mt.) ~20°12'N / 104°01'E; 1300–1900 m; 7.IV.–/25.V.2010; leg. C. Holzschuh / Ankauf ZFMK Bonn 2011 (P) // – NHMB, 1 ♂, 1 ♀; // Laos, Houa Phan prov. / 20°12'–13'N, 103°59'–100'E / Ban Saluei – Phou Pane Mt / 1300–1900 m, IV.2012 / K. Sisoutham & local coll. leg. // NHMB / Expedition Laos 2012 (P) // PCOM, 2 ♂♂; // Laos, 1500 m, Ban Saleuy / Mt Phouphan / 16.V/05.VI.2016, M. Tingaud leg. // – **Phongsali Province**: PCAR, 2 ♂♂; // Lao-N Phongsaly [Phongsali] prov. / 21°41'–42'N, 102°06'–08'E / Phongsaly env. / 6–17.V.2004, 1500 m / Vit Kubán leg. (P on yellow) // ex coll. V. Kubán / National Museum / Prague, Czech Republic (P) // – 36 ♂♂, 5 ♀♀; // Lao-N Phongsaly prov. / 21°41'–42'N, 102°06'–08'E / Phongsaly env. / 6–17.V.2004, 1500 m / Vit Kubán leg. (P on yellow) // ex coll. V. Kubán / National Museum / Prague, Czech Republic (P) // – NHMB, 31 ♂♂, 2 ♀♀; // Laos, Phongsaly prov. / 21°41'–42'N, 102°06'–08'E / 28.V.–20.VI.2003 / Phongsaly env. / 1500 m, Brancucci leg. (P) // – MHNG, 1 ♂; // Lào,



Figs. 14–17. *Cyphochilus genevievae* sp. nov. 14 – parameres and medial lobe in right lateral view; 15 – parameres and median lobe in dorsal view; 16 – parameres and median lobe in left lateral view; 17 – habitus of holotypus ♂ (BL: 27.7 mm).

Phongsaly prov. / 21°21'N, 102°03'E / Ban Sano Mai / 19–26.V.2004, 1150 m / M. Brancucci leg. (P) // – MHNG, 10 ♂♂, 2 ♀♀; // Laos – Phongsaly prov. / Muang Khoa distr. / Ban Phianglan, May 2014 (P) // – MHNG, 1 ♂; // Laos, Phongsaly prov. / Muang Khua district / Ban Phianglan, May 2014 (P) // [sub] *tonkinensis* Brenske // – **Xiangkhouang Province:**



Figs. 18–25. Pygidium and ventrite VIII in females. 18–19 – *Cyphochilus backy* sp. nov. 20–21 – *C. dongkinh* sp. nov. 22–23 – *C. tonkinensis* Brenske, 1903. 24–25 – *C. genevievae* sp. nov.

NHMB, 1 ♂; // Laos-NE, Xieng Khouang / prov. 19°38.20'N, 103°20.20'E / Phonsavan (30 km NE) / Phou Sane Mt., 1420 m / 10–30.V.2009, Z. Kraus leg. (P) // NHMB, NMPC NMPC / Laos 2009 Expedition: / M. Brancucci, M. Geiser / Z. Kraus, D. Hauck, V. Kubáň (P) // – NMPC, 4 ♂♂; // Laos-NE, Xieng Khouang prov. / 19°38.20'N, 103°20.20'E / Phonsavan (30 km NE) / Phou Sane Mt., 10.–30.V.2009 / 1420 m, Vit Kubáň leg. (P) // Primary mountain forest / individual collecting / Laos 2009 Expedition / National Museum Prague, / Czech Republic (P) // – **Louangphabang Province**: ISNB, 1 ♂; // Luang Prabang [Louangphabang] / Ban Sen Savouane / 16.III.1920 / R. V. de Salvaza (P) // TYPUS (P on red [? no other label]) // ISNB, 1 ♀; // Luang Phabang / Muong You / 7.V.1919 / R.V. de Salvaza (P) // – **Vietnam: Vinh Phuc Province**: MHNG, 9 ♂♂, 2 ♀♀; // N. Vietnam – Vinh Phuc Prov. / Tam Dao Nat. Park, 1000 m / 14.VIII.2011, leg. M. Pejcha (P) // – **China, Guangxi Zhuang Autonomous Region**: NMPC; 2 ♂♂; // China, Guangxi A. R. [Autonomous Region] 5.IV.2013 / Shiwandashan [Shiwan Dashan] National Forest Prk / (forested river valley, at light) / 21°54.4'N, 107°54.2'E, 290–360 m / M. Fikáček, J. Hájek, J. Růžička leg. (P) //.

All above specimens labelled as // Paratypus ♂ or ♀ / *Cyphochilus genevievae* mihi / G. Sabatinelli, 2020 (T on red) //.

DESCRIPTION. Holotype ♂ (Fig. 17). Body ovate; BL: 27.7 mm, BW: 9.5 mm, BWX: 11.7 mm situated at midpoint of elytra; integuments shiny dark brown almost black, antennal club light brown and opaque in contrast with the funicle back and shiny; entire body including legs and tarsi with white scales uniformly distributed, not aggregated in any part of the body.

Head: CW/L: 3; anterolateral edges of clypeus rounded, lateral edges of clypeus curved divergent posteriorly; frons large, making eyes relatively small (F/O: 5.1); antennal club, twice longer than antennomeres 2–7 (A2–7/CL: 0.5).

Pronotum: transverse (PnW/L: 1.8), strongly convex; apical angles obtuse, basal angles almost right.

Elytra with five elevated striae, the 2nd and 3rd more prominent.

Thoracic ventra with short, white setation and scales; mesoventrum not developed between the mesocoxae, which are medially contiguous.

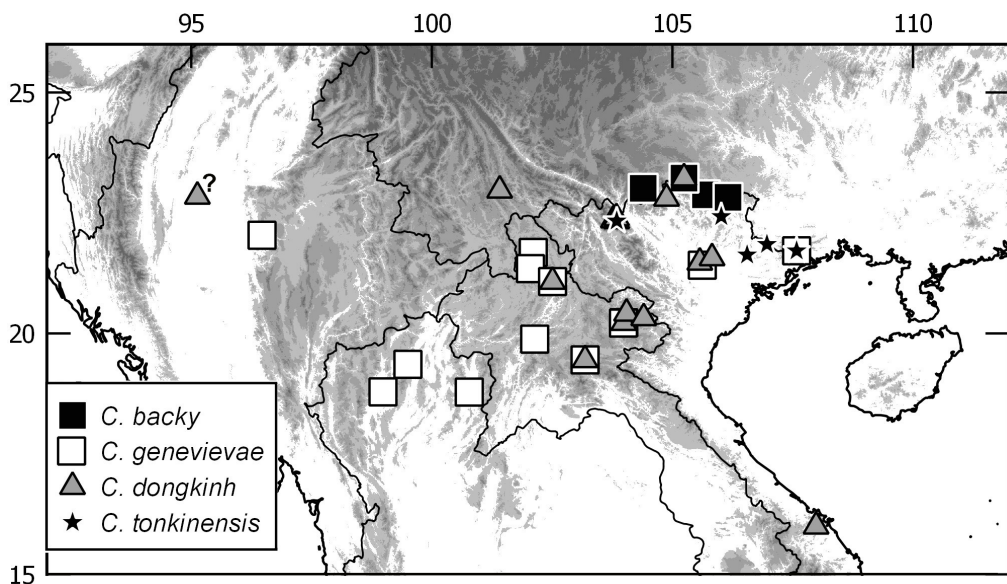


Fig. 26. Geographical distribution of *Cyphochilus tonkinensis* Brenske, 1903, *C. backy* sp. nov., *C. dongkinh* sp. nov., and *C. genevievae* sp. nov.

Abdominal ventrites with dense scales except along the median part of the ventrite VII that has also the distal margin slightly sinuate. Pygidium slightly convex with ventral surface mucronate.

Legs: protibiae tridentate with the two apical teeth similar in size and closer each other than to the basal one.

Aedeagus: medial lobe divided distally in two processes curved dorsally (Figs. 14, 15); parameres similar in morphology, with the distal part expanded dorsally (Fig. 14); left paramere bearing a small spine on the ventral margin (Fig. 16).

MALE PARATYPES. BL: 23.2–28.5 mm (\bar{x} =28.3, n =55).

FEMALE PARATYPES. BL: 29.9–25.4 mm; BW: 9.6; BWX: 12.8; antennal club ovate, shorter than preceding antennomeres (A2–7/CL: 1.13); protibiae 3-toothed, ventrite VIII sinuate apically; pygidium slightly convex, marginal apex normally rounded (Figs. 24, 25).

DIFFERENTIAL DIAGNOSIS. *Cyphochilus genevieveae* sp. nov. it is one of the most common *Cyphochilus* present in the entomological collections. The specimens are easily recognizable for the relatively large size (up 30 mm) and snow-white vestiture; however, it was often confused with *C. tonkinensis* from which males can be easily separated by the more large base of pygidium and



Fig. 27. Specimens of *Cyphochilus dongkinh* sp. nov. eaten by local population in a soup with local vegetables as documented by M. Tingaud in April 2012, at Ban Saleuy (30 km southwest of Sam Nua, Laos).

females by the regularly curved abdominal ventrite VIII (Figs. 22, 23 versus Fig. 25). From all other congeners, it is readily distinguishable by unique form of parameres.

ETYMOLOGY. This species appears to be the most beautiful among *Cyphochilus*, I would like to dedicate it to my wife Geneviève Darbre who kindly bear/support, since 1986, my passion for scarabs.

TYPE LOCALITY AND DISTRIBUTION. The type locality Wiang Pa Pao is the southwesternmost district of Chiang Rai Province in northern Thailand. The Khun Tan Range, that occupies a central position in Northern Thailand, conditions the landscape of the district with a pick of about 1600 m and the intermontane basins at about 500 m a. s. l. The species has a wide distribution of about 1400 km from Myanmar (Mandalay Region), Thailand (Chiang Mai, Chiang Rai and Nan Provinces), Laos (Houaphan, Phongsali, Xianghouang and Louangphabang Provinces), and Vietnam (Vĩnh Phúc Province) up to South East China (Guangxi Zhuang Autonomous Region). *Cyphochilus genevievae* sp. nov. is sympatric with *C. dongkinh* sp. nov. in Tam Dao (Vietnam, Vĩnh Phúc), Muang Khua (Laos, Phongsali) and Ban Saleuy (Laos, Houaphang) and with *C. tonkinensis* in Shiwan Dashan (China, Guanxi; Fig. 26).

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