

**New *Agathidium* Panzer, 1797 (Coleoptera: Leiodidae: Leiodinae) from China
without or with reduced eyes - addition I**

Zdeněk ŠVEC

Kamenická 4, 170 00 Praha 7, Czech Republic
e-mail: zd.svec@volny.cz

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Abstract. *Agathidium* (*Agathidium*) *involutum*, *A. (A.) excavatum* and *A. (A.) simpliforme*, spp. nov. from China are described, distinguished from similar species and figured. The key to the identification of new and similar species is presented.

INTRODUCTION

This work is further to the paper dealing with Chinese blind *Agathidium* species or species with strongly or distinctly reduced eyes (Švec, 2014).

This paper comprises those Chinese *Agathidium* species sharing the following characters:

1. lack of membranous wings,
2. lack of eyes or eyes strongly reduced,
3. specific rhombic shape of the head,
4. long temples (at least 0,5 times of the eye length with few exceptions),
5. roundly angulate temple angles in dorsal view,
6. supraocular carina verges into postero-lateral marginal crest,
7. small to medium size of body 1.5-3.0 mm,
8. yellow-red or reddish-brown dorsum,
9. unicolorous light antennae,
10. metaventrite usually abbreviated even in the species belonging to *Agathidium* s. str.

The shape of body of these species is in a range from short oval to very oblong oval. Dorsal punctures bear short light coloured recumbent setae predominantly oriented anteriorly on head, posteriorly or posterolaterally on pronotum and randomly or posteriorly on elytra. Mainly those species lacking eyes have a few very sparse long erect setae on their dorsum.

Altogether twenty-two *Agathidium* species having the combination of the characters mentioned above are known to occur in China including those three species described as new in this paper.

MATERIAL AND METHODS

Thanks to the courtesy of Michael Schülke (Berlin, Germany) and Jiří Hájek (National Museum, Prague, Czech Republic) the author was provided with interesting *Agathidium* material, recently collected in China, including species having strongly reduced eyes.

If it is not stated otherwise the descriptions of the new species are based on the holotypes only.

The description of the variability is based on the paratype specimens.

The measurements of total body length were taken from all the specimens examined. Specific measurements of the individual body parts were taken from the holotypes only. The measurements were rounded off to the first decimal place.

Abbreviations of body parts and measurements:

Median lobe - median lobe of aedeagus.

Basal part of median lobe - median foramen (sensu Park, Leschen & Ahn 2013).

AII-AXI antennomeres II-XI.

AIII/AII The ratio of the length of the antennomeres III:II.

MTLM Length of metaventricle measured at midline from the top of anterior process and top of posterior process of metaventricle.

MTLC Length of metaventricle measured at the shortest distance (between mid- and hind-coxae).

MTW Width of metaventricle measured between outermost postero-lateral points.

MTW/MTLM or MTLC Ratio between relevant measurements.

L Length.

W Width.

L/W or W/L Ratio between measurements

Collection abbreviations:

MSBC Michael Schülke, Berlin, private collection, Germany;

NMPC National Museum, Praha, Czech Republic,

ZSPC Zdeněk Švec, Praha, private collection, Czech Republic.

The material examined was compared with the type and other material deposited in the author's collection and the collection of Jonathan Cooter (Oxford, England). The material mentioned in this paper is deposited in the collections of MSBC, NMPC and in ZSPC.

In this paper all the terms follow those in Švec 2014.

The dissected male genitalia were glued by gum Arabic on the same plate as the relevant specimen; female genitalia were mounted in gum Arabic or in polyvinylpyrrolidone (Lompe 1986) on the same plate or on a transparent plate added to the same pin as the relevant specimen.

Each holotype or paratype is indicated by a red label bearing the status of the specimen (holotypus or paratypus respectively), name of the species, the name of the author, year 2015 and attached to the same pin as the relevant specimen.

The male genitalia are figured in dorsal and lateral views. The shape of the operculum is indicated in dorsally figured median lobe by a dotted line.

KEY AND DESCRIPTIONS

Key of the Chinese *Agathidium* Panzer, 1797 sharing the characters 1-10 mentioned above in the Introduction

Generally the species are variable in details and simultaneously uniform in the general appearance. Therefore dissection and the examination of the genitalia are frequently necessary for correct identification.

1	Femoral lines lacking, metaventrite abbreviated, lateral angle of elytra feebly developed unobtrusive; head usually obtrusively broad (subg. <i>Macroceble</i>).	2
-	Femoral lines developed although sometimes strongly approximate or even partly confluent with border of mesocoxal cavities; metaventrite well developed or abbreviated, lateral angle of elytra feebly developed unobtrusive (subg. <i>Agathidium</i>).	6
2(1)	Species lacking eyes. Tarsal formula 4-4-4 in male,	3
-	Eyes strongly reduced but visible in dorsal view. Tarsal formula 5-5-4 in male.	4
3(2)	Average size larger (1.8-2.2 mm). Median lobe of aedeagus constricted before tip; spermatheca U-shaped, stout (figs. 20, 22 in Švec 2014. China (Yunnan).	<i>A. (Macr.) caecum</i> Švec, 2014
-	Body on average smaller (1.4-2.0 mm). Median lobe of aedeagus evenly narrowed apically; spermatheca U-shaped, slim (figs. 26, 28 in Švec 2014). China (Yunnan).	<i>A. (Macr.) fernandoangelinii</i> Švec, 2014
4(2)	Median lobe very broadly rounded at apex (Fig. 27 in Angelini 2002). Antennal segment III distinctly longer than segment II (AIII/AII=1.4). Length 2.1 mm. China (Hubei).	<i>A. (Macr.) nanum</i> Angelini, 2002
-	Median lobe apically emarginate or conical with rounded tip (figs. 42, 43 in Angelini & Cooter 2003). Antennal segment III approximately as long as segment II.	5
5(4)	Median lobe apically emarginate (Fig. 43 in Angelini & Cooter 2003). Spermatheca J-shaped with stout basal part. Longitudinal carina on mesoventrite weakly developed. Length 2.2-2.3 mm. China (Hubei).	<i>A. (Macr.) penultimum</i> Angelini et Cooter, 2003
-	Median lobe conically narrowed to rounded tip (Fig. 42 in Angelini & Cooter 2003). Mesoventral carina sharp. Length 1.5-1.7 mm. China (Jianxi, Fujian).	<i>A. (M.) dongnanense</i> Angelini et Cooter, 2003
6(1)	Sutural striae not developed on elytra.	7
-	Sutural striae developed. Entire dorsum distinctly microreticulate. Median lobe deeply emarginate on apex (figs. 41, 42 in Angelini & Švec 2000). Length 3.4 mm. China (Gansu).	<i>A. (A.) janatai</i> Angelini et Švec, 2000
7(6)	Eyes developed, but reduced, not visible in dorsal view.	8
-	Eyes reduced but visible in dorsal view. Temples long well developed.	13
8(7)	Dorsum without microreticulation.	9
-	Dorsum at least in part distinctly microreticulate.	11
9(8)	Smaller (2.0-2.1 mm); median lobe with simple abruptly or broadly rounded tip apically; basal part of median lobe bent, almost ring-shaped.	10
-	Larger (2.3-2.7 mm). III/II=1.3-1.6. Aedeagus with small unobtrusive nipple apically. Basal part of aedeagus simple, rounded (as in Fig. 7). Tarsal formula in male 4-4-4. Spermatheca with basal part almost cylindrical, proximal part slim, bent at apex (Fig. 10). China (Yunnan)	<i>A. (A.) excavatum</i> sp. nov.
10(9)	Temples broadly rounded, head widest at some distance behind posterior margin of eye; ratio of eye: temple length 2.7:1.0 (see from oblique lateral view). Antennomeres VI-X broader than long. Median lobe regularly narrowed to almost pointed tip (Fig. 8 in Švec 2014). China (Yunnan). 2.0 mm.	<i>A. (A.) cryptophthalmum</i> Švec, 2014
-	Temples roundly angulate, head widest at very short distance behind posterior margin of eye. AIV-AX broader than long. Median lobe very broadly rounded apically (Fig. 18 in Švec 2014). China (Yunnan). Length 2.1 mm.	<i>A. (A.) daublebskyorum</i> Švec, 2014
11(8)	Clypeus deeply or at least very distinctly emarginate. Elytra microreticulate, without puncturation. Aedeagus with nipple on apex. Parameres swollen distally (Fig. 14 in Angelini & Cooter 1999). Length 1.6 mm. China (Zhejiang).	<i>A. (A.) nitidulum</i> Angelini et Cooter, 1999
-	Clypeus shallowly emarginate. Elytra microreticulate, punctured. Median lobe evenly curved to very abruptly rounded apex; parameres slim distally; spermatheca U-shaped with swollen basal part (figs. 11, 13 in Švec 2014). Length 1.6-1.8 mm. China (Yunnan).	<i>A. (A.) minoculum</i> Švec, 2014
12(7)	Average smaller (up to 2.4 mm). AIII/AII=0.9-1.6.	13
-	Body size larger (2.9-3.0 mm). AIII/AII=1.9. Elytra superficially microreticulate, not punctured. Head and pronotum smooth but punctured. Head with short temples (at most as long as one-third length of eyes). Aedeagus with nipple apically (Fig. 28 in Angelini 2002). China (Yunnan).	<i>A. (A.) michaeli</i> Angelini, 2002

- 13(12) Metaventricle short or very short, meso- and metacoxae very approached. Median lobe not emarginate apically. 14
- Metaventricle moderately developed, coxae not extremely approached. Median lobe very deeply emarginate apically ending in two gradually widened rami; spermatheca with bulbous basal part (figs. 2, 4 in Švec 2014). Elytra microreticulate. Length 1.8-2.0. China (Zhejiang). *A. (A.) cavum* Švec, 2014
- 14(13) Median lobe first angulate laterally then broadly triangular at apex, operculum narrow, conical with abruptly rounded apex or oblong oval with unobtrusive shallow pit on its apex; basal part of median lobe spiral-shaped, spermatheca J-shaped with cylindrical basal part (figs. 37-39 in Angelini & De Marzo 1998; figs. 17, 18 in Angelini & Cooter 1999). Dorsum at least partly microreticulate. 15
- Median lobe ending in nipple or small bump or broadly rounded apically or evenly narrowed to shortly rounded tip (figs. 2, 8, 12 in Švec 2014 and also Fig. 23 in Angelini & Cooter 2003; figs. 29, 32, 35, 43 in Angelini & Cooter 1999). Spermatheca U-shaped (figs. 30, 33, 36, 44 in Angelini & Cooter 1999), or J-shaped with strongly swollen or even pyriform basal part (figs. 4, 15). Dorsum without or with traces of microreticulation. 16
- 15(14) AIII longer than AII (AIII/AII=1.3). Aedeagus with slim parameres, operculum protruding a little at apex of median lobe in dorsal view; spermatheca with swollen basal part (figs. 37-39 in Angelini & De Marzo 1998). Tarsal formula 5-5-4 in male; 4-4-4 in female. Length 2.2-2.3 mm. China (Hubei).
- *A. (A.) celatum* Angelini et De Marzo, 1998
 - AIII as long as AII. Aedeagus with parameres swollen apically, operculum not visible in dorsal view; spermatheca with swollen basal part constricted and bent at base (figs. 16-18 in Angelini & Cooter 1999). Tarsal formula 5-5-4 in male, 5-4-4 in female. Length 2.1-2.4 mm. China (Jiangsu).
 - *A. (A.) zijinense* Angelini et Cooter, 1999
- 16(14) Parameres slim or unobtrusively widened apically. Median lobe broadly rounded on apex or evenly narrowed to very shortly rounded tip. Spermatheca U-shaped; if J-shaped spermatheca straight at base. 17
- Parameres distinctly swollen apically; median lobe ending in distinct nipple; spermatheca curved at base (figs. 28-30 in Angelini & Cooter 1999). Smooth except of vague traces of microreticulation on elytral apex and very fine and sparse punctures. AIII/AII=0.9. Length 1.5-2.0 mm. China (Zhejiang).
 - *A. (A.) tianmuoides* Angelini et Cooter, 1999
- 17(16) Median lobe broadly rounded on apex; spermatheca J-shaped with cylindrical basal part. III/II=1.0-1.1. 18
- Median lobe conically or slightly roundly narrowed to apex simply very abruptly rounded; spermatheca U-shaped or J-shaped with swollen basal part. III/II=0.9-1.6. 19
- 18(17) Average size smaller (1.8-1.9 mm). III/II=1.1. Parameres unobtrusively thicken on apex; distal part of J-shaped spermatheca terminates approximately at level of mid-length of basal part (figs. 34-36 in Angelini & Cooter 1999). China (Zhejiang). *A. (A.) paratianmuense* Angelini et Cooter, 1999
- Size larger (2.5 mm). III/II=1.0. Parameres slim all along their length (Fig. 23 in Angelini & Cooter 2003).
 - *A. (A.) jiuchongense* Angelini et Cooter, 2003
- 19(17) Average size smaller (1.7-2.1 mm). Operculum oval with distinct emargination apically or even U-shaped. Basal part of median lobe ring-shaped or J-shaped. 20
- Average size larger (1.8-2.4 mm). Operculum rectangular or oval with very shallow emargination apically; basal part of median lobe spiral-like, twisted. 21
- 20(19) Smaller (1.7-1.9 mm). Eyes reduced, flat, oblong oval but well visible in dorsal view (Fig. 40 in Angelini & Cooter 1999). III/II=1.1. Basal part of spermatheca slimmer than distal part (genitalia as in figs. 42-44 in Angelini & Cooter 1999). China (Zhejiang). *A. (A.) tianmuense* Angelini et Cooter, 1999
- Larger (2.1 mm). Eyes visible as very narrow strip (consisting of one row of ommatidium) in dorsal view (as in Fig. 13). III/II= 1.0-1.1. Basal part of spermatheca pyriform (Fig. 15). Aedeagus as in figs. 11, 12. China (Jiangxi).
 - *A. (A.) simpliforme* sp. nov.
- 21(19) III/II=1.2. Microreticulation in vague traces on pronotum and elytra. Lateral outline of pronotum broadly rounded. Parameres slim in dorsal view (Fig. 32 in Angelini & Cooter, 1999). Basal and distal parts of spermatheca similar in their strength; base of spermatheca strongly curved inward. 1.9-2.1 mm. China (Zhejiang). *A. (A.) pseudotianmuense* Angelini et Cooter, 1999
- III/II= 0.9-1.0. Microreticulation absent. Lateral outline of pronotum shortly rounded. Parameres a little swollen before apex in dorsal view (Fig. 2). Basal part of spermatheca pyriform, distal part much slimmer. 1.9-2.4 mm. China (Guangdong).
 - *A. (A.) involutum* sp. nov.

***Agathidium (Agathidium) involutum* sp. nov.**

(Figs. 1-5, 16)

Type material. Holotype (♂): "CHINA: GUANGDONG prov. / Nanling National Nature Reserve / DADONGSHAN NP, 21.iv.2013 / 24°54.62'N, 112°43.11'E, 770 m / J. Hájek & J. Růžička leg. // sift # 19 bamboo forest on right / slope of valley above small dam, / close to former field station, sifting / of leaves, in deeper depressions / and close to large stones //", (NMPC). Paratype: (♀), same locality data, (ZSPC).

Description. Length of body 1.9-2.4 mm, in holotype 2.4 mm. Length of body parts in holotype: head 0.5 mm, pronotum 0.8 mm, elytra 1.1 mm, antenna 0.6 mm, aedeagus 0.9 mm. Maximum width of body parts in holotype: head 1.0 mm, pronotum 1.1 mm, elytra 1.0 mm.

Oblong oval (Fig. 16). Dorsum and legs yellow-red. Antennomeres yellow-red, AI brown. Ventral surface yellow-red with darker coxae and longitudinal carina of mesoventrite. Dorsum punctured, without microreticulation. Sutural striae absent; femoral lines developed (species group *dentatum* sensu Angelini 1993).

Head. Maximum width of head far from posterior margins of eyes, temples very broadly rounded, well developed, ratio of eye length : temple length=0.8. Eyes very flat, reduced, almost no detectable in dorsal (Fig. 3) and ventral views. Eyes very narrow in lateral view. Ratio of length: maximum width of eyes = 19:1 in dorsal view; 2:1 in lateral view. Supraocular carina low all along its length. Supra- and subocular carina meet some distance behind posterior margin of eye, approximately in middle of temple arc. Ommatidia confluent with each other without distinct borders. Clypeus distinctly emarginate, clypeal line lacking. Antennomere III as long as AII (AIII/AII = 1.0). AIII as long as AIV and AV together. AIV and AV as wide as long, AVI-AXI broader than long, AXI 1.2 times broader than long; 1.5 times as long as AX. AX as wide as AXI. Surface of head smooth, lacking microsculpture but with very sparsely arranged extremely small and fine punctures separated by more than 10 times their own diameters marked by short recumbent setae.

Pronotum. Shape in dorsal view as in Fig. 16. Sides shortly arcuate in lateral view (Fig. 5). Puncturation similar as on head.

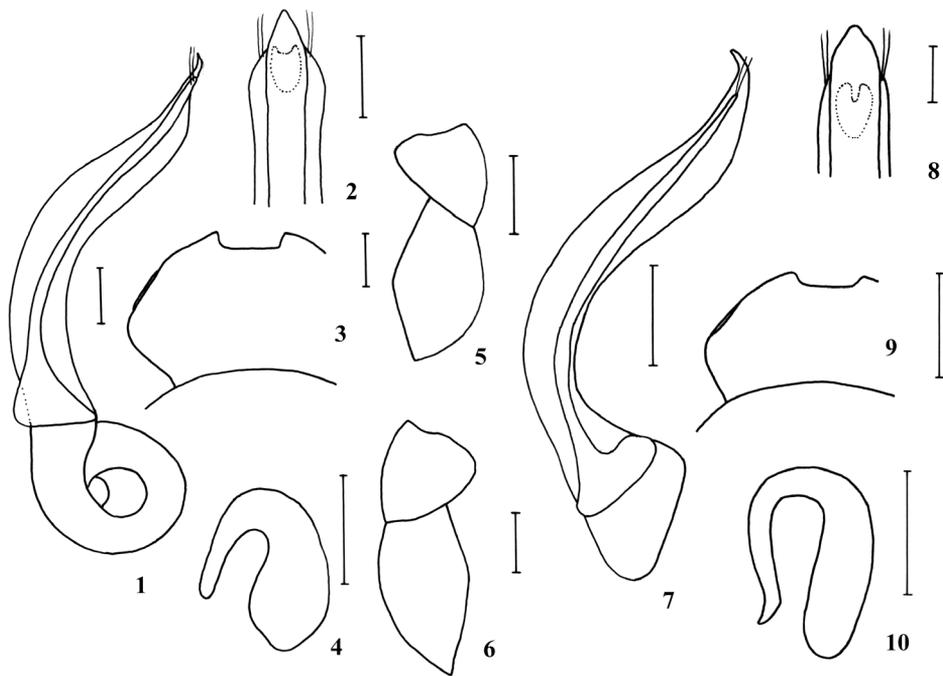
Elytra. Shape as in figs. 5, 16. Puncturation similar to that of head and pronotum. Sutural stria absent. Lateral angle located approximately in mid-length of elytra.

Legs. Anterior and mid-tarsomeres I-IV distinctly dilated in male, gradually narrowed toward apex of tarsus. Tarsi slender in female. Tibia slim. Hind femora without specific characters. Tarsal formula: 5-5-4 in male; 4-4-4 in female.

Mesoventrite. Posterior part subconcave. Anterior part raised with longitudinal carina. Lateral lines absent.

Metaventrte. Femoral lines complete very closely approximated to mid-coxal cavities. Metaventrte abbreviated - MTW/MTLM = 3.6; MTW/MTLC= 8.3. Membranous wings absent.

Genitalia. Aedeagus as in Figs. 1-2. Median lobe flatly rounded laterally toward almost pointed apex in dorsal view. Operculum semi-oval with short slim process at each side of distal margin. Spermatheca as in Fig. 4.



Figs. 1-10. Figs. 1, 7- aedeagus lateral; Figs. 2, 8- apex of aedeagus dorsal; Figs. 3, 9- head dorsal schematically; Figs. 4, 10- spermatheca; Figs. 5, 6- pronotum with elytra lateral; 1-5- *Agathidium (Agathidium) involutum* sp. nov.; 6-10- *A. (A.) excavatum* sp. nov. Scale = 0.1 mm in figs 1-4, 8, 10; 0.2 mm in Fig. 3; 0.5 mm in figs 5, 6, 9.

Variation. AIII/AII=0.9 in the paratype. The eyes of the female paratype more visible in dorsal view (ratio L/W =7.5:1.0).

Differential diagnosis. *Agathidium (A.) involutum* sp. nov. is similar to *A. (A.) pseudotianmuense* Angelini et Cooter, 1999 from China in size and colour of its body and antennae, absence of sutural striae, lack of membranous wings and shape of the basal part of the median lobe of the aedeagus. It is similar also to *A. (A.) simpliforme* sp. nov. in the shape of head having the eyes strongly reduced, visible as narrow strip in dorsal view and the shape of the apex of aedeagus. The new species differs by the eyes strongly reduced for very narrow strip in dorsal view while the same are oblong oval in *A. (A.) pseudotianmuense*; from *A. simpliforme* it differs distinctly by the shape of basal part of the aedeagus, by larger size of body and by broadly rounded temples. Basal part of spermatheca is much stouter than distal part in the new species while basal and distal parts of spermatheca are similar in their strength in *A. pseudotianmuense*.

Name derivation. The name of the new species refers to the twisted spiral-like base of the median lobe of aedeagus (from Latin involutus - rolled out).

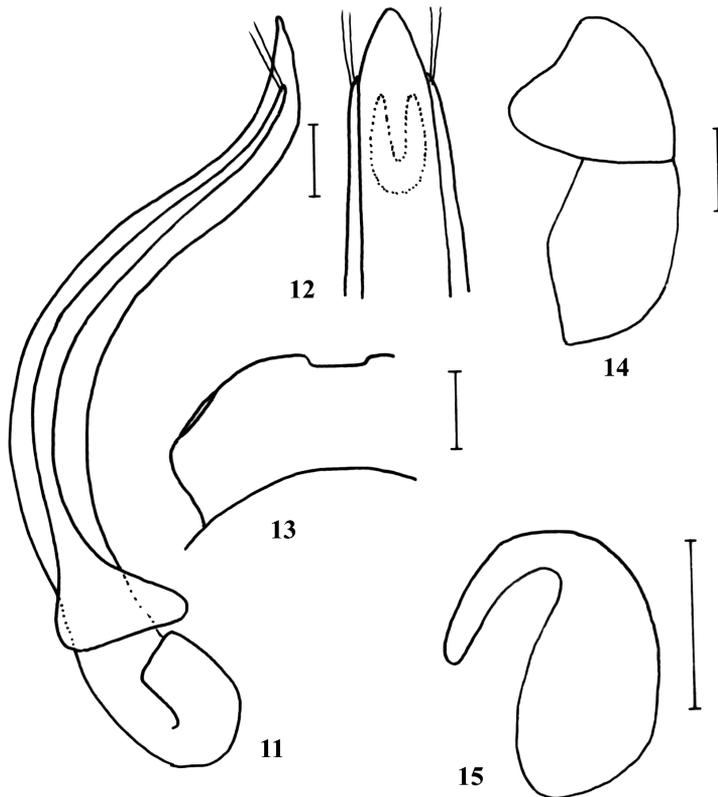
Agathidium (Agathidium) excavatum sp. nov.

(Figs. 6-10, 17)

Type material. Holotype (♂): "CHINA: Yunnan, SE Pingbian, / 22°54'31"N, 103°41'44"E, 2100 m, / primary subtropical broad-leaved/ forest, litter sifted, 28.VIII.2014, / leg. M. Schülke [CH14-22a]", (MSBC); paratypes (♂, 2 ♀♀, 6 specimens, sex indet.), same locality data, (MSBC, ZSPC); (2 ♂♂, 2 ♀♀, 5 spec. sex indet.), same locality data but 27.viii.2014, [CH14-22], (MSBC, ZSPC).

Description. Length of body 2.3-2.7 mm, in holotype 2.7 mm. Length of body parts in holotype: head 0.6 mm, pronotum 0.9 mm, elytra 1.2 mm, antenna 0.8 mm, aedeagus 1.0 mm. Maximum width of body parts in holotype: head 1.1 mm, pronotum 1.5 mm, elytra 1.5 mm.

Oval (Fig. 17). Dorsum and legs light red-brown. Antennomeres yellow-reddish; AI red-brown. Ventral surface yellow-red with darker coxae and longitudinal carina of mesoventrite. Dorsum punctured, without microreticulation. Sutural striae absent; femoral lines developed



Figs. 11-15. *Agathidium (Agathidium) simpliforme* sp. nov.: 11- aedeagus lateral; 12- apex of aedeagus dorsal; 13- head dorsal schematically; 14- pronotum with elytra lateral; 15- spermatheca. Scale = 0.1 mm in figs 10, 12, 15; 0.2 mm in Fig. 13; 0.5 in Fig. 14.

but confluent with mesocoxal cavities, (species standing on the border of subgenus *Agathidium* s.str. species group *dentatum* sensu Angelini 1993 and subgenus *Macroceble* Angelini, 1993 - see the paragraph Discussion).

Head. Maximum width of head far behind posterior margins of eyes, temples broadly rounded, well developed, ratio of eye length : temple length=5:1. Eyes very strongly reduced, detectable as a translucent narrow strip in dorsal view (Fig. 9), not visible in ventral view. Eyes very narrow in lateral view appear as narrow fissure between supra and sub-ocular carina containing one row of ommatidia. Supraocular carina raised anteriorly before clypeus resembling the *Agathidium* belonging to *madurensis* species group sensu Angelini (1993). Supra- and subocular carina meet closely behind posterior margin of eye. Ommatidia confluent with each other without distinct borders. Clypeus distinctly emarginate, clypeal line absent. Antennomere III distinctly longer than AII (AIII/AII = 1.4). AIII longer than AIV and AV together.

AIV-AX broader than long, AXI 1.2 times longer than broad; two times as long as AX. AX broader than AXI (W AX/AXI=1.1). Surface of head smooth, but with very sparsely arranged extremely small and fine punctures separated by more than 10 times their own diameter.

Pronotum. Shape in dorsal view as in Fig. 17. Sides shortly rounded in lateral view (Fig. 6). Puncturation similar as on head.

Elytra. Shape as in figs 5, 17. Puncturation stronger deeper and denser similar to that of head and pronotum, separated by about 6-8 times their own diameter. Sutural stria absent. Lateral angle located far before mid-length of elytra.

Legs. Anterior and mid-tarsomeres I-IV distinctly dilated in male, gradually narrowed. Tarsi slender in female. Pro- and mid- tibia distinctly expanded toward apex, 3 times as wide apically as on their base, hind tibia less expanded. Hind male femora angled in middle of hind margin. Tarsal formula: 4-4-4 in male and female.

Mesoventrite. Posterior part subconcave. Anterior part raised with distinct but obtuse longitudinal carina. Lateral lines absent.

Metaventrte. Femoral lines developed - medially first very tightly approximated then confluent with border of mid-coxal cavities. Metaventrte very abbreviated - MTW/MTLM = 3.7; MTW/MTLC= 23.3. Central depression of metaventrte with oblique, apically widely rounded process oriented posteriorly between posterior coxae. Membranous wings absent.

Genitalia. Aedeagus as in figs. 7, 8. Median lobe rounded laterally toward apex ending with vague small nipple. Operculum oval with distinct apical emargination. Spermatheca as in fig. 10.

Variation. AIII/AII=1.3-1.6 in the type series. The eyes in one of the paratypes more visible in lateral view (1-2 rows of ommatidia). Puncturation of head stronger than pronotum in two of the paratypes. Femoral lines very approximate to mid-coxal cavities but distinctly separated running parallel in some of the paratypes.

Differential diagnosis. *Agathidium* (*A.*) *excavatum* sp. nov. is similar to *A.* (*A.*) *daublebskyorum* Švec, 2014 from China in the colour of its body and antennae, absence of sutural striae, absence of microreticulation, the shape of head having roundly angulate

temples and the eyes strongly reduced, usually not visible in both dorsal and ventral view. It differs by its larger size the shape of the basal part of the median lobe and by the shape of the apex of the median lobe.

Name derivation. The name of the new species refers to excavate operculum.

Agathidium (Agathidium) simpliforme sp. nov.
(Figs. 11-15, 18)

Type material. Holotype (♂): "CHINA: Jiangxi prov. [MF 08] / Jingganshan Mts. Xiangzhou / forested valley S of the village / 76°35.5'N, 114°16.0'E, 374 m. / 26.iv.2011, Fikáček & Hájek // sifting: accumulation of moist / leaf litter below the stream and / on the steep slope above the / stream in the sparse secondary / forest", (NMPC). Paratypes (3 ♀♀): same data as holotype (NMPC, ZSPC).

Description. Length of body 2.1 mm. Length of body parts in holotype: head 0.3 mm, pronotum 0.8 mm, elytra 1.0 mm, antenna 0.6 mm, aedeagus 0.8 mm. Maximum width of body parts in holotype: head 1.0 mm, pronotum 1.2 mm, elytra 1.2 mm.

Oblong oval (Fig. 18). Dorsum and legs yellow-red. Antennomeres a little lighter; AI red-brown. Ventral surface yellow-red with darker coxae and longitudinal carina of mesoventrite. Dorsum punctured, elytra with very feeble traces of microreticulation. Sutural striae absent; femoral lines developed but very approximated to mesocoxal cavities (the species stands on the border of subgenus *Agathidium* s.str. species group *dentatum* or species group *lavevigatum* sensu Angelini 1993 and subgenus *Macroceble* Angelini, 1993 - see the part Discussion).

Head. Maximum width of head far behind posterior margins of eyes, temples abruptly rounded, well developed, ratio of eye length : temple length=3:1. Eyes very strongly reduced, detectable as narrow strip consisting of one row of ommatidia in both dorsal (Fig. 13) and



Figs. 16-18. Holotypes, dorsal. 16- *Agathidium (A.) involutum* sp. nov.; 17- *A. (A.) excavatum* sp. nov.; 18- *Agathidium (A.) simpliforme* sp. nov.

ventral views. Eyes moderately narrow in lateral view, containing three rows of ommatidia. Supraocular carina somewhat raised anteriorly near clypeus resembling *Agathidium* species belonging to *madurensis* species group sensu Angelini (1993). Supra- and subocular carina meet closely behind posterior margin of eye. Ommatidia distinctly bordered. Clypeus distinctly emarginate, emargination narrow; clypeal line absent. Antennomere III as long as AII. AIII a little longer than AIV and AV together. AIV-AX broader than long, AXI 1.1 times longer than broad; 1.8 times as long as AX. AX broader than AXI (W AX/AXI=1.1). Surface of head smooth, but with very sparsely arranged extremely small and fine punctures separated more than 10 times their own diameter.

Pronotum. Shape in dorsal view as in Fig. 18. Sides closely rounded in lateral view (Fig. 14). Puncturation similar as on head.

Elytra. Shape as in figs. 14, 18. With very feeble, almost not detectable, traces of microreticulation. Puncturation a little stronger deeper than that of head and pronotum, separated more than 10 times their own diameter. Sutural stria absent. Lateral angle located close to mid-length of elytra.

Legs. Anterior and mid-tarsomeres I-III distinctly dilated in male, gradually narrowed toward apex of tarsus. Tarsi slender in female. Tibia not broadened. Hind male femora angled in middle of hind margin. Tarsal formula: 5-5-4 in male, 4-4-4 in female.

Mesoventrite. Posterior part subconcave. Anterior part raised with distinct but obtuse longitudinal carina. Lateral lines absent.

Metaventrite. Femoral lines developed - basally first very tightly approximated then confluent with border of mid-coxal cavities approximately in mid-length of coxae. Metaventrite abbreviated - MTW/MTLM = 3.6; MTW/MTLC= 8.3. With erect bush of setae centrally between mid- and hind coxae. Membranous wings absent.

Genitalia. Aedeagus as in figs. 11, 12. Median lobe rounded laterally toward abruptly rounded apex; basally simply J-shaped. Operculum U-shaped. Spermatheca as in fig. 15.

Variation. AIII/AII=1.0-1.1, ratio of length of eye:temple 1.8-3.0 in the type series. Microreticulation not developed in the paratypes.

Differential diagnosis. *Agathidium simpliforme* sp. nov. is similar to *A. involutum* sp. nov., *A. tianmuense* Angelini et Cooter, 1999 and *A. pseudotianmuense* Angelini et Cooter, 1999 from China in the colour of its body and antennae, absence of sutural striae and by the shortly rounded apex of the median lobe of aedeagus. The new species is similar to *A. (A.) involutum* sp. nov. also by strongly reduced, very narrow eyes seen dorsally. It differs by eyes visible dorsally as narrow strip from *A. tianmuense* and *A. pseudotianmuense* - the eyes in both species are oblong oval. *A. simpliforme* differs from *A. involutum* distinctly by the shape of basal part of the aedeagus, by smaller size of body and by shortly rounded temples. Basal part of spermatheca is much stouter than distal part in the new species while basal and distal part of spermatheca are similar in their strength in *A. pseudotianmuense*; distal part of spermatheca is stouter in *A. tianmuense* than its basal part.

Name derivation. The name of the new species refers to simply J-shaped basal part of median lobe of aedeagus.

DISCUSSION

Many of the Asian *Agathidium* species collected in recent years represent a real puzzle regarding their affiliation to relevant subgenera. Especially the subgenus *Macroceble* which is one of those taxa that, in the light of new discoveries, has become very difficult to properly understand. The basic character given by Angelini (1993) in the paragraph “Diagnosi” is the large size of head expressed by narrow ratio of pronotum:head = 1.16-1.40 predominantly 1.25-1.35 while in the others congener species the ratio is 1.3-2.1, predominantly 1.4-1.6. Use of this character even in the context with others seems to be difficult. Some previously described species of *Agathidium* s. str. seem to be large headed, but simultaneously having metaventrite and femoral lines well developed and well distant from mesocoxal cavities. Examples (measurement taken from holotypes): *A. cavum* Švec, 2014 - ratio of W pronotum/head = 1.25, *A. cryptophthalmum* Švec, 2014 - 1.33, *A. minoculum* Švec, 2014 - 1.29, *A. concolor* Angelini - 1.28 *A. apterum* Angelini et De Marzo, 1981 - 1.37; *A. johnsoni* - Angelini et De Marzo, 1981 - 1.35 and many others.

Individual variations in the ratio pronotum/head also should not be forgotten. A good example of this variation is *A. truncatum* (variation of W of pronotum:head in several measured specimens deposited in the author’s collection = 1.36-1.51)

Angelini (1993) mentioned also the second important diagnostic character - slightly developed, broadly rounded humeral (= lateral in this paper) angle. The importance of the character for the sorting of species is obvious but the character itself does not help much for the understanding of the subgenus concept within *Agathidium*.

Moreover Angelini (1993) mentioned also the presence of an intercoxal process on mesoventrite in the majority of males. Later (for instance the present paper) some species were discovered belonging to *Agathidium* s. str. having intercoxal process on metaventrite.

Beside these characters Angelini (1993) stated in the paragraph “Posizione sistematica” and partly also in “Diagnosi” the improved ability of body contraction enabled by conspicuously abbreviated metaventrite causing contact of meso- and metacoxae leading to impossibility of detecting of femoral lines. This character seems to me as the most important one and I regard it as a main basis for assigning species to subgenus *Macroceble*. Therefore, I consider for *Macroceble* those species having strongly abbreviated metaventrite without detectable femoral lines.

Additionally, the presence and strength of the femoral lines varies from clearly visible and well removed from the meso-coxal cavities, to lines that are visible only in their basal part, forming a shallow “V” shape with the oblique lateral anterior directed branches approaching the meso-coxal cavities where they become confluent and thus no longer detectable. An example is *Agathidium excavatum* sp. nov. (W pronotum : head = 1.27). The species (and it is not alone) obviously combines characters of both subgenera *Agathidium* s.str. and *Macroceble*.

The difficulties and contradictions mentioned above lead me to the conclusion that my attribution of the new described species to subgenus *Agathidium* s.str. or to other subgenera (not necessarily only in this paper) should be perceived as provisional and tentative.

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