

**Contribution to the knowledge of Chinese species
of the genus *Agathidium* Panzer, 1797
(Coleoptera: Leiodidae: Leiodinae) - part III**

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Abstract. *Agathidium (Agathidium) cephalotum* sp. nov., *A. (A.) circum* sp. nov., *A. (Macroceble) pokornyi* sp. nov. and *A. (Macr.) bicornigerum* sp. nov. all from China (Yunnan) are described and compared with similar species. *A. (A.) procerum* Angelini et De Marzo, 1994 and *A. (Macr.) fui* Švec, 2011 are recorded for Yunnan and *A. (Macr.) oui* Švec, 2011 for Gansu and Yunnan newly. Shape variability of the genitalia of *A. procerum* is mentioned.

INTRODUCTION

China is extraordinary rich country regarding the amount and the diversity of the genus *Agathidium* Panzer 1797 species. Among 825 up to now known species, there are 142 species occurring in China. Including the taxa described in the present paper, there are known altogether 829 *Agathidium*, among them 146 species from China. This paper continues the previous articles dealing with Chinese *Agathidium* (Švec 2016, 2017). This article follows the concept of the genus *Agathidium* presented by Angelini (1993, 1995, 2004, 2010) and Perreau (2016) for the advantage of the practical attitude to sorting out and distinguishing the individual species.

MATERIAL AND METHODS

This paper is based on the material collected in China, Yunnan predominantly by Vasily Grebennikov (Ottawa) and Michael Schülke (Berlin), some of the examined specimens come also from the Museum in Dresden.

Abbreviations of the collections:

- CNCO The Canadian National Collection of Insects, Arachnids and Nematodes,
Ottawa, Canada;
IZAS The Institute of Zoology, Chinese Academy of Science, Beijing, China;
MSBC Collection M. Schülke (Museum für Naturkunde Berlin, Germany);
NMPC National Museum, Praha, Czech Republic;
SMTD Staatliches Museum für Tierkunde Dresden, Germany;
ZSPC Zdeněk Švec, Praha, private collection, Czech Republic.

The examined material has been compared with the type and other *Agathidium* material deposited in ZSPC and in NMPC. The material mentioned in this paper is deposited in the

collections of CNCO, MSBC, SMTD and in ZSPC. Indication of the place of the deposition CNCO added to the locality data at the type and other examined species should be considered as temporary; this means that the holotypes and a part of the paratypes temporarily deposited in CNCO will be eventually deposited in IZAS.

Collecting data cited in quotation marks are taken from the locality labels accompanying the examined examples. The individual lines from the original locality labels are separated by a slash; the individual labels are separated by double slash here. 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 2017 and attached to the same pin as the relevant specimen.

The specimens had been relaxed in 4% acetic acid first, then rinsed in water and dissected in a drop of water. The male genitalia were mounted in Arabic gum on the same card as the relevant specimen; the female genitalia (spermatheca) in polyvinylpyrrolidone (Lompe 1986) or in Euparal on a transparent card added to the same pin as the dissected specimen or directly on the card near the relevant specimen.

The descriptions are based on the holotypes. Variability is mentioned in the paragraph "Variability" if necessary and includes features exhibited by paratypes. Also the important characters of the sexual dimorphism are included in the mentioned paragraph. Those characters that seem to be usual in the genus - e.g. presence of short recumbent setae in dorsal punctures, microsculpture of venter, setosity on antennae, legs and venter are not mentioned in the descriptions.

The measurements of the total body length were taken from all specimens examined. Specific measurements of the individual body parts were taken from the holotypes only except the data about the variation. The measurements were measured to the first decimal place of millimetre. The ratios of measurements of the metaventricle were approximated on integers.

If it is not stated otherwise, the examined material was determined by the author.

Abbreviations of body parts and measurements:

AII-AXI Antennomeres II-XI.

TI-TIII Tarsomeres I-III.

AIII/AII The ratio of the length or width of the antennomeres III:II, analogously ratios of others antennomeres.

L Length.

W Width.

L/W or W/L Ratio between measurements

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.

Terminology:

supraocular carina = antero-lateral raised marginal bead of head (e.g. Angelini 2004), i.e. carina at antero-lateral margin of head dorsum running from clypeus just above eyes (if present) caudally,

subocular line = line or even carina bordering eyes on ventral side, if present,

basal part of median lobe = median foramen (Park, Leschen & Ahn 2013),

median lobe = median lobe of aedeagus,

lateral lines = lines connecting medially to mesoventral longitudinal carina running obliquely antero-laterally, if present,

femoral lines = line located on metaventrite, usually U- or V-shaped, its two branches lead up antero-laterally, if present.

DESCRIPTIONS

Subgenus *Agathidium* Panzer, 1797 species group *dentatum* (according to Angelini, 1993)

Agathidium (Agathidium) cephalotum sp. nov. (Figs. 1-4, 17, 18)

Type material: Holotype (♂): “P.R.CHINA, Yunnan, E/ slope Cangshan at Dali/ N25°40′48.5″ E103°87′/ 40.8″, 12.v.2010, 2724 m/ sifting 07, V. Grebennikov”, (CNCO). Paratypes: (1 ♂, 1 specimen, sex indet.), the same data, (CNCO, ZSPC); (8 ♂♂, 8 ♀♀, 8 spec.): “P.R.CHINA, Yunnan, E/ slope Cangshan at Dali/ N25°40′18.6″, E100°08′/ 00.7″, 11.v.2010, 2690 m/ sifting 06, V. Grebennikov”, (CNCO, ZSPC); (4 ♂♂, 11 ♀♀, 4 spec.): “P.R.CHINA, Yunnan, E/ slope Cang Shan at/ Dali, N25°40′13.2″/ E 100°07′54.8″// 11.v.2010./ 2728 m, sifting 05/ V. Grebennikov”, (CNCO, ZSPC); (14 ♀♀, 4 spec.): “P.R.CHINA, Yunnan, E/ slope Cangshan at Dali/ N25°40′13.2″, E 100°07′/ 54.8″, 2728 m 13.v.2010./ sift. 09-11, V. Grebennikov” (CNCO, ZSPC); (13 ♂♂, 12 ♀♀, 11 spec.): “P.R.CHINA, Yunnan, E/ slope Cangshan at Dali/ N 25°40′12.4″ E 100°07′/ 27.2″, 10.v.2010, 2764 m/ sifting 03, V. Grebennikov”, (CNCO, ZSPC); (1 ♀): the same data, but “...sifting 02...”, (CNCO); (1 ♀): “CHINA: Yunnan [CH07-02]/ Dali Bai Auton. Pref., Diancang/ Shan W Dali, 25°41′20″N, 100°06′12″E, 3160 m/ small creek valley, litter and/ debris sifted, 27.V.2007, leg. A./ Pütz// Ankauf A.Pütz, 2008/ Eisenhüttenstadt/ Tierkundemuseum/ DRESDEN”, (SMTD); (1 ♂, 1 ♀): “China: N-Yunnan, Dali Bai Aut. Nat. Pref., /Jizu Shan, summit plateau, 37 km NE/ Dali, 25°58.30′ N, 100°21.36′ E./ 3150 m, mixed forest sifted from litter/ moss & mushrooms, 5.ix.2009/ leg. M. Schülke, [CH09-28]”, (MSBC, ZSPC); (2 spec.): “China: N-Yunnan, [C03-15]/ Dali Bai Aut. Nat. Pref., Diancang Shan/ 5 km SSW Dali old town, creek valley/ above cablecar, 25°38.7′ N, 100°08.3′ E./ shrubs, bamboo, moss, old flood debries./ 2800 m, 28.viii.2003, M. Schülke” (MSBC, ZSPC); (1 ♂): “CHINA: Yunnan, Dali Bai Aut. Pref./ Diancang Shan, pass, 43 km NW Dali/ 25°59′33.5″ N, 90°52′12.5″ E/ 3104 m, pasture&shrubs, litter/ moss and mushrooms sifted, 23.viii./ 2009, leg. M. Schülke [CH09-01]”, (MSBC); (1 ♀): “CHINA: Yunnan, Dali Bai Aut. Pref./ Jizu Shan, path to cable car, 37 km NE/ Dali, 25°58′ N, 100°23′ E./ 2450 m, mixed forest, sifted from litter/ moss & pine apples, 5.ix.2009./ leg. M. Schülke [CH09-29]”, (ZSPC); (1 ♀): CHINA: Yunnan [CH07-08], Dali Bai Auton. Pref., Diancang Shan 43 km NW Dali, 3078 m, 25°59′35″N, 99°52′06″E, W pass, Rhodod., oaks, bamboo, sifted, 29.V.2007, M. Schülke (MSBC); (1 ♀): “China: N-Yunnan [C03-20]/ Dali Bai Aut. Nat. Pref., Diancang Shan./ 4 km W Dali old town, 25°41.4′ N, 100°06.7′, 2900-3000 m, E slope with/ devastated forest and old pine forest/ mushrooms, /31.viii.2003, leg. M. Schülke”, (MSBC).

Description. Length of body 1.9-2.3 mm, in holotype 2.0 mm, head 0.4 mm, pronotum 0.8 mm, elytra 0.8 mm, antenna 0.8 mm, aedeagus 0.8 mm. Maximum width of head 1.0 mm, pronotum 1.3 mm, elytra 1.3 mm.

Short oval (Fig. 17). Dorsum chest-nut coloured, antennae lightly red-brown with a little darker AI. Ventral surface red-brown. Dorsum punctured, without microsculpture. Sutural striae absent; femoral lines partly developed, supraocular carina low all along its length (species is therefore attributed to the subgenus *Agathidium* s.str., species group *dentatum*).

Head. Shape as in Fig. 18. Maximum width of head at eyes short before posterior margins. Eyes well developed. Supraocular carina low between eyes and antennal articulation then a little raised anteriorly. Subocular line not merging to supraocular carina behind eyes. Clypeus distinctly broadly emarginate; clypeal line lacking. Antennomere III distinctly longer than AII (AIII/AII = 1.3). Ratio of length of AII-AXI (AII=1.0): 1.0-1.3-0.7-0.8-0.6-0.6-0.5-1.0-1.0-1.7. Ratio of width of AII-AXI (AII=1.0): 1.0-0.8-0.8-0.6-0.8-1.0-0.9-1.4-1.6-1.6. Ratio of W/L of AII-AXI: 0.8-0.5-0.9-0.6-1.0-1.3-1.4-1.1-1.3-0.8. Surface of head smooth with very sparsely arranged very small and fine punctures separated by about 10 or more times their own diameters.

Pronotum. Lateral outline broadly rounded in lateral view. Shape in dorsal view as in Fig. 17, in lateral view as in Fig. 4. Puncturation even sparser than that on head, punctures finer than those on head.

Elytra. Shape as in Figs. 4, 17. Puncturation unobtrusive very sparse but punctures a little stronger than on head. Punctures separated more than 10 times their own diameter. Sutural stria absent.

Legs. TI-TIII of anterior tarsi a little widened. Tibiae gradually widened apically. Meso- and metatibiae dorso-ventrally flattened, obtrusively widened. Hind femora without specific characters. Tarsal formula: 5-5-4 in male; 4-4-4 in female.

Mesoventrite. Posterior part subconcave. Anterior part raised without longitudinal carina. Lateral lines not developed.

Metaventrite. Femoral lines feebly expressed, shortened - evanescent far before lateral margins of metaventrite, rounded medially. Between both branches of femoral lines shortly before posterior margin of metaventrite with fovea equipped by erect seta. Metaventrite distinctly shortened - MTW/MTLM = 3; MTW/MTLC = 28.

Membranous wings missing.

Genitalia. Aedeagus as in Figs. 1, 2. Operculum oval with terminal notch as in Fig. 2. Spermatheca as in Fig. 3.

Variation. AIII/AII=1.2-1.3 in the type series. Tarsi slim, metaventral fovea not present in females.

Differential diagnosis. *Agathidium (Macroceble) cephalotum* sp. nov. is very similar to *A. (A.) kabateki* Angelini, 2000 from China (Sichuan), in shape of body, head and eyes, the colour of its antenna, by the distinctly emarginate clypeus, the same tarsal formula in males and females, flattened and widened mid- and posterior tibiae and also the shape of aedeagus and spermatheca. The new species differs from *A. kabateki* by the absence of elytral sutural striae and by a smaller ratio of length of antennomeres III/II. Certain differences can also be detected in shapes of genitalia in both species.

Name derivation. The name of the new species is derived from Greek word κεφαλής (= head) points to the broad head of *A. cephalotum*.

***Agathidium (Agathidium) circulum* sp. nov.**
(Figs. 5-8, 19, 20)

Type material: Holotype (♂): "CHINA - YUNNAN/ HABASHAN - Habashan Mts./ 6.-11.6.2002, alt. 3150-3500 m/ WSG 84: 27°19'N, 100°08'E/ lgt. Bečvář S. & Fouqué R.+H.", (ZSPC). Paratypes (1 ♂): the same data, (ZSPC); (2 ♀♀): CHINA: Yunnan [CH07-26], Nujiang/ Lisu Aut.Pref., Gaoligong Shan, pass 21/ km NW Liuku, 3150 m, 25°58'22"N, 98°41'00"E, bamboo with shrubs, litter/ sifted, 9.VI.2007, M. Schülke, (MSBC, ZSPC); (3 ♂♂, 3 ♀♀, 2 specimens, sex indet.): "CHINA: N-Yunnan . [C03-13]/. Zhongdian Co., pass 28 km ESE Zhong-/ dian, devastated primary forest with/ young Abies, Larix, Betula, Rhodod./ 27°43.9' N, 99°58.2' E, 3700-3750 m/ 22.viii.2003, leg. M. Schülke", (MSBC, ZSPC); (1 ♀): "CHINA: N-Yunnan [C03-13B]/ Zhongdian Co., 36 km ESE Zhongdian/ overgrown rock hillside with old mixed/ forest, bamboo, dead wood, mushrooms/ 27°40.9' N, 100°01.5' E, 3500-3550 m/ 24.viii.2003, leg. M. Schülke", (MSBC).

Description. Length of body 2.3-2.7 mm, in holotype 2.3 mm, head 0.5 mm, pronotum 0.8 mm, elytra 1.0 mm, antenna 0.7 mm, aedeagus 0.8 mm. Maximum width of head 0.9 mm, pronotum 1.3 mm, elytra 1.3 mm.

Oval (Fig. 19). Dorsum including antennae and legs chest-nut coloured. Ventral surface red-brown. Dorsum punctured, without microsculpture. Sutural striae absent; femoral lines partly developed, supraocular carina low all along its length (species is therefore attributed to the subgenus *Agathidium* s.str., species group *dentatum*).

Head. Shape as in Fig. 20. Maximum width of head far before posterior margins at eyes. Eyes well developed. Supraocular carina low all along its length. Subocular line not merging to supraocular carina behind eyes. Clypeus feebly emarginate, a little convex; clypeal line lacking. Antennomere III distinctly longer than AII (AIII/AII = 1.4). Ratio of length of AII-AXI (AII=1.0): 1.0-1.4-0.8-0.6-0.7-0.7-0.6-1.0-1.0-1.7. Ratio of width of AII-AXI (AII=1.0): 1.0-0.8-0.8-0.9-0.9-1.3-1.1-1.8-1.8-1.8. Ratio of W/L of AII-AXI: 0.9-0.5-0.9-1.2-1.2-1.7-1.8-1.6-1.6-0.9. Surface of head with sparsely arranged small and fine punctures separated by about 6-10 or more times their own diameters.

Pronotum. Lateral outline broadly rounded in lateral view. Shape in dorsal view as in Fig. 19, in lateral view as in Fig. 5. Puncturation similar to that on head, punctures fine.

Elytra. Shape as in Figs. 19, 5. Puncturation unobtrusive sparse similar to that on head and pronotum. Traces of transverse oblique and longitudinal lines in some places forming irregular large cells containing one or more punctures detectable on elytral surface as it is usual in many other *Agathidium*. Sutural stria absent.

Legs. TI-TIII of anterior tarsi a little widened. Tibiae of moderate, usual width, gradually widened apically. Hind femora slightly emarginate before apex on their posterior margin forming small apical lobe. Tarsal formula: 5-5-4 in male; 4-4-4 in female.

Mesoventrite. Posterior part subconcave. Anterior part raised without longitudinal carina. Lateral lines not developed.

Metaventrte. Femoral lines long, broadly rounded in middle, evanescent shortly before antero-lateral margin of metaventrte. With fovea equipped by erect seta just before posterior margin of metaventrte. Metaventrte distinctly shortened - MTW/MTLM = 3; MTW/MTLC = 22.

Membranous wings missing.

Genitalia. Basal part of median lobe ring-shaped, aedeagus as in Figs. 6, 7. Operculum V-shaped as in Fig.7. Spermatheca as in Fig. 8.

Variation. AIII/AII=1.4-1.8 in the type series. Colour of dorsum varies from light red-brown to black with lighter clypeus, pronotal margins and narrow strip along elytral suture. Tarsi slim, metaventral fovea not present in females.

Differential diagnosis. *Agathidium (Agathidium) circulum* sp. nov. is similar to *A. (A.) franzi* Angelini et De Marzo, 1981 from Nepal, in size and shape of body, head and eyes, the colour of its antenna, by the feebly emarginate clypeus, the same tarsal formula in males and females, absence of sutural striae, mesoventral carina, lateral lines by long femoral lines and lack of membranous wings. Both species are similar mainly in the shape of aedeagus having ring-shaped basal part and small nipple on top of median lobe. The new species differs from *A. franzi* by a smaller ratio of length of antennomeres III/II, by smooth surface lacking microsculpture and also by the slightly widened median lobe before apex in dorsal view. Basal and distal part of U-shaped spermatheca is much stouter than the same in the slim spermatheca of *A. franzi*.

Name derivation. The name of the new species is Latin word *circulum* (= ring) points to the ring-shaped base of the median lobe of *A. circulum*.

Subgenus *Macroceble* Angelini, 1993

Agathidium (Macroceble) pokorny sp. nov.

(Figs. 9-12, 21, 22)

Type material: Holotype (♂): "China: Yunnan [CH07-19], /Dehong Dai Aut. Pref., mountain/ range, 31 km E Luxi, 2280 m./ 24°29'31''N, 98°52'58''E, second./ pine forest with old decid. trees./ litter sifted, 3.vi.2007, A. Pütz// Ankauf A.Pütz, 2008/ Eisenhüttenstadt/ Tierkundemuseum", (SMTD). Paratypes: (2 ♀♀): the same data, (SMTD, ZSPC); (1 ♂): "China: Yunnan [CH07-30],/ Nujiang Lisu Aut. Pref., Nu Shan./ 7 km NNW Coajian./ 25° 43'29''N, 99° 07'57''E, 2420/ m, second. pine forest with/ shrubs, litter, bark sifted./ 11.vi.2007, leg. A. Pütz// Ankauf A.Pütz, 2008/ Eisenhüttenstadt/ Tierkundemuseum", (SMTD); (1 ♂, 1 ♀): "China: Yunnan [CH07-15],/ Baoshan Pref., Gaoligong Shan./ 29 km ESE Tengchong, 2350 m./ 24°55'37''N 94°45'09''E, dev./ decid. forest, litter, wood, fungi sifted./ 1.vi.2007, leg. A. Pütz// Ankauf A.Pütz, 2008/ Eisenhüttenstadt/ Tierkundemuseum", (SMTD, ZSPC); (1 ♀): "CHINA: Yunnan, Lincang Pref., Xue/ Shan, 11 km ENE Lincang, 2510 m./ 23°55'01''N, 100°11'17.5''E, second./ pine forest with Rhodod., small cleft with/ water, litter & mushrooms sifted./ 10.IX.2009, leg. M. Schülke [CH09-39]", (MSBC); (1 ♀, 2 species, sex indet.): "CHINA: Yunnan, Nujiang Lisu Pref./ Gaoligong Shan, „Cloud pass"/ 21 km NW Liuku, 3150 m./ 25°58'21''N, 98°41'01''E./ shrubs & bamboo, litter sifted./ 2.IX.2009, leg. M. Schülke [CH09-22]", (MSBC, ZSPC); (1 ♀): "CHINA: Yunnan, Nujiang Lisu Pref./ Gaoligong Shan, „Cloud pass"/ 21 km NW Liuku, 25°58'21''N./ 98°41'01''E, 3150 m, shrubs/ & bamboo, litter sifted, 3.IX.2009./ leg. M. Schülke [CH09-22a]", (ZSPC); (3 ♂♂, 1 ♀): "China: Yunnan [CH07-19], Dehong Dai/ Aut. Pref., mountain range, 31 km E Luxi, /2280 m, 24°29'31''N, 98°52'58''E./ second pine forest with old decid. trees./ litter sifted, 3.vi.2007, M. Schülke", (MSBC, ZSPC).

Description. Length of body 1.6-2.1 mm, in holotype 2.1 mm, head 0.8 mm, pronotum 0.8 mm, elytra 1.0 mm, antenna 0.7 mm, aedeagus 0.3 mm. Maximum width of head 0.9 mm, pronotum 1.2 mm, elytra 1.2 mm.

Short oval (Fig. 21). Dorsum dark brown, legs chest-nut coloured, AI chest-nut, AII-AVI yellow-brown, AVIII-AX brown-black, AXI very slightly lighter than AVIII-AX. Ventral

surface yellow-brown. Dorsum punctured, without microsculpture. Sutural striae absent; femoral lines absent, metaventrite shortened, supraocular carina low all along its length (species is therefore attributed to the subgenus *Macroceble*).

Head. Shape as in Fig. 22. Maximum width of head at posterior part of eyes. Eyes well developed but very small (ratio of maximum width of head : width of eye = 26). Supraocular carina low all along its length. Subocular line not developed. Clypeus feebly roundly emarginate, clypeal line lacking. Antennomere III distinctly longer than AII (AIII/AII = 1.4). Ratio of length of AII-AXI (AII=1.0): 1.0-1.4-0.7-0.7-0.7-0.7-0.6-1.2-1.0-1.8. Ratio of width of AII-AXI (AII=1.0): 1.0-0.8-0.8-0.8-0.8-1.0-1.4-2.2-2.4-2.4. Ratio of W/L of AII-AXI: 0.6-0.3-0.7-0.7-0.7-0.8-1.4-1.0-1.3-0.8. Surface of head smooth with very sparsely arranged small and fine punctures separated by more than 10 times their own diameters.

Pronotum. Lateral outline broadly rounded in lateral view. Shape in dorsal view as in Fig. 21, in lateral view as in Fig. 12. Puncturation even sparser and finer than that on head.

Elytra. Shape as in Figs. 12, 22. Puncturation unobtrusive and sparse, similar to that on pronotum.

Legs. TI of anterior and mid-tarsi feebly widened. Tibiae 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 not developed.

Metaventrite. Femoral lines missing, with fovea equipped by bush of erect setae just before posterior margin of metaventrite. Metaventrite extremely shortened - MTW/MTLM = 2; MTW/MTLC = 61.

Membranous wings missing.

Genitalia. Basal part of the median lobe simple. Aedeagus as in Figs. 9, 10. Operculum egg-shaped as in Fig. 10. Spermatheca as in Fig. 11.

Variation. AIII/AII=1.3-1.5 in the type series. Horn on left mandible missing in some males; in that case males have left mandible thickened and a little larger than the right mandible. Both mandibles are approximately similar in shape and size in females. Setal fovea is present on metaventrite also in females. Colour of AII-AVIII varies from yellow brown to brown, so antennae are completely dark in some of the paratypes.

Differential diagnosis. *Agathidium (Macroceble) pokornyi* sp. nov. is very similar to *A. (Macr.) oui* Švec, 2011 from China, Sichuan and *A. (Macr.) janruzickai* Švec from China (Gansu), in size and shape of body, head and eyes, the dark colour of its antennal club or at least AIX-AX, by the feebly emarginate clypeus, absence of sutural striae, smooth dorsum, the same tarsal formula in males and females, very slim tibiae. On the other hand the *Tilia* leaf-like shape of apex of the median lobe and also shape of spermatheca strongly differs from both species compared. Beside - the new species differs from both mentioned species by the ratio of length of AIII/AII = 1.3-1.5, while AIII/AII = 1.0 in both compared species.

Name derivation. The new species is dedicated to very good man and my entomological friend Svatopluk Pokorný (Praha, Czech Republic) who helped me a lot in my entomological work.

Agathidium (Macroceble) bicornigerum sp. nov.

(Figs. 13-16, 23, 24)

Type material: Holotype (♂): “China: N-Yunnan [C03-19A]/ Dali Bai Aut. Nat. Pref., Diancang Shan./ 3 km W Dali old town./ pine forest at “Cloud Road”./ right upper chairlift station./ 25°41.1' N, 100°06.8', 2650-2750 m// [C03-19A], pine needles, moss/(dry) in ditches, mushrooms./30.viii.2003, leg. M. Schülke”, (MSBC). Paratypes: (2 ♀♀, 2 specimens, sex indet.), the same data, (MSBC, ZSPC); (2 ♂♂, 1 ♀, 1 spec.): “China: N-Yunnan [C03-19B]/ Dali Bai Aut. Nat. Pref., Diancang Shan./ 3 km W Dali old town./ pine forest at “Cloud Road”./ right upper chairlift station./ 25°41.1' N, 100°06.8', 2650-2750 m// [C03-19B], pine needles, moss/(dry) in ditches, mushrooms, traps./ 1.ix.2003, leg. M. Schülke” (MSBC, ZSPC); (1 ♂, 1 ♀, 1 spec.): “China: N-Yunnan [C03-19C]/ Dali Bai Aut. Nat. Pref., Diancang Shan./ 4 km W Dali old town, 25°41.4' N, 100°06.7' E, 2900-3000 m, E slope with/ devastated and old pine forest./ mushrooms, 31.viii.2003, leg. M. Schülke”, (MSBC, ZSPC); (1 ♂): “China: N-Yunnan [C03-20]/ Dali Bai Aut. Nat. Pref., Diancang Shan./ 4 km W Dali old town, 25°41.4' N, 100°06.7', 2900-3000 m, E slope with/ devastated forest and old pine forest/ mushrooms./ 31.viii.2003, leg. M. Schülke”, (MSBC); (2 ♀♀): “China: Yunnan, Dali Bai Aut. Pref./ Zhemo Shan, 7 km NW Xiaguan./ 25°32.33' N, 100°10.11' E, 2870-2970/ m, scrub with bamboo, oaks./ Rhododendr., litter sifted, 18.ix./ 2009, leg. M. Schülke [CH09-60]”, (MSBC, ZSPC); (1 ♀): “China: N-Yunnan [C2005-09]/ Dali Bai Nat. Aut. Pref., Diancang/ Shan, 3 km W Dali old town, pine/ forest at “Cloud Road”, 25°41.1'N./ 100°06.8' E, 2650-2750 m./ 17.vi.2005, M. Schülke”(MSBC); (1 ♂): “CHINA: Yunnan [CH07-35]/ Dali Bai Auton. Pref. Wuliang/ Shan, 9 km SW Weishan, 2450-/ 2500 m, 25°10'14"N, W slope/ 100°14'22" E, oaks and pines/ sifted, 13.vi.2007, leg. A. Pütz”// “Ankauf A.Pütz, 2008/ Eisenhüttenstadt/ Tierkundemuseum”, (SMTD); (2 ♂♂): “P.R.CHINA, Yunnan, E/ slope Cangshan at Dali/ N 25°40'12.4" E 100°07' / 27.2", 10.v.2010, 2764 m/ sifting 03, V. Grebennikov”, (CNCO, ZSPC); (1 ♀): “P.R.CHINA, Yunnan, E/ slope Cangshan at Dali/ N 25°40'12.4" E 100°07' / 27.2", 10.v.2010, 2764 m/ sifting 02, V. Grebennikov”, (CNCO); (1 ♂, 1 spec.): “P.R.CHINA, Yunnan, E/ slope Cangshan at Dali/ N 25°40'00.6" E 100°07' / 19.1", 2763 m, 14.v.2010./ sifting 12, V. Grebennikov”, (CNCO, ZSPC); (1 ♂, 1 ♀): “P.R.CHINA, Yunnan, E/ slope Cangshan at Dali/ N25°40'13.2" E, E 100°07' / 54.8", 2728 m 13.v.2010./, sift. 09-11, V. Grebennikov”, (CNCO); (1 ♀): “P.R.CHINA, Yunnan, E/ slope Cangshan at Dali / N25°40'18.6" E100°08' / 00.7", 11.v.2010, 2690 m/ sifting 06, V. Grebennikov”, (CNCO); (2 ♀♀, 3 spec.): “P.R.CHINA, Yunnan, E/ slope Cang Shan at / Dali, N25°40'13.2" / E 100°07'54.8" // 11.v.2010/ 2728 m, sifting 05/ V. Grebennikov”, (CNCO, ZSPC).

Description. Length of body 2.5-3.1 mm, in holotype 2.9 mm, head 0.5 mm, pronotum 1.2 mm, elytra 1.2 mm, antenna 0.9 mm, aedeagus 0.8 mm. Maximum width of head 1.1 mm, pronotum 1.5 mm, elytra 1.4 mm.

Oval (Fig. 23). Posterior part of head, pronotal disc and elytra dark brown; anterior part of head, pronotal margins and narrow strips along elytral suture and elytral margins a little lighter; antennae and legs yellow-red. Ventral surface yellow-brown. Dorsum punctured, without microsculpture. Sutural striae absent; femoral lines not detectable, supraocular carina low all along its length (species is therefore attributed to the subgenus *Macroceble* Angelini, 1993).

Head. Shape as in Fig. 24. Maximum width of head at eyes far before their posterior margins. Eyes well developed. Supraocular carina low along all its length. Subocular line not merging to supraocular carina behind eyes. Clypeus feebly emarginate, clypeal line lacking. Antennomere III much longer than AII (AIII/AII = 2.1). Ratio of length of AII-AXI (AII=1.0): 1.0-2.1-0.8-0.8-0.6-0.6-0.5-1.0-1.2-2.2. Ratio of width of AII-AXI (AII=1.0): 1.0-0.9-0.9-0.9-1.0-1.2-1.1-1.7-1.8-1.8. Ratio of W/L of AII-AXI: 0.9-0.4-1.0-1.0-1.5-1.8-2.0-1.5-1.3-0.7. Surface of head smooth with very sparsely arranged very small and fine punctures separated by about 10 or more times their own diameters.

Pronotum. Lateral outline broadly rounded in lateral view. Shape in dorsal view as in Fig. 23, in lateral view as in Fig. 16. Puncturation even sparser than that on head - punctures finer than those on head.

Elytra. Shape as in Figs. 23, 13. Puncturation fine and sparse, punctures a little stronger than on head. Punctures separated by about 4-10 times their own diameter. Sutural stria absent.

Legs. TI of anterior and mid-tarsi a little widened. Tibiae narrow. Hind femora without specific characters. Tarsal formula: 5-5-4 in male; 5-4-4 in female.

Mesoventrite. Posterior part subconcave. Anterior part raised with longitudinal carina. Lateral lines not developed.

Metaventrite. Femoral lines not developed. Metaventrite shortened - $MTW/MTLM = 2$; $MTW/MTLC = 20$.

Membranous wings missing.

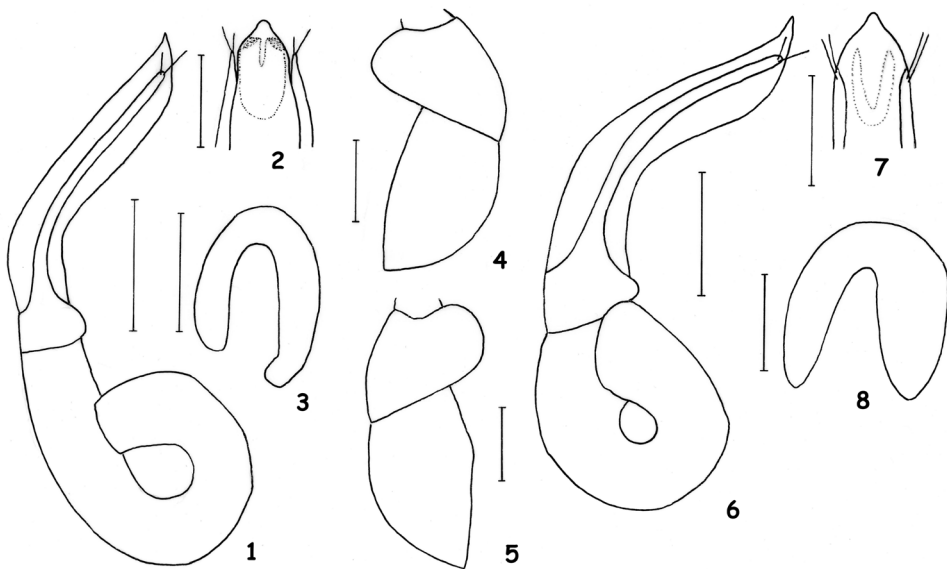
Genitalia. Aedeagus as in Figs. 14, 15. Operculum egg-shaped with apical notch as in Fig. 15. Spermatheca as in Fig. 16.

Variability. $AIII/AII=2.0-2.2$ in the type series. Dorsum unicolorous, dark brown in some of the paratypes. Tarsi slim in females.

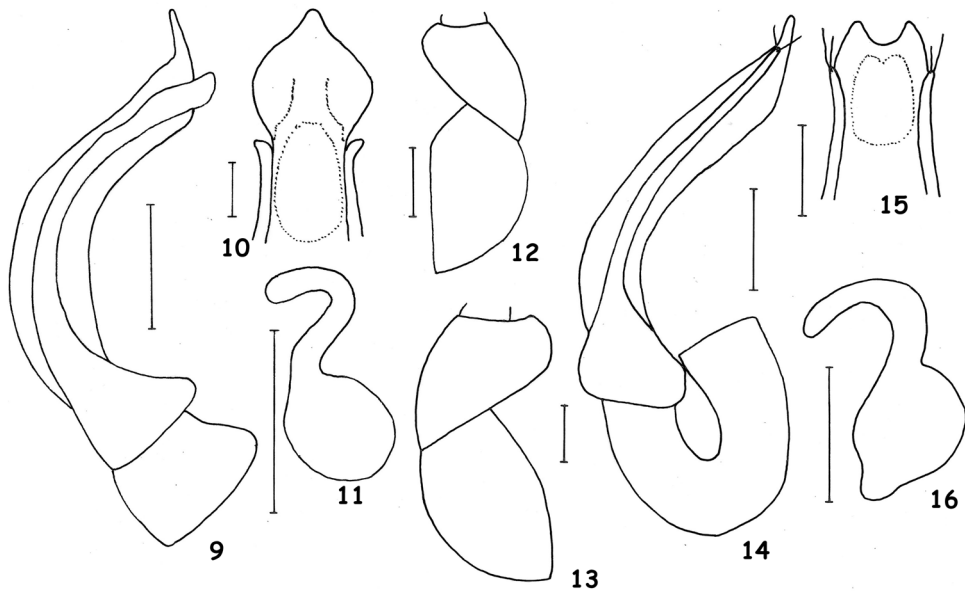
Differential diagnosis. *Agathidium (Macroceble) bicornigerum* sp. nov. is very similar to *A. (Agathidium) alesmetanai* Švec, 2011 from China (Yunnan) and *A. (A.) smetanaicum* Angelini, 2002 from China (Hubei, Shaanxi), not only in the external characters - shape of head, eyes, body, colouring of body and antennae, absence of sutural striae on elytra and absence of dorsal microsculpture, but mainly by the shape of deeply emarginate apex of median lobe and also even in the shape of spermatheca. The three mentioned species can be differentiated as follows:

- 1 Body large (3.7-3.9 mm), black. Femoral lines developed.....2
- Body smaller (2.5-3.1), predominantly dark brown with lighter pronotal and elytral margins. Femoral lines absent, $AIII/AII=2.1$. Femora without specific characters. Basal part of median lobe J-shaped, top of median lobe deeply emarginate. Basal part of spermatheca pyriform with small bump at point of connection of spermatheca. China (Yunnan). *A. (Macroceble) bicornigerum* sp. nov.
- 2(1) $AIII/AII=2.0$. Male femora with large triangular dents apically. Lateral lines on mesoventrite absent. Apex of median lobe raised in lateral view. Spermatheca with short basal appendix oriented to opposite side than slim apical part of spermatheca. 3.7-3.9 mm. *A. (A.) smetanaicum* Angelini, 2002
- $AIII/AII=2.5-2.6$. Male femora with small tooth at distal third of their length. Lateral lines developed, complete. Apex of median lobe inclined in lateral view. Spermatheca without appendix basally. 3.7.-3.8 mm. *A. (A.) alesmetanai* Švec, 2011

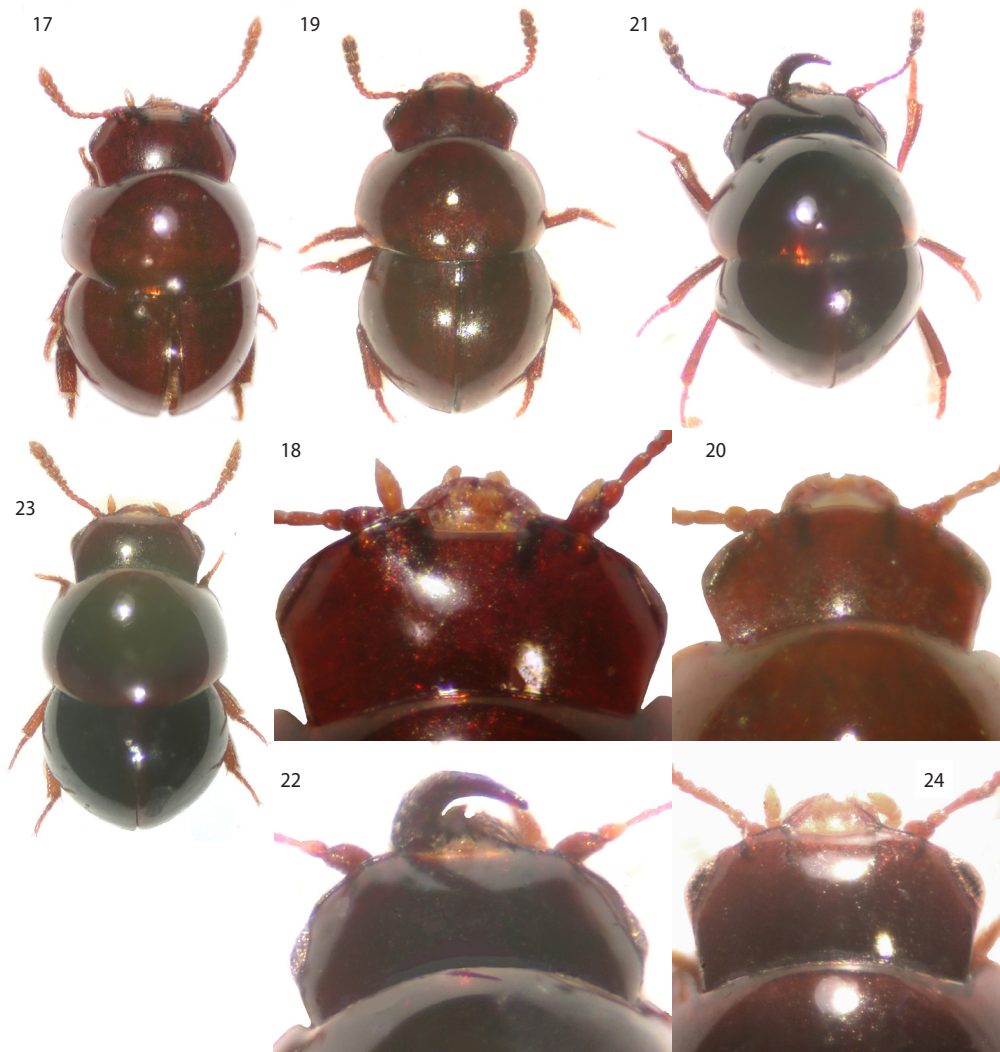
Name derivation. The name of the new species is derived from the Latin word *bicorniger* (= forked) points to the bifurcate apex of the median lobe.



Figs. 1-8. Figs. 1, 6: aedeagus lateral; Figs. 2, 7: apex of aedeagus dorsal; Figs. 3, 8: spermatheca; Figs. 4, 5: pronotum with elytra lateral. 1-4- *Agathidium (Agathidium) cephalotum* sp. nov.; 5-8- *A. (A.) circulum* sp. nov. Scale = 0.1 mm in Figs. 2, 3, 7, 8; 0.2 mm in Figs. 1, 6; 0.5 mm in Figs. 4, 5.



Figs. 9-16. Fig. 9, 14: aedeagus lateral; Figs. 10, 15: apex of aedeagus dorsal; Figs. 11, 16: spermatheca; Figs. 12, 13: pronotum with elytra lateral. 9-12. *Agathidium (Macroceble) pokorny* sp. nov. Figs. 13-16 *Agathidium (Macr.) bicornigerum*. Scale = 0.1 mm in Figs. 10, 11; 15, 16; 0.2 mm in Figs. 9, 14; 0.5 mm in Figs. 12, 13.



Figs. 17-24. Figs. 17, 19, 21, 23: body, dorsal view (holotypes); 18, 20, 22, 24 - head, dorsal view (holotypes). 17, 18: *Agathidium (A.) cephalotum* sp. nov. 19, 20: *A. (A.) circulum* sp. nov.; 21, 22: *A. (Macroceble) pokornyi* sp. nov. Figs. 23, 24: *A. (Macr.) bicornigerum* sp. nov.

REMARKS ON TAXONOMY AND NEW FAUNISTIC RECORDS

Agathidium (Agathidium) procerum Angelini et De Marzo, 1994

Material examined. (15 specimens): "P.R.CHINA, Yunnan, E/ slope Cangshan at Dali/ N 25°40'48.5'' E 103°87'40.8'', 12.v.2010, 2724 m/ sifting 07, V. Grebennikov, (CNCO, ZSPC); (28 spec.): P.R. CHINA, Sichuan/ NE slope Gongga Shan, N29°50'50'' E102°02'28'', 09.vi.2011, 3170m, sift14, V.Grebennikov, (CNCO, ZSPC); (3 spec.): "P.R.CHINA, Yunnan, E/ slope Cangshan at Dali/ N 25°40'00.6'' E 100°07'19.1'', 2763 m, 14.v.2010./ sifting 12, V. Grebennikov", (CNCO, ZSPC); (2 spec.): "CHINA: S-Gansu [CH12-11] W-Qingling Shan, 125 km

NW Longnan, / Lazikou pass, S-side, Zhuli valley, / 34°07'57"N, 103°56'15"E, 2260 m, / N-slope, mixed forest with oak and pine near creek, / litter and dead wood sifted, 3.VIII.2012, / leg. M. Schülke", (MSBC); (1♂): CHINA, Sichuan/ Emeishan Jioyin/ 2500 m, 18.vii. 1996/ 29°32'N, 103°21'E C65// collected by/ A. Smetana, J. Farkač/, and P. Kabátek// *Agathidium* (*Agathidium*) *procerum* Ang. & Dmz./ det. F. Angelini, 1998, (ZSPC).

Distribution. Species known from China (Sichuan, Yunnan, Gansu). New for Yunnan, Gansu.

Remark. According to the material examined *A. procerum* seems to be very variable in the dorsal structures and the shape of genitalia as well. Length of the examined material varies between 1.7-2.0 mm, AIII/AII between 1.0-1.3. Dorsum of the specimens examined is smooth without microreticulation. Apex of the median lobe varies from the shape with simply closely rounded top to nipple. Operculum does not exceed lateral margin of median lobe in the dorsal view. On the other hand, the shape of basal part of median lobe is constantly spiral-like. This is very good character to distinguish the *A. procerum* from similar species. The shape of spermatheca varies a lot in the examined material. The spermatheca in *A. procerum* is typical by long, slim straight process at its basal part. [This process and also the distal part of spermatheca is of varies length, in some specimens the process is not straight but strongly curved almost rectangularly.

Agathidium (Macroceble) fui Švec, 2011

Material examined: 5 specimens, "China: Yunnan, Dali Bai Aut. Pref./ Zhemu Shan, 7 km NW Xiaguan, / 25°32.33' N, 100°10.11' E, 2870-2970/ m, scrub with bamboo, oaks, /Rhododendr., litter sifted, 18.ix./ 2009, leg. M. Schülke [CH09-60]", (MSBC, ZSPC).

Distribution. Species known from China (Sichuan, Yunnan). New for Yunnan.

Agathidium (Macroceble) oui Švec, 2011

Material examined: 30 specimens, "China: Yunnan, Dali Bai Aut. Pref./ Zhemu Shan, 7 km NW Xiaguan, / 25°32.33' N, 100°10.11' E, 2870-2970/ m, scrub with bamboo, oaks, /Rhododendr., litter sifted, 18.ix./ 2009, leg. M. Schülke [CH09-60]" (MSBC, ZSPC); 6 specimens, "China: Yunnan, Dali Bai Aut. Pref./ Wuliang Shan, 9 km SW Weishan, / 25°10'15.5'' N, 100°14'21.8'' E, / 2450 m, scrub with (oak, alder, pine), / litter & mushroom sifted 14.ix./ 2009, leg. M. Schülke [CH09-51]", (NSBC, ZSPC); 3 spec., "CHINA: Yunnan, Dali Bai Aut. Pref./ Jizu Shan, summit plateau, 37 km NE/Dali, 25°58.30' N 100°21.36' E/3150 m, mixed forest, sifted from litter, / moss&mushrooms, 5.ix.2009/leg. M. Schülke (CH09-28), (MSBC, ZSPC); CHINA: S-Gansu [CH12-12] / W-Qingling Shan, 128 km NW Longnan, / Lazikou pass, S-side, Laolong valley, / 34°08'14"N, 103°51'57"E, 2300 m, / S-slope with pine and spruce forest, /litter sifted, 3.VIII.2012, /leg. M. Schülke", (ZSPC).

Distribution. Species known from China (Sichuan, Gansu, Yunnan). New to Gansu and Yunnan.

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