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A contribution to knowledge of Chinese species of the genus *Agathidium* Panzer, 1797 (Coleoptera: Leiodidae: Leiodinae) - part V.

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Abstract. *Agathidium* (*Agathidium) pseudouliginosum*, *A.* (*A.*) *excisum, A.* (*A.*) *circinatum, A.* (*Macroceble*) *elevatum, A.* (*Ma.*) *parvum* spp. nov., all from China, Yunnan, *Agathidium* (*A.*) *bifurcatum, A.* (*Ma.*) *interpositum* and *A.* (*Ma.*) *mesotibiale* spp. nov. all from China, Sichuan, are described and compared with similar species.

INTRODUCTION

This paper is focused on the Chinese *Agathidium* belonging to the subgenera *Agathidium* s. str. and *Macroceble* Angelini, 1993. It continues the previous articles dealing with Chinese *Agathidium* (Švec, 2016, 2017a, 2017b) and Švec & Angelini (2019). This article follows the conception of the genus *Agathidium* that was presented by Angelini (1993; 1995; 2004; 2010) and Perreau (2016) for the reason of the advantage of the practical attitude to sorting out and distinguishing the individual species using the subgenera and species groups.

Agathidium Panzer 1797 is the most numerous genus within Leiodinae and Leiodidae at all. It comprises 867 species including the eight new species described in the present paper. Great part - 294 species is attributed to the subgenus *Agathidium* s. str., not taking into account the *Agathidium* belonging to the fauna of the New World because the American species were not sorted according to their affiliation to subgenera (Wheeler & Miller 2005 and Miller & Wheeler 2005). Four new species of the nominate subgenus are added in this paper. The subgenus *Macroceble* comprises 79 species inhabiting the Old World. Four additional new species are described in this paper.

MATERIAL AND METHODS

The present paper is based on the material collected in China by my late friend Aleš Smetana with his entomological friends Petr Kabátek and Jan Farkač (Prague, Czech Republic), further by Vasily Grebennikov (Ottawa, Canada) and by Michael Schülke (Berlin, Deutschland).

Abbreviations of the collections

CNCO Canadian National Collection of Insects, Arachnids and Nematodes, Ottawa, Canada;
IZAS Institute of Zoology, Chinese Academy of Science, Beijing, China;
MSBC Collection Michael Schülke, Museum für Naturkunde Berlin, Germany;
NMPC Collection of National Museum in Prague, Czech Republic;
ZSPC Zdeněk Švec, Prague, private collection, Czech Republic.

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

Collecting data cited in quotation marks are taken from the locality labels accompanying the examined examples. 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, the year 2023 and attached to the same pin as the relevant specimen. The labels of the holotypes are signed by the author.

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 stuck by Arabic gum on the same label as the relevant specimen; the female genitalia (spermatheca) were mounted in polyvinylpyrrolidine (Lompe 1986) on a transparent label added to the same pin as the dissected specimen or directly on the label near the relevant specimen. The aedeagi were figured in both dorsal and lateral views, the shape of the operculum was indicated by the dotted line in the dorsal view on the top of the aedeagus.

The descriptions are based on the holotypes. Variability is mentioned in the paragraph "Variation" if necessary and includes features exhibited by the paratypes. Also the important characters of the sexual dimorphism are included in the mentioned paragraph.

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 of the data about the variation and the spermatheca. The measurements of morphologic body parts were measured to the first decimal place of millimetre, the measurements of the genitalia were measured to the second decimal place of millimetre. The aedeagus was measured dorsally viewed.

The types have been deposited in ZSPC, MSBC and CNCO. Indication of the place of the deposition CNCO added to the locality data at the type material should be considered as temporary; it means that the holotypes and a part of the paratypes temporary deposited in CNCO will be eventually deposited in IZAS.

Abbreviations of body parts and measurements:

AII-AXI antennomeres II-XI;

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

L length;

W width;

MTLM length of metaventrite measured at midline from the top of anterior process and top of posterior process of metaventrite;

MTLC length of metaventrite measured at the shortest distance (between mid- and hind-coxae);

MTW width of metaventrite measured between outermost postero-lateral points;

MTW/MTLM or MTLC, further L/W or W/L 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, running caudally (if present);
femoral lines = V- shaped line located on metaventrite (if present) having blunt angle or round top oriented caudally;
lateral lines = lines connecting medially to mesoventral longitudinal carina running obliquely anterio-laterally (if present);
type of the aedeagus = the type is classified according to the shape of the basal part of the aedeagus (Švec & Angelini 2019);
shape of eyes = the terminology follows Švec (2021).

DESCRIPTIONS

Agathidium (*Agathidium*) *pseudouliginosum* sp. nov.
(Figs. 1-4)

Type material. Holotype (♂): " CHINA: N-Yunnan, Zhongdian Co., 46 km SSE Zhongdian, 27°27.0′, 99°54.7′E, 3,50-3100 m, 17.viii.2003, A. Smetana [C125] ", (ZSPC).

Description. Length 3.1 mm, maximum length of head 0.5 mm, pronotum 1.3 mm, elytra 1.3 mm, antenna 0.9 mm, aedeagus 1.31 mm, maximum width of head 1.0 mm, pronotum 1.7 mm at basal quarter of pronotal length, elytra 1.7 mm at basal quarter. Black, antenna and legs yellow-reddish. Ventral surface chest-nut coloured. No micro-sculpture evident on dorsal surface. Sutural striae developed. The species can be attributed to the species group *atrum*.

Head. Broadest at the parabola slice shaped eyes. Supraocular carina between eyes and clypeus very low, of the equal height. Subocular line not developed. Clypeal line feebly but distinctly developed. Clypeus straight not emarginate. Shape of head as on Fig. 3. Antennal club 3-segmented. Ratio of length of antennomeres II-XI (AII=1.0) = 1.0-1.7-0.8-0.8-0.7-0.6-0.6-0.9-0.9-1.6. Ratio of width of AII-AXI (AII=1.0): 1.0-1.0-1.1-1.1-1.1-1.2-1.2-1.9-2.0-2.0. Ratio of width:length of AII-AXI= 0.7-0.4-1.0-1.1-1.1-1.2-1.6-1.4-1.5-0.8. Puncturation very fine sparse and superficial. Punctures separated by 8-10 or more times their diameter.

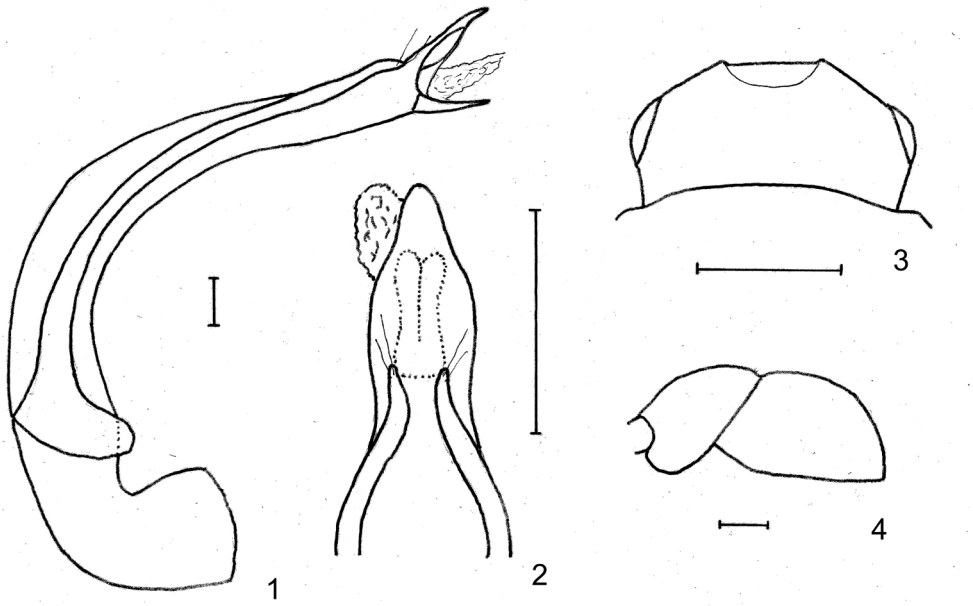
Pronotum. Very sparsely, almost indistinctly punctured. Punctures very fine small weak, puncturation much sparser than those on head, separated more than 10 times their diameter. Posterior angles not developed, anterior pronotal angles broadly rounded in dorsal and lateral view. Lateral margin broadly rounded laterally seen (Fig. 4).

Elytra. With puncturation similar to that on pronotum. Punctures very fine small weak, separated by 10 or more times their diameter. Lateral angle very blunt but distinct. Sutural striae feebly impressed at elytral apex.

Mesoventrite. Longitudinal carina and lateral lines developed, complete.

Metaventrite. Moderately developed. MTW/MTLM = 6, MTW/MTLC = 10. Femoral lines feeble, shortened. Centrally located fovea equipped with several erected each other adjacent setae. Membranous wings missing.

Legs. Tarsal formula 5-5-4. Tarsomeres not widened. Metafemora with large triangular



Figs. 1-4. *Agathidium* (*Agathidium*) *pseudouliginosum* sp. nov.: 1- aedeagus laterally; 2- top of aedeagus dorsally; 3- shape of head; 4- shape of body laterally. Scale in Figs. 1, 2 = 0.1 mm, in 3, 4 = 0.5 mm.

tooth on distal half of posterior margin. All tibiae slim of approximately equal width.

Genitalia. Aedeagus of type B (Fig. 1). Operculum skittle shaped with short suture apically (Fig. 2).

Variation. Female not known.

Differential diagnosis. *Agathidium* (*Agathidium*) *pseudouliginosum* sp. nov. is very similar to *A.* (*A.*) *uliginosum* Angelini *&* Švec, 2011, in many the external characters, especially body size and colour, shape of head possessing parabola slice shaped eyes, low supraocular carina, missing membranous wings, presence of feeble short sutural striae, and the almost same length ratio of AIII/AII. The new species differs by the unobtrusive puncturation on head while the same is very distinct and dense in *A. uliginosum*. Although the aedeagus in both species is the same type and the shape of apex of aedeagus is similar in the compared species, the apical part of aedeagus differs. The apex of the aedeagus is narrow, roundly arrow-head shaped, in A. *pseudouliginosum* while the same is distinctly broader, *Tilia*-leaf shaped, in *A. fuliginosum*.

Etymology. The name should draw attention to the similarity of the new species to *Agathidium* (*A.*) *uliginosum* Angelini & Švec, 1994.

Agathidium (*Agathidium*) *excisum* sp. nov.
(Figs. 5-9)

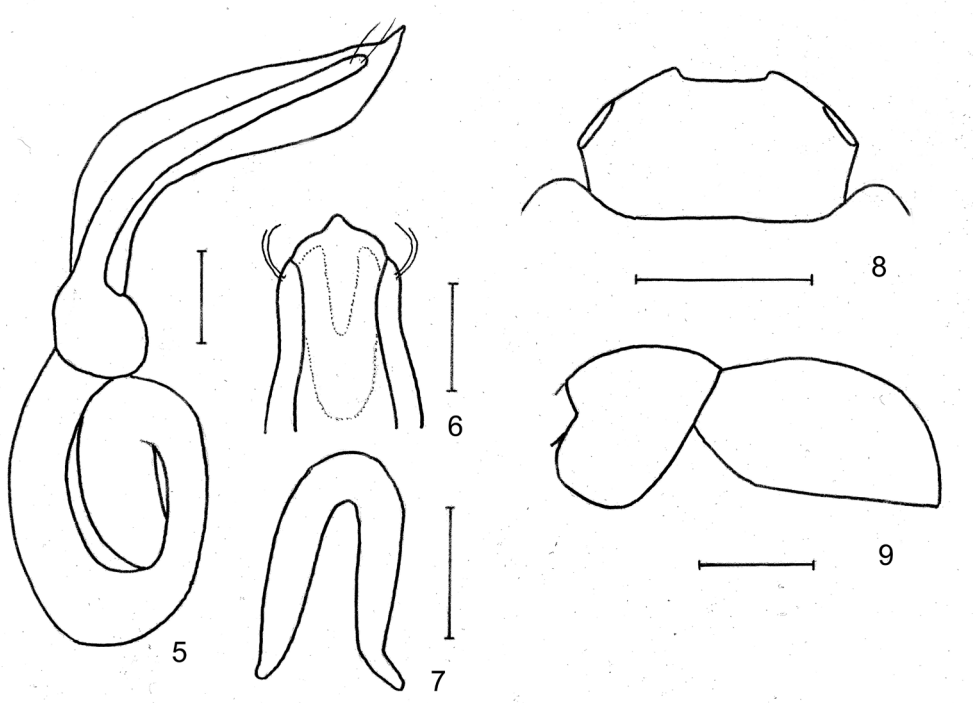
Type material. Holotype (♂): "P.R.CHINA, Yunnan, E slope Cangshan at Dali N 25°40′13.2′′ E 100°07′54.8′′, 9.v.2010, 2728 m sifting 01, V. Grebennikov" (CNCO). Paratypes: (3 ♂♂, 2 spec. sex indet.): same data as holotype, (CNCO, ZSPC); (5 ♂♂, 3 ♀♀, 10 spec., sex indet): "P.R. CHINA, Yunnan Cang Shan at Dali N 25°41'07" E100°06'58", 02.vii.2011, 2714 m, sift 33, V. Grebennikov", (CNCO, ZSPC); (1 ♂, 2 spec. sex indet.): "P.R. CHINA, Yunnan Cang Shan at Dali, N 25°40'17" E100°07'47", 03.vii.2011, 2698 m, sift 34, V. Grebennikov, (CNCO, ZSPC); (2 spec. sex indet.): "P.R.CHINA, Yunnan, E slope Cangshan at Dali N25°40′13.2′′ E100°07′54.8′′, 11.v.2010, 2728 m sifting 05, V. Grebennikov", (CNCO); (2 ♂♂, 2 spec. sex indet.): "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); (1 ♂, 6 spec. sex indet.): "P.R.CHINA, Yunnan, E slope Cangshan at Dali N 25°40′15.5′′ E 100°07′ 45.4′′, 18.v.2010, 2657 m sifting 77, V. Grebennikov", (CNCO, ZSPC); (1 ♂, 2 spec. sex indet.): "P.R.CHINA, Yunnan E slope Cangshan at Dali N 25°40′15.1′′ E 100°07′39.9′′, 10.v.2010, 2711 m sifting 04, V. Grebennikov", (CNCO, ZSPC); (1 ♀): "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); (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]", (MSBC); (1 sex indet.): "CHINA: Yunnan, Dali Bai Aut. Pref., mount. range E Weishan, 12 km NE Weishan, 25°17'02-15''N, 100°22' 23-30''E, 2630-2660 m, scrub with pines and bamboo, litter sifted, 15.IX. 2009, leg. M. Schülke [CH09-54]", (ZSPC); (1 ♂): "CHINA: Yunnan [CH07-09], Dali Bai Auton. Pref., Diancang Shan 45 km NW Dali, 2730 m, 26°01'20''N, 99°53'17''E, creek valley, pines, ferns, sifted, 29.V.2007, M. Schülke", (ZSPC); (1 ♂): "China: N-Yunnan [C03-01], Lijiang Naxi Aut. Co., E Yulongxue Shan , 30 km N Lijiang, 27°09.0′N 100°14.9′E, 2800-2900 m, creek valley, secondary mixed forest, 13.viii. 2003. M. Schülke" (MSBC).

Description. Length 2.0 mm, maximum length of head 0.3 mm, pronotum 0.8 mm, elytra 0.9 mm; antenna 0.6 mm, aedeagus 0.68 mm. Maximum width of head 0.8 mm, pronotum 1.1 mm at middle of pronotal length, elytra 1.1 mm at basal third. Dorsum including legs and antennomeres AII-AXI lightly chest-nut, AI a little darker. Ventral surface chest-nut coloured. No micro-sculpture evident on dorsal surface. Sutural striae not developed. The species can be attributed to the species group *dentatum*.

Head. Broadest at very short temples, just behind eyes. Eyes strongly reduced to narrow strip dorsally seen. Supraocular carina between eyes and clypeus very low, of the equal height. Subocular line developed. Clypeal line missing. Clypeus straight distinctly emarginate. Shape of head as on Fig. 8. Antennal club 5-segmented. Ratio of length of antennomeres II-XI (AII=1.0) = 1.0-1.0-0.6-0.4-0.6-0.6-0.6-0.9-1.0-1.4. Ratio of width of AII-AXI (AII=1.0): 1.0-0.7-0.6-0.6-0.6-0.9-0.9-1.4-1.7-1.7. Ratio of width:length of AII-AXI= 0.8-0.6-0.8-1.0 -0.8-1.2-1.2-1.3-1.3-0.9. Puncturation very fine, shallow but distinct. Punctures separated by 3-4 times their diameters.

Pronotum. Puncturation feebler and sparser than on head, less regular. Punctures separated by 3-10 times their diameter. Posterior angles not developed, anterior pronotal angles broadly rounded in dorsal and lateral view. Lateral margin broadly rounded laterally seen (Fig. 9).

Elytra. With puncturation more distinct than that on pronotum. Punctures larger than those on head and pronotum, separated by about 5-10 times their diameter. Elytra possess irregular very superficial lines oriented in various directions forming irregular large cells containing one or more punctures. Lateral angle very blunt but distinct. Sutural striae not developed.



Figs 5-9. *Agathidium* (*Agathidium*) *excisum* sp. nov.: 5- aedeagus laterally; 6- top of aedeagus dorsally; 7- shape of spermatheca; 8- shape of head; 9- shape of body laterally. Scale Figs. 5-7 - 0.1 mm, in Figs. 8, 9 = 0.5 mm.

Mesoventrite. Longitudinal carina developed, lateral lines missing.

Metaventrite. A little shortened. MTW/MTLM = 8, MTW/MTLC = 22. Femoral lines complete. Centrally located fovea equipped with several erected each other adjacent setae. Membranous wings missing.

Legs. Tarsal formula 5-5-4. Basal segment of pro- and meso-tarsi very slightly widened. Pro-tibiae of usual width, meso- and meta-tibiae dorso-ventrally depressed, slightly widened, a little broader than pro- tibiae. Meso- and meta- tibiae of the same width. Meta-femora without specific characters.

Genitalia. Aedeagus of type E, apex with distinct nipple (Fig. 5). Operculum U shaped (Fig. 6).

Variation. Tarsal formula 4-4-4 in females. Female tarsi slim. Metaventrite lacking central fovea in female. Maximum length of U-shaped spermatheca (Fig. 7) 0.18 mm. The body length varies between 1.7-2.0 mm in the type series. The length ratio of antennomeres III:II varies in the range 1.0-1.3. Some of the paratypes are chest-nut to brown-black coloured with lighter pronotal and elytral margins.

Differential diagnosis. *Agathidium* (*Agathidium*) *excisum* sp. nov. is very similar to *A.* (*A.*) *procerum* Angelini & De Marzo, 1998 in the body size, shape of body, colour of dorsum,

length ratio of AIII/AII, missing sutural striae and the type of basal part of aedeagus. The main difference between both species is the shape of eyes. While the eyes of *A. excisum* are strongly depressed, strip like shaped the eyes of *A. procerum* are normally developed, parabola slice shaped. Also the shape of the aedeagal apex are different in both species as the top of the aedeagus lacks any terminal nipple in *A. procerum*.

Etymology. The name should draw the attention to the distinctly emarginate clypeus (Latin expression excisum means cut out in English).

Agathidium (*Agathidium*) *circinatum* sp. nov.
(Figs. 10-14)

Type material. Holotype (♂): "CHINA, Yunnan, 15km W Deqin, Mingyong, N 28°27'29" E 98°45'28", 7.vi.2012, 3289 m, sift16, V. Grebennikov", (CNCO). Paratypes: (3 ♂♂, 3 ♀♀, 1 spec. sex indet.): the same data as in holotype, (CNCO, ZSPC); (1 ♂, 2 ♀♀): "CHINA, Yunnan, 15km W Deqin, Mingyong, N 28°27'39" E 98°46'19", 8.vi.2012, 2735 m, sift17, V. Grebennikov, (CNCO, ZSPC); (1 ♂): "China: N-Yunnan [C2005-09], Diqin Tibet Aut. Pref., Deqin Co., Meili Xue Shan, E side, 14 km W Deqin, 2850 m; 28º27.47´ N, 98º46.35´ E, creek valley below glacier, mixed forest, leaf litter, moss, dead wood sifted, 11.vi.2005, M, Schülke", (MSBC).

Description. Length 3.2 mm, maximum length of head 0.5 mm, pronotum 1.3 mm, elytra 1.4 mm, antenna 1.0 mm, aedeagus 0.91 mm, maximum width of head 1.1 mm, pronotum 1.8 mm at middle of pronotal length, elytra 1.6 mm at basal third. Brown-black, pronotal and elytral margins with narrow strip along elytral suture a little lighter coloured. Antenna and legs lightly chest-nut, antennomeres AI, AII and AXI lighter. Ventral surface lightly chest-nut coloured. No micro-sculpture evident on dorsal surface. Sutural striae not developed. The species can be attributed to the species group *dentatum*.

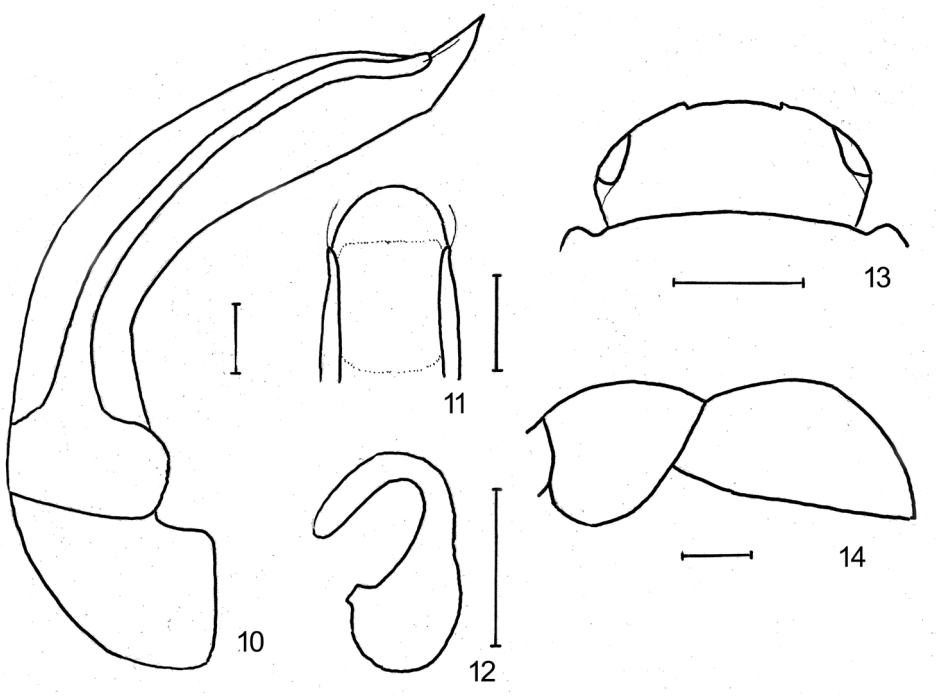
Head. Broadest closely behind posterior margins of the flattened drop shaped eyes. Temples very short. Supraocular carina between eyes and clypeus low, of the equal height. Subocular line not developed. Clypeal line not developed. Clypeus very feebly convex not emarginate. Shape of head as on Fig. 13. Antennal club 5-segmented. Ratio of length of antennomeres II-XI (AII=1.0) = 1.0-1.4-0.6-0.6-0.6-0.6-0.5-0.9-0.9-1.6. Ratio of width of AII-AXI (AII=1.0): 1.0-1.0-1.0-1.1-1.0-1.3-1.4-1.7-1.7-1.8. Ratio of width:length of AII-AXI= 0.6-0.5-1.0-1.1-1.0-1.3-1.9-1.2-1.3-0.7. Puncturation very fine, very sparse, superficial and unobtrusive. Punctures very small separated by more than10 times their diameter.

Pronotum. Puncturation even sparser than that on head, hardly detectable. Posterior angles not developed, anterior pronotal angles hardly detected in dorsal view, lateral margin broadly rounded laterally seen (Fig. 14).

Elytra. With puncturation similar to that on pronotum with exception of non complete a little irregular row of larger distinct punctures aligned along suture. Lateral angle very blunt, hardly detectable. Sutural striae missing.

Mesoventrite. Longitudinal carina developed, lateral lines missing.

Metaventrite. Well developed. MTW/MTLM = 4, MTW/MTLC = 7. Femoral lines well developed, complete, widely rounded at posteriorly oriented top. Centrally located fovea lacking setae. Membranous wings missing.



Figs. 10-14. *Agathidium* (*Agathidium*) *circinatum* sp. nov.: 10- aedeagus laterally; 11- top of aedeagus dorsally; 12- shape of spermatheca; 13- shape of head; 14- shape of body laterally. Scale in Figs. 10-12 = 0.1 mm, in 13, 14 = 0.5 mm.

Legs. Tarsal formula 5-5-4. Tarsomere TI widened, TII a little wider than following ones. Meta-femora with large triangular tooth on distal half of posterior margin. All tibiae of usual wide and shape, approximately equally slim.

Genitalia. Aedeagus of type B (Fig. 10). Operculum of a coat of arms shaped with straight distal margin (Fig. 11)

Variation. The colour of dorsum varies from brown-black to chest nut in the type series, the body length varies between 2.5-3.2 mm, the length ratio of AIII/AII from 1.1 to 1.5. Tarsal formula 5-4-4, tarsi slim, meta-femora without specific characters in female.

Differential diagnosis. *Agathidium* (*Agathidium*) *circinatum* sp. nov. is very similar to *A.* (*A.*) *punctipenne* Švec, 2017 in many the external characters, especially body size and colour missing membranous wings, lack of dorsal micro-sculpture, missing sutural striae, and by the shape of the aedeagus and spermatheca. The new species differs by the thick antenna, especially antennomeres AIII-AVI that are at least as wide as AII in *A. circinatum*, while the same antennomeres are narrower than AII in *A. punctipenne*. The new species differs also by low supraocular carina and the unobtrusive puncturation on elytra while the same is very distinct and dense in *A. punctipenne*. The aedeagus in both compared species is the same type and very similar the shape of apex, on the other hand the apical part of operculum

is straight in A. *circinatum* while the same is roof-like shaped in *A. punctipenne*. The new species differs also by the shape of eyes that are drop shaped while eyes are parabola slice shaped in *A. punctipenne*. Also the length ratio of AIII/AII differs in both species - it is 1.1-1.5 in *A. circinatum*, while the same is 1.6-1.9 in *A. punctipenne*.

Etymology. The name should point to the rounded apex of aedeagus (Latin word circinatus means rounded in English).

Agathidium (*Agathidium*) *bifurcatum* sp. nov.

(Figs. 15-18)

Type material. Holotype (♂): "CHINA: Sichuan Emeishan Leidongping, 2500 m, 18.vii.1996 29º32′ N, 103º21′ E A. Smetana, J. Farkač, P. Kabátek", (ZSPC).

Description. Length 3.2 mm, maximum length of head 0.4 mm, pronotum 1.4 mm, elytra 1.4 mm, antenna 1.1 mm, aedeagus 1.35 mm, maximum width of head 1.3 mm, pronotum 1.9 mm at basal quarter of pronotal length, elytra 1.8 mm at basal sixth. Black, lateral margins of elytra lighter coloured, antenna and legs light chest-nut. Ventral surface chest-nut coloured. No micro-sculpture evident on dorsal surface. Sutural striae not developed. The species can be attributed to the species group *dentatum*.

Head. Broadest at the caudal third of parabola slice shaped eyes. Supraocular carina between eyes and clypeus low, of the equal height. Subocular line not developed. Clypeal line very feebly hardly detectable developed. Clypeus straight feebly emarginate. Shape of head as on Fig. 17. Antennal club 3-segmented. Ratio of length of antennomeres II-XI (AII=1.0) = 1.0-2.3-0.9-1.0-0.7-0.9-0.6-1.2-1.2-2.2. Ratio of width of AII-AXI (AII=1.0): 1.0-0.9-0.9-1.0-1.0-1.5-1.5-2.3-2.3-2.3. Ratio of width:length of AII-AXI= 1.0-0.9-0.9-1.0-1.0-1.5-1.5-2.3-2.3-0.8. Puncturation distinct, strong and moderately dense, punctures separated by about 4-5 times their diameter.

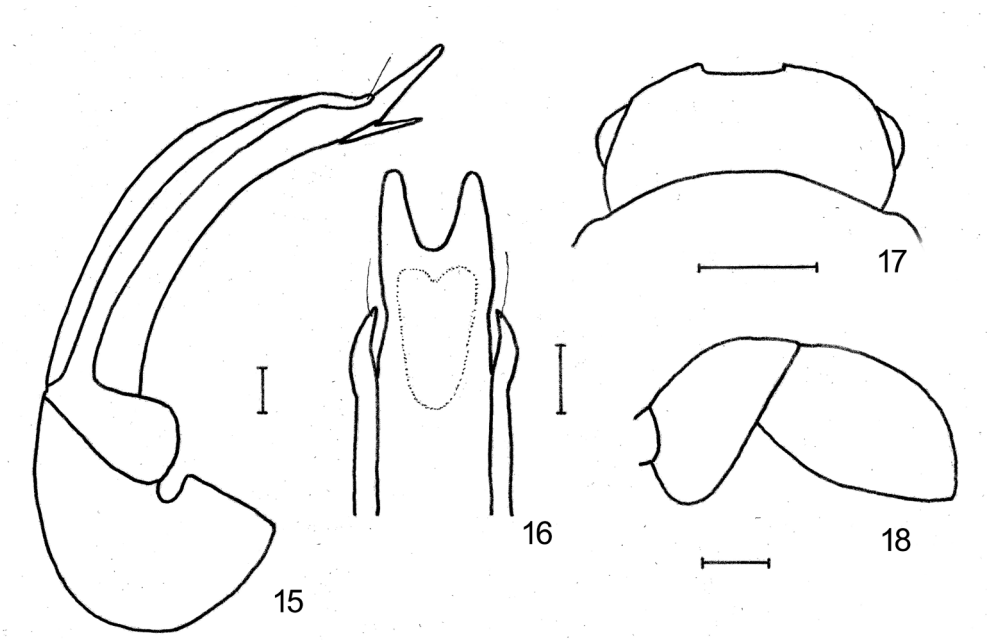
Pronotum. Puncturation similar to that on head, less regular, punctures a little smaller than those on head, separated by about 4-5 times their diameter. Posterior angles not developed anterior pronotal angles broadly rounded in dorsal and lateral view. Lateral margin broadly rounded laterally seen (Fig. 18).

Elytra. With puncturation similar to that on pronotum but sparser. Punctures a little finer than those on pronotum, very fine small weak separated by 10 or more times their diameter. Surface possess very fine, sparsely distributed lines oriented in various directions forming irregular large cells containing one or more punctures. Lateral angle indistinct. Sutural striae not developed.

Mesoventrite. Longitudinal carina developed, lateral lines shortened very feebly expressed.

Metaventrite. Well developed. MTW/MTLM = 3, MTW/MTLC = 6. Femoral lines feeble, complete.

Legs. Tarsal formula 5-5-4. Tarsomere I of pro-tarsi distinctly widened, T I of meso-tarsi feebly widened. All tibiae slim of approximately equal width. Meta-femur with wide blunt tooth truncated on its top occupying distal third of femoral length.



Figs. 15-18. *Agathidium* (*Agathidium*) *bifurcatum* sp. nov.: 15- aedeagus laterally; 16- top of aedeagus dorsally; 17- shape of head; 18- shape of body laterally. Scale in Figs. 15, 16 = 0.1 mm, in 17, 18 = 0.5 mm.

Genitalia. Aedeagus of type C (Fig. 15), apex deeply emarginate, bifurcate. Both apical processes rounded on tip. Paramere distinctly curved apically. Operculum somewhat hearth shaped (Fig. 16).

Variation. Female not known.

Differential diagnosis. *Agathidium* (*Agathidium*) *bifurcatum* sp. nov. is very similar to *A.* (*A.*) *smetanaicum* Angelini & Švec, 2011 in many the external characters especially in body size and colour, shape of pronotum, low supraocular carina, missing membranous wings and sutural striae, lack of dorsal micro-scupture and the similar ratio of AIII/AII, the same type of aedeagus and by the deeply emarginate apex of the aedeagus. The new species differs mainly by the shape of the aedeagus that is, except of elevated flattened apical part, simply arcuate in lateral view while the same is S- shaped in *A. smetanaicum*.

Etymology. The name of the species should draw the attention to the distinctive bifurcate shape of the aedeagal apex (from Latin bifurcatus).

Agathidium (*Macroceble*) *interpositum* sp. nov.
(Figs. 19-23)

Type material. Holotype (♂): "CHINA: Sichuan Emeishan Leidongping, 2500 m, 18.vii.1996 29º32′ N, 103º21′ E A. Smetana, J. Farkač, P. Kabátek", (ZSPC). Paratype: (1 ♀): the same data (ZSPC).

Description. Length 2.8 mm, maximum length of head 0.4 mm, pronotum 1.2 mm, elytra 1.2 mm, antenna 0.9 mm, aedeagus 0.85 mm, maximum width of head 1.1 mm, pronotum 1.5 mm at basal quarter of pronotal length, elytra 1.5 mm at basal quarter. Chest-nut, antenna and legs light chest-nut. Ventral surface yellow-red. No micro-sculpture evident on dorsal surface but elytra opalescent. Sutural striae not developed.

Head. Broadest approximately at middle of parabola slice shaped eyes. Supraocular carina between eyes and clypeus low, of the equal height. Subocular line not developed. Clypeal line not developed. Clypeus straight very feebly emarginate. Shape of head as on Fig. 22. Antennal club 3-segmented. Ratio of length of antennomeres II-XI (AII=1.0) = 1.0-2.1-0.9-0.9-0.8-1.0-0.8-1.3-1.3-2.4. Ratio of width of AII-AXI (AII=1.0): 1.0-0.8-0.7-0.9-0.9-1.0-1.1-1.6-1.8-1.5. Ratio of width:length of AII-AXI= 1.0-0.4-0.8-1.0-1.1-1.0-1.4-1.2-1.3-0.6. Puncturation indistinct, feeble and sparse, punctures separated by about 6-10 or more times their diameter.

Pronotum. Puncturation sparser and finer than that on head, punctures hardly detected, separated by about 10 or more times their diameter. Posterior angles not developed anterior pronotal angles broadly rounded in dorsal and lateral view. Lateral margin moderately rounded laterally seen (Fig. 23).

Elytra. With puncturation even sparser than on pronotum. Punctures similar to those on pronotum, very fine small weak separated by 10 or more times their diameter. Surface possess very fine opalescence. Lateral angle indistinct. Sutural striae not developed.

Mesoventrite. Anterior part of mesoventrite roof-like elevated with rounded top, therefore longitudinal carina not detectable. Lateral lines shortened very feebly expressed.

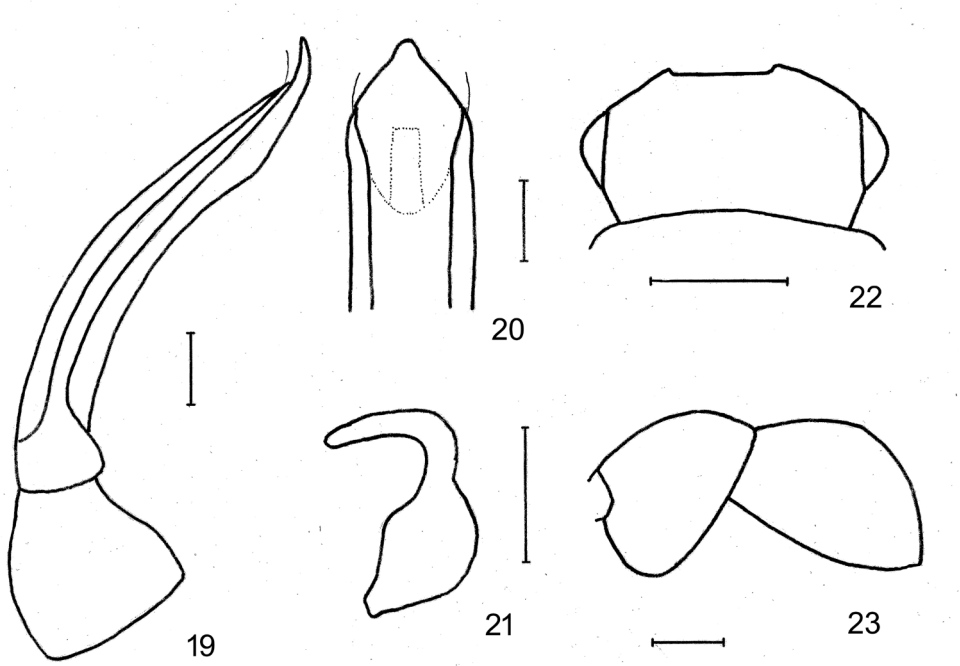
Metaventrite. A little shortened. MTW/MTLM = 6, MTW/MTLC = 19. Femoral lines not developed.

Legs. Tarsal formula 5-5-4. Tarsomere I of pro-tarsi widened, T I of meso-tarsi very slightly widened. All tibiae slim of approximately equal width. Meta-femur with small unobtrusive apical tooth at posterior margin.

Genitalia. Aedeagus of type A (Fig. 19), apex with small but distinct nipple. Operculum rectangle (Fig. 20).

Variation. Body size varies between 2.8-3.0 mm, the ratio of length of AIII/AII from 1.9-2.1. Female tarsi slim, femora without specific characters, tarsal formula 5-4-4. The elytral opalescence not detectable in the female paratype.

Differential diagnosis. *Agathidium* (*Macroceble*) *interpositum* sp. nov. is very similar to *A.* (*A.*) *acutum* Angelini, 2000, in many the external characters, especially body size, shape of head, eyes and pronotum, low supraocular carina, missing membranous wings and sutural striae, in long antennomere III compared with AII, the same type of aedeagus and similar shape of the spermatheca. *A. interpositum* differs from the compared species mainly by the



Figs. 19-23. *Agathidium* (*Macroceble*) *interpositum* sp. nov.: 19- aedeagus laterally; 20- top of aedeagus dorsally; 21- shape of spermatheca; 22- shape of head; 23- shape of body laterally. Scale in Figs. 19-21 = 0.1 mm, in 22, 23 = 0.5 mm.

absence of the femoral lines. Surface of head and pronotum is shiny, elytra shiny or slightly opalescent in the new species, while the whole surface is distinctly opalescent in *A. acutum*. The new species differs also by the nipple on the aedeagal top while the apical part of aedeagus is simply acutely narrowed toward tip in *A. acutum*.

Discussion. *Agathidium* (*Macroceble*) *interpositum* sp. nov. does not agree perfectly neither to the nominate subgenus *Agathidium* s.str. nor to the subgenus *Macroceble.* The inclusion of the new species to the first or second mentioned subgenus can be supported by its morphological characters that correspond partly with *Agathidium* s. str. (developed, only a little shortened metaventrite), partly with *Macroceble* (missing femoral lines).
The subgenus *Macroceble* was defined by Angelini (1993) using the following morphological characters:

- ratio of pronotal width/ width of head is 1.15-1.40, predominantly 1.25-1.35;
- metaventrite strongly shortened, meso- and meta-coxae in contact, metaventrite frequently with narrow protuberance equipped by setae;
- lateral (= humeral) elytral angle very flat, as in *Agathidium* s.str.

While the ratio of width of pronotum and head is a quantitative character that can change under various influences, the reduction of metaventrite accompanying by lack of femoral

lines seems to be more objective character. Therefore I propose to modify the definition of *Macroceble* as follows:

- the metaventrite shortened,
- lines bordering caudal margin of meso-coxa and cranial margin of meta- coxae are less or more approaching or even touching, femoral lines not developed;
- lateral (= humeral) elytral angle very flat or indistinct, as in *Agathidium* s.str.

The morphology of the metaventrite and lack of lateral elytral angle in *Agathidium interpositum* sp. nov. and also the following *A. elevatum* sp. nov. convinced me to attribute both species to the subgenus *Macroceble*.

Also *Agathidium simulator* Angelini, 2002 described as a member of the subgenus *Agathidium* s.s.tr. belongs, according to my opinion, to subgenus *Macroceble*. The reason of the proposal to transfer of *A. simulator* in the subgenus *Macroceble* is the same as in *A. interpositum and A. elevatum*.

Etymology. The name *interpositus* indicates that the structure of metaventrite places the species between the subgenera *Agathidium* s. str. and *Macroceble* (Latin word interpositum means in English: placed between).

Agathidium (*Macroceble*) *elevatum* sp. nov.

(Figs. 24-28)

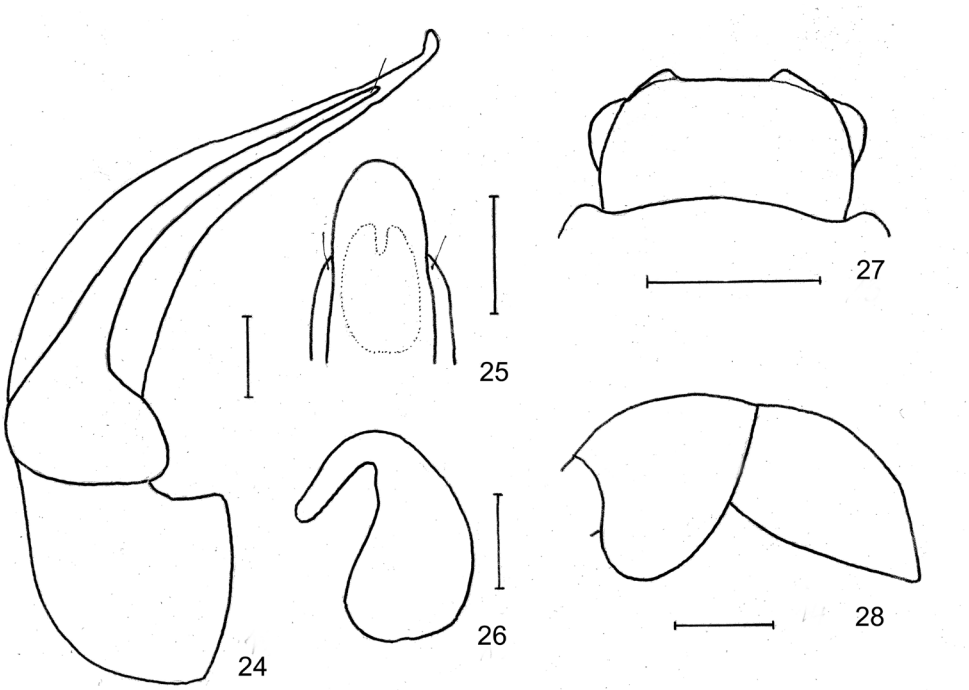
Type material. Holotype (♂): "P.R. China, Yunnan E slope N Gaoligongshan, N 27º47´51.7´´ E 098º34´56.4´´ 01.vi.2010, 2100 m, sifting 25 V. Grebennikov", (CNCO). Paratypes: (2 ♂♂, 2 ♀): the same data (CNCO, ZSPC); (1 ♀): "P.R.CHINA, Yunnan, E slope Cang Shan at Dali, N 25°40´13.2´´ E 100°07´54.8´´ 11.v.2010, 2728 m, sifting 05, V. Grebennikov", (CNCO).

Description. Length 2.1 mm, maximum length of head 0.3 mm, of pronotum 0.9 mm, of elytra 0.9 mm; antenna 0.7 mm, aedeagus 0.82 mm. Maximum width of head 0.8 mm, pronotum 1.2 mm at middle of pronotal length, elytra 1.2 mm at basal third. Dorsum dark chest-nut coloured, legs and antennae chest-nut. Lateral margins of pronotum and elytra in basal half lighter coloured. Ventral surface yellow-brown. No micro-sculpture evident on dorsal surface. Sutural striae not developed.

Head. Broadest at parabola slice shaped eyes. Supraocular carina toward clypeus distinctly elevated. Subocular line developed. Clypeal line missing. Clypeus straight not emarginate. Shape of head as on Fig. 27. Antennal club 5-segmented. Ratio of length of antennomeres II-XI (AII=1.0) = 1.0-1.2-0.6-0.8-0.6-0.7-0.7-1.2-1.2-2.1. Ratio of width of AII-AXI (AII=1.0): 1.0-1.0-0.8-0.8-1.0-1.3-1.3-1.8-2.0-2.2. Ratio of width:length of AII-AXI= 0.7-0.5-1.0-0.7 -1.2-1.3-1.3-1.0-1.1-0.7. Puncturation fine but distinct. Punctures separated by 4-6 times their diameter.

Pronotum. Puncturation similar to that on head. Punctures a little larger than punctures on head separated by 4-6 times their diameter. Posterior angles not developed, anterior pronotal angles broadly rounded in dorsal and lateral view. Lateral margin rounded laterally seen (Fig. 28).

Elytra. With puncturation similar but sparser than on pronotum. Punctures separated by



Figs. 24-28. *Agathidium* (*Macroceble*) *elevatum* sp. nov.: 24- aedeagus laterally; 25- top of aedeagus dorsally; 26- shape of spermatheca; 27- shape of head; 28- shape of body laterally. Scale in Figs. 24-26 = 0.1 mm, in 27, 28 = 0.5 mm.

about 8-10 or even more times their diameter. Lateral angle and sutural striae not developed.

Mesoventrite. Longitudinal carina developed, lateral lines missing.

Metaventrite. A little shortened. MTW/MTLM = 6, MTW/MTLC = 19. Femoral lines missing. Centrally located fovea equipped with several erected each other adjacent setae. Membranous wings missing.

Legs. Tarsal formula 5-5-4. Basal segment of pro- and meso-tarsi very slightly widened. Tibiae of usual width. Meso- and meta-tibiae dorso-ventrally a little depressed, of the same width, not broader than pro- tibiae. Meta-femora without specific characters.

Genitalia. Aedeagus of type B (Fig. 24), apex broadly rounded. Operculum oval with apical notch (Fig. 25).

Variation. Tarsi slim, tarsal formula 5-4-4 in females. Spermatheca with pear shaped basal part and bent slim apical part (Fig. 26). Maximum length of spermatheca 0.21 mm. The body length varies between 2.0-2.2 mm in the type series. The length ratio of antennomeres III:II varies in the range 1.1-1.2. One of the female paratypes is lightly chest-nut coloured; its elytra possess denser puncturation by larger punctures with small but distinct darker spots around each puncture.

Differential diagnosis. *Agathidium* (*Macroceble*) *excisum* sp. nov. is very similar to *A.* (*Ma.*) *simulator* Angelini, 2002 in the body size, length ratio of AIII/AII, shape of body, colour of dorsum, legs and antennae, in the dorsal sculpture, in shortened metaventrite, narrower head, and in elevated supraocular carina (see also discussion bellow). Both species differ distinctly by the type of the aedeagus base (type A in *A. simulator*).

Discussion. I attributed *Agathidium elevatum* sp. nov. to the subgenus *Macroceble* for the reasons stated in the paragraph Discussion added to the description of *A. interpositum* sp. nov. *A. elevatum* sp. nov. is specific, beside the structure of metaventrite also by elevated supraocular carina. This morphological character is typical for the species gathered within *Agathidium* s.str. in the species group *madurense*.

Etymology. The name draws the attention to the elevated supraocular carina near clypeus what is unusual in the subgenus *Macroceble* (Latin elevatus means raised up in English).

Agathidium (*Macroceble*) *mesotibiale* sp. nov.

(Figs. 29-34)

Type material. Holotype (♂): " CHINA: Sichuan Emeishan, Leidongping, 2500 m, 18.vii.1996, 29º32′ N, 103º21′ E, A. Smetana, J. Farkač, P. Kabátek ", (ZSPC). Paratypes: (6 ♂♂, 3 ♀♀): the same data, (ZSPC).

Description. Length 1.9 mm, maximum length of head 0.3 mm, of pronotum 0.8 mm, of elytra 0.8 mm; antenna 0.6 mm, aedeagus 0.71 mm. Maximum width of head 0.8 mm, pronotum 1.0 mm at middle of pronotal length, elytra 1.0 mm at basal third. Dorsum and legs light chest-nut coloured, antennae yellow-red. Ventral surface light chest-nut coloured. No micro-sculpture evident on dorsal surface. Sutural striae not developed.

Head. Broadest at eyes, far before their posterior margin, eyes parabola slice shaped. Supraocular carina low along all its length. Subocular line developed. Clypeal line missing. Clypeus straight not emarginate. Left mandible larger than right one. Shape of head as on Fig. 32. Antennal club 3-segmented. Ratio of length of antennomeres II-XI (AII=1.0) = 1.0-1.0-0.4-0.4-0.4-0.4-0.4-1.0-1.0-1.8. Ratio of width of AII-AXI (AII=1.0): 1.0-0.6-0.6-0.6-0.6-0.7-0.6-1.6-1.6-1.6. Ratio of width:length of AII-AXI= 0.8-0.4-1.0-1.0-1.0-1.3-1.0-1.2-1.2-0.7. Puncturation irregular, very sparse, unobtrusive. Punctures separated by 6-10 or more times their diameter.

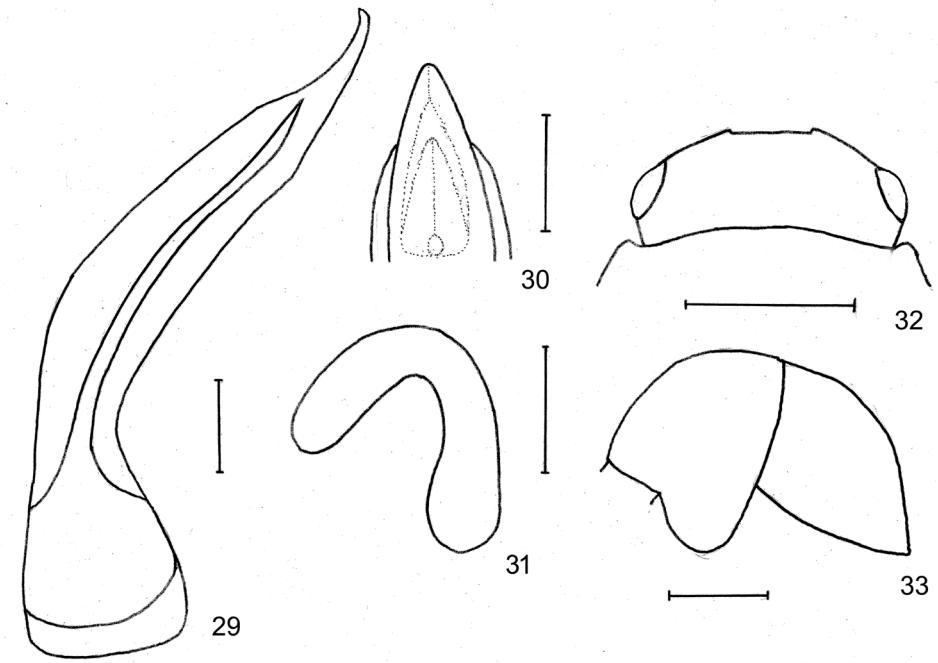
Pronotum. Puncturation even finer and sparser than that on head. Posterior angles not developed, anterior pronotal angles broadly rounded in dorsal and lateral view. Lateral margin moderately rounded laterally seen (Fig. 33).

Elytra. With puncturation similar as that on pronotum. Lateral angle (Fig. 33) and sutural striae not developed.

Mesoventrite. Longitudinal carina developed, lateral lines missing.

Metaventrite. Shortened. MTW/MTLM = 5, MTW/MTLC = 27. Femoral lines missing. Centrally located ventro-caudally oriented protuberance equipped with several erected each other adjacent setae. Membranous wings missing.

Legs. Tarsal formula 5-5-4. Tarsi not widened. Tibiae of unequal width. All tibiae



Figs. 29-33. *Agathidium* (*Macroceble*) *mesotibiale* sp. nov.: 29- aedeagus laterally; 30- top of aedeagus dorsally; 31- shape of spermatheca; 32- shape of head; 33- shape of body laterally. Scale in Figs. 29-31 = 0.1 mm, in 32, 33 = 0.5 mm.

dorso-ventrally depressed, pro-tibiae approximately 2.5 times as wide apically than proximally, meso-tibiae broader than pro-tibiae and very distinctly broader than meta-tibiae, approximately 3.5 times as broad at apex as at base. Meta-tibiae narrow, a little swollen at ultimate apex. Meta-femora without specific characters.

Genitalia. Aedeagus of type A (Fig. 29), apex triangularly narrowed to shortly rounded apex. Operculum of roundly pyramid shape (Fig. 30).

Variation. Tarsi slim, tarsal formula 4-4-4 in females. Maximum length of U-shaped spermatheca (Fig. 31) 0.18 mm. Metaventral protuberance presents also in females. The body length varies between 1.9-2.2 mm in the type series. The length ratio of antennomeres III:II varies in the range 0.8-1.0. Three of the male paratypes possess horn on left mandible (as in Fig. 34).

Differential diagnosis. *Agathidium* (*Macroceble*) *mesotibiale* sp. nov. is very similar to *A.* (*Ma.) oui* Švec, 2011 and *A.* (*Ma.*) *janruzickai* Švec, 2011 in the body size and colour, shape of head possessing parabola slice shaped eyes, low supraocular carina, missing membranous wings, lack of sutural striae, unobtrusive very sparse and fine dorsal puncturation and length ratio of AIII/AII. Also shape of aedeagus is similar in the compared species. The new species differs in the widened pro- and meso-tibiae that are very distinctly broader than meta-tibiae. In contrast all tibiae in *A. janruzickai* and *A. oui* are approximately of the same width. The

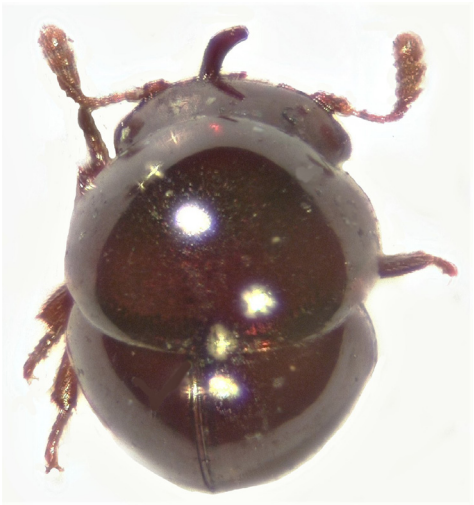


Fig. 34. *Agathidum* (*Ma.*) *mesotibiale* sp nov., paratype, body, dorsal view.

spermatheca in *A. mesotibiale* is U-shaped while shape of the basal part of spermatheca is globose or semi-globose and distal part is letter S-shaped in the compared species.

Etymology. The name should draw attention to the meso-tibiae unusually wide in comparison with pro- and meta-tibiae.

***Agathidium* (*Macroceble*) *parvum* sp. nov.**

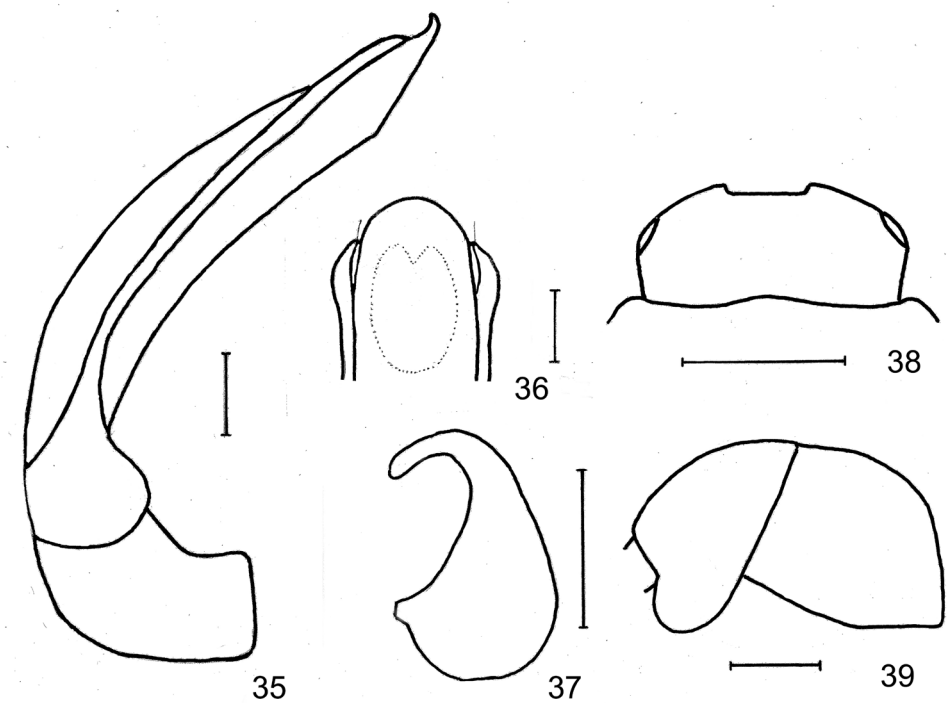
(Figs. 35-39)

Type material. Holotype (♂): " P.R. CHINA, Yunnan, Jizu Shan, N 25°59'02" E 100°20'20", 29.vi.2011, 2689 m, sift 29, V. Grebennikov", (CNCO). Paratypes: (2 ♂♂, 2 ♀♀): the same data, (CNCO, ZSPC); (1 ♂, 1 ♀): "P.R. CHINA, Yunnan, Jizu Shan, N 25°58'12" E 100°21'50", 30.vi.2011, 2840 m, sift 31, V. Grebennikov", (CNCO).

Description. Length 1.9 mm, maximum length of head 0.3 mm, of pronotum 0.8 mm, of elytra 0.8 mm; antenna 0.6 mm, aedeagus 0.81 mm. Maximum width of head 0.8 mm, pronotum 1.1 mm at middle of pronotal length, elytra 1.1 mm at basal third. Dorsum and legs light chest-nut coloured, basal antennomere darker. Ventral surface light chest-nut coloured. No micro-sculpture evident on dorsal surface. Sutural striae not developed.

Head. Broadest at posterior margin of eyes, eyes flatt. Supraocular carina low along all its length. Subocular line not developed. Clypeal line missing. Clypeus straight, slightly but distinctly emarginate. Shape of head on Fig. 38. Antennal club gradually widened since AVII. Ratio of length of antennomeres II-XI (AII=1.0) = 1.0-0.9-0.6-0.7-0.4-0.3-0.8-0.8-0.9-1.8. Ratio of width of AII-AXI (AII=1.0): 1.0-0.8-0.6-0.6-0.8-1.1-1.3-1.6-1.8-1.8. Ratio of width:length of AII-AXI= 0.9-0.8-1.0-0.8-1.5-3.0-1.4-1.9-1.8-0.9. Puncturation irregular very sparse and unobtrusive. Punctures separated by 10 or more times their diameter.

Pronotum. Puncturation as fine and sparse as on head. Posterior angles not developed, anterior pronotal angles broadly rounded in dorsal and lateral view. Lateral margin moderately rounded laterally seen (Fig. 35).



Figs. 35-39 *Agathidium* (*Ma.*) *parvum* sp. nov.: 35- aedeagus laterally; 36- top of aedeagus dorsally; 37- shape of spermatheca; 38- shape of head; 39- shape of body laterally. Scale in Figs. 35-37 = 0.1 mm, in 38, 39 = 0.5 mm.

Elytra. With puncturation similar as that on pronotum. Punctures a little larger than those on pronotum, separated more than 10 times their diameter. Lateral angle and sutural striae not developed.

Mesoventrite. Longitudinal carina developed, lateral lines missing.

Metaventrite. Shortened. MTW/MTLM = 7, MTW/MTLC = 20. Femoral lines missing. Centrally located transverse fovea with several erected each other adjacent setae. Membranous wings missing.

Legs. Tarsal formula 5-5-4. Tarsi not widened. Tibiae dorso-ventrally depressed, moderately broad, of equal width. Pro-and meso-tibiae gradually thickened apically, Maximum width of meta-tibia in their mid-length. Meta-femora without specific characters.

Genitalia. Aedeagus of type B (Fig. 35), apex broadly rounded. Operculum oval with slightly emarginate apex (Fig. 36).

Variation. Tarsi slim, tarsal formula 5-4-4 in females. Feebly expressed metaventral fovea lacking setae developed also in females. Spermatheca with pear shaped basal part and bent slim apical part (Fig. 37); its length is 0.16 mm. The body length varies between 1.7-1.9 mm in the type series. The length ratio of antennomeres III:II varies in the range 0.8-0.9.

Differential diagnosis. *Agathidium* (*Macroceble*) *parvum* sp. nov. is similar to *A.* (*Ma.*) *fui* Švec, 2011 in the shape and size of body, the ratio of length of antennomeres AIII/AII, the

colour and dorsal sculpture and in the shape of head. The new species differs by the flattened eyes, by the B type of aedeagus, by paramera thickened apically and by pear shape basal part of spermatheca, while aedeagus is of type E and spermatheca is U-shaped in *A. fui*.

Etymology. The name draws the attention to the small size of body and small flattened eyes (Latin parvus means small in English).

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REFERENCES

Angelini F. 1993: Studi sugli *Agathidium*. Designazione di un nuovo genere, un nuovo sottogenere e gruppi di specie. *Bolletino de la Società Entomologica Italiana* 125(1): 29-44.

Angelini F. 1995: Revisione tassonomica delle specie paleartiche del genere *Agathidium* Panzer (Coleoptera: Leiodidae: Agathidiini). *Monografie, Museo Regionale di Scienze Naturali (Torino)* 18: 1-485.

Angelini F. 2004: Chiavi dicotomiche e catalogo degli *Agathidium* Panzer dell'Asia sudorientale e della Cina (Coleoptera, Leiodidae, Agathidiini). *Annali del Museo Civico di Storia Naturale Giacomo Doria* 95: 135-577.

Angelini F. 2010: World catalogue of the tribe Agathidiini (Coleoptera, Leiodidae, Leiodinae). *Annali del Museo Civico di Storia Naturale Giacomo Doria* 102: 1-157.

Lompe A. 1986: Ein neues Einbettungsmittel für Insectenpräparate. In: Puhtz V. Kleine Mitteilungen. *Entomologishe Blätter* 82: 119.

Löbl I. & Löbl D. 2015: *Catalogue of Palaearctic Coleoptera. Vol. 2/1. Hydrophiloidea - Staphylinoidea. Revised and Updated Edition.* Leiden: Koninklijke Brill, XXV + 900 pp

Miller K. B. & Q. D. Wheeler, 2005: Slime mold beetles of the genus *Agathidium* Panzer in north and central America (Coleoptera: Leiodidae), part II. *Bulletin of the American Museum of Natural History* 291: 1-167.

Švec Z. 2016: Contribution to the knowledge of Chinese and Indian species of the genus *Agathidium* Panzer, 1797 (Coleoptera: Leiodidae: Leiodinae) - part I. *Studies and Reports, Taxonomical Series* 10(1): 187-213.

Švec Z. 2017a: Contribution to the knowledge of Chinese and Indian species of the genus *Agathidium* Panzer, 1797 (Coleoptera: Leiodidae: Leiodinae) - part II. *Studies and Reports, Taxonomical Series* 13(1): 209-217.

Švec Z. 2017b: Contribution to the knowledge of Chinese species of the genus *Agathidium* Panzer, 1797 (Coleoptera: Leiodidae: Leiodinae) - part III. *Studies and Reports, Taxonomical Series* 13(2): 485-497.

Švec Z. 2021: Himalayan Leiodinae Fleming, 1821 (Insecta: Coleoptera: Leiodidae) - part III. with morphological notes on the genus Agathidium Panzer, 1797. Pp. 321-333. In: Hartmann M. & Weipert J. (eds): *Biodivesität und Naturausstattung im Himalaya IV. Verein der Freunde und Förderer des Naturkundemuseums Erfurt e.V.,* Erfurt, 615 pp.

Švec Z. & Angelini F. 2019: A contribution to knowledge of the aedeagal morphology and Chinese species of the genus Agathidium Panzer, 1797 (Coleoptera: Leiodidae: Leiodinae). Part IV - subgenus *Cyphoceble* Thomson, 1859. *Studies and Reports, Taxonomical Series* 15(2): 475-494.

Wheeler Q. D. & Miller K. B. 2005: Slime-mold beetles of the genus Agathidium Panzer in North and Central America, part I. Coleoptera: Leiodidae. *Bulletin of the Americsn Museum of Natural History* 290: 1-95.

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