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On the *Tetrabothrus* fauna of China (Coleoptera: Staphylinidae: Aleocharinae: Lomechusini)

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A b s t r a c t : Five species of *Tetrabothrus* BERNHAUER, 1915 from China are (re-) described and illustrated: *T. cavus* nov.sp. (Yunnan, Shaanxi), *T. inflexus* nov.sp. (Yunnan), *T. brevalatus* nov.sp. (Yunnan), *T. rubricollis* nov.sp. (North Sichuan), and *T. chinensis* PACE, 2012. The six named species recorded from China thus far are keyed and their distributions are mapped. In total, the *Tetrabothrus* material known from China at present amounts to only twelve specimens, one of them unnamed. Including the new species, the genus currently includes 28 species, 18 of which have been recorded from the southern East Palaearctic region.

K e y w o r d s : Coleoptera, Staphylinidae, Aleocharinae, Lomechusini, *Tetrabothrus*, East Palaearctic region, China, Taiwan, taxonomy, description, new species, key to species, catalogue.

Introduction

According to HLAVÁČ et al. (2011), the lomechusine genus *Tetrabothrus* BERNHAUER, 1915 included 21 valid species. Three additional species were described by PACE (2012, 2013a, b). *Tetrabothrus* was represented in the southern East Palaearctic region sensu SMETANA (2004) by 14, in the Oriental region by eight, and in the Australian region by two named species. The Oriental species have been reported from Burma (one species), Vietnam (one species), Thailand (two species), Malaysia (three species), Indonesia (three species), and the Philippines (one species), the Australian species from Papua New Guinea (one species) and Australia (one species). In the East Palaearctic, the genus has been recorded from the Himalaya (six species), China (two species), Taiwan (three species), Hongkong (one species), South Korea (two species), and Japan (three species). The Himalayan species were reviewed and keyed in a previous contribution (ASSING 2006). The species recorded from Japan were revised by MARUYAMA & KISHIMOTO (1999). The two Chinese species are currently known only from Yunnan (*T. puetzi* ASSING, 2009) and the Daba Shan in the border region between Shaanxi, Chongqing, and Hubei (*T. chinensis* PACE, 2012).

Tetrabothrus species are generally found rarely; several species are currently represented only by single specimens. Next to nothing is known about the natural history; an association with ants has been hypothesized, but not confirmed (ASSING 2006).

Based on the similar morphology of the aedeagus and the spermatheca (capsule with

simple distal portion and with extremely long and partly spiral proximal portion), *Tetrabothrus* is probably closely related to *Zyras* STEPHENS, 1835. The aedeagus, in particular the median lobe, provides the most useful and reliable characters for the identification of species. Some species may be identified also based on external characters. The spermatheca, on the other hand, is of rather uniform shape and consequently of little taxonomic significance.

The present paper is based on material from the collection of Michael Schülke (Berlin) and on some specimens collected during recent field trips to the Qinling Shan and to East Yunnan conducted by Michael Schülke, David Wrase (Berlin), and the author in 2012 and 2014. A study of this material yielded four new species from Yunnan and Shaanxi.

Material and methods

The material treated in this study is deposited in the following collections:

SDEI ..... Senckenberg Deutsches Entomologisches Institut, Müncheberg (L. Behne)

cAss..... author´s private collection

cSch..... private collection Michael Schülke, Berlin

The morphological studies were conducted using a Stemi SV 11 microscope (Zeiss Germany) and a Jenalab compound microscope (Carl Zeiss Jena). The images of external characters were created using a photographing device constructed by Arved Lompe (Nienburg) and CombineZ software. A digital camera (Nikon Coolpix 995) was used for the remaining photographs. The map was created using MapCreator 2.0 (primap) software.

Body length was measured from the anterior margin of the labrum to the abdominal apex, the length of the forebody from the anterior margin of the labrum to the posterior margin of the elytra, head length from the anterior margin of the clypeus (without anteclypeus) to the posterior constriction of the head, elytral length at the suture from the apex of the scutellum to the posterior margin of the elytra, the length of the metatarsus from the base to the apex without claws, and the length of the aedeagus from the apex of the ventral process to the base of the aedeagal capsule. The "parameral" side (i.e., the side where the sperm duct enters) is referred to as the ventral, the opposite side as the dorsal aspect.

The *Tetrabothrus* fauna of China

Including the newly described species, *Tetrabothrus* is now represented in China by six named species, four of which have been recorded from Yunnan, two from Shaanxi (one of them from the border region between Shaanxi, Hubei, and Chongqing), and one from northern Sichuan (Map 1). Four species are currently known only from their respective type localities. All the specimens were sifted from leaf litter in various, usually moist forest habitats at altitudes of 1700-2510 m. The total number of *Tetrabothrus* specimens known from China amounts to twelve (one of them unnamed). As a rule, only a single specimen was collected per locality; only on two occasions were two specimens collected in the same locality.

The genus now includes a total of 28 named species, 18 of which have been recorded from the southern East Palaearctic region.

Key to the *Tetrabothrus* species of China

C o m m e n t : For a key to the *Tetrabothrus* species of Taiwan see PACE (2010). *Tetrabothrus bicolor* CAMERON, 1939 from Burma is readily distinguished from all the species keyed below by its coloration alone (forebody black; abdomen red; legs blackish-brown; antennae black).

1. Elytra conspicuously short, approximately 0.55 times as long as pronotum (Fig. 16). Hind wings and palisade fringe at the posterior margin of the abdominal tergite VII reduced (Fig. 20). Antenna 1.7 mm long (Fig. 19). Abdomen broader than elytra. Median lobe of aedeagus as in Figs 21-22. Paramere with long and slender apical lobe (Fig. 23). Yunnan (Map 1) ..... ***brevalatus*** nov.sp.

- Elytra longer, at least approximately 0.85 times as long as pronotum. Hind wings and palisade fringe at the posterior margin of the abdominal tergite VII fully developed. Antenna shorter. Abdomen narrower than elytra. Sexual characters different. 2

2. Forebody distinctly bicoloured: pronotum pale-reddish, strongly contrasting with the blackish posterior portion of the head and the blackish elytra. Head strongly transverse, > 1.3 times as broad as long. Eyes much longer than distance from posterior margin of eye to posterior constriction of head (Fig. 24). Abdomen broader, with more transverse segments (Fig. 26). Tergite VIII and sternite VIII strongly transverse (Figs 27-28). Northern Sichuan (Map 1)..... ***rubricollis*** nov.sp.

- Forebody not distinctly bicoloured, more or less uniformly reddish to dark-brown. Head less transverse, < 1.3 times as broad as long. Eyes shorter than distance from posterior margin of eye to posterior constriction of head. Abdomen more slender and with less transverse segments. Tergite VIII and sternite VIII less transverse 3

3. Legs pale-yellowish, mostly with the apices of the femora weakly to distinctly infuscate 4

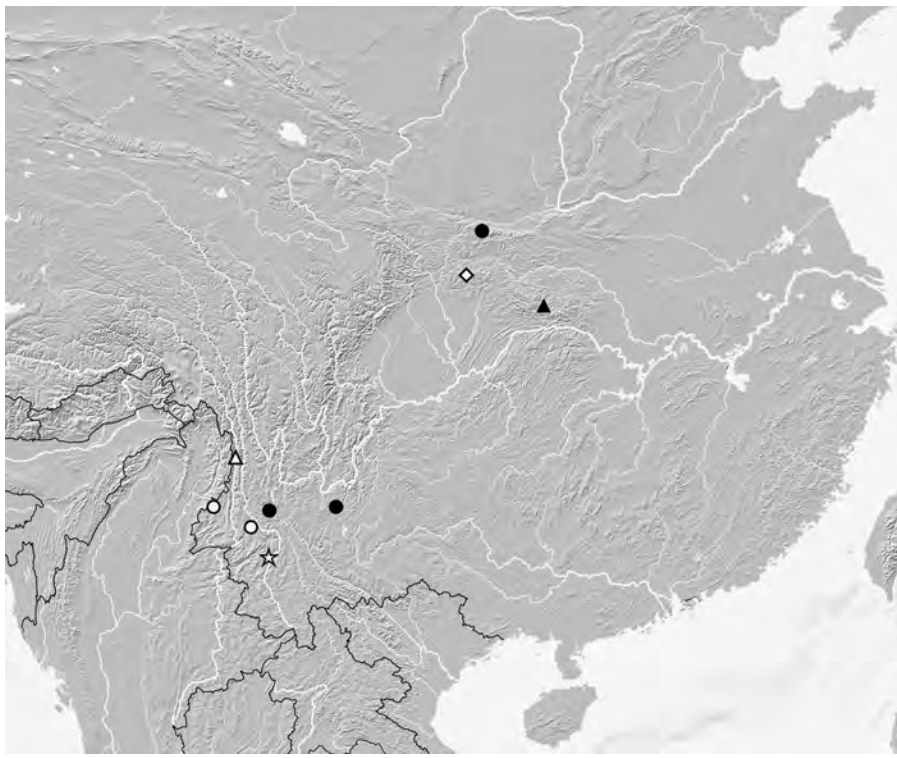
- Legs reddish-brown to brown, with the bases of the femora paler at most 5

4. Apices of the femora very narrowly and indistinctly infuscate at most. Anterior angles of pronotum visible in dorsal view. Median lobe of aedeagus smaller, 0.45 mm long at most, and with short, strongly angled ventral process (Figs 15-16). Paramere smaller and with shorter apical lobe (Fig. 17). Western Yunnan (Map 1) ..... ***inflexus*** nov.sp.

- Apices of the femora broadly and distinctly infuscate. Anterior angles of pronotum not visible in dorsal view. Median lobe of aedeagus larger, 0.5 mm long, and with smoothly curved ventral process. Paramere larger and with longer apical lobe (Fig. 6). Yunnan, North Sichuan (Map 1) ..... ***cavus*** nov.sp.

5. Basal half to two-thirds of femora yellowish. Head with obtusely marked posterior angles (Fig. 30). Pronotum less convex and more transverse, 1.13 times as broad as long (Fig. 29). Apical portion of abdomen moderately tapering (Fig. 32). Median lobe of aedeagus larger, 0.57 mm long and shaped as in PACE (2012: figures 21-22). Paramere > 0.6 mm long. Border region between Shaanxi, Chongqing, and Hubei (Map 1). ..... ***chinensis*** PACE

- Femoral bases only narrowly and indistincly paler than remainder of femora and tibiae. Posterior angles of head obsolete. Pronotum more convex in cross section and less transverse. Apical portion of abdomen strongly tapering (ASSING 2009: figures 16, 32). Median lobe of aedeagus 0.5 mm long and shaped as in ASSING (2009: figures 19-20). Paramere 0.5 mm long. Northwestern Yunnan (Map 1)..... ***puetzi*** ASSING



Map 1: Distributions of *Tetrabothrus* species in China: *T. puetzi* (open triangle); *T. inflexus* (open circles); *T. brevalatus* (open star); *T. cavus* (filled circles); *T. rubricollis* (open diamond); *T. chinensis* (filled triangle).

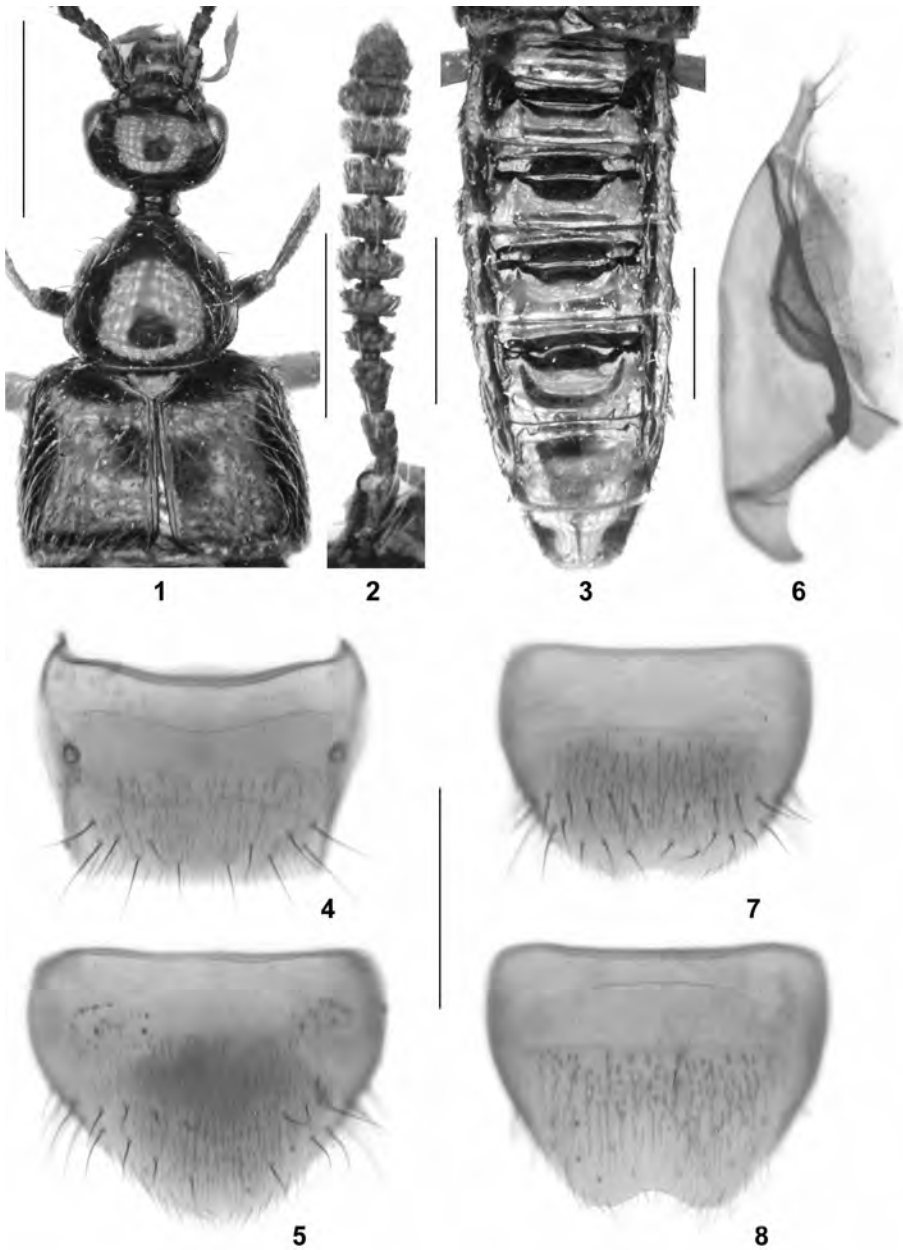
Species descriptions and records

***Tetrabothrus cavus* nov.sp.** (Figs 1-11, Map 1)

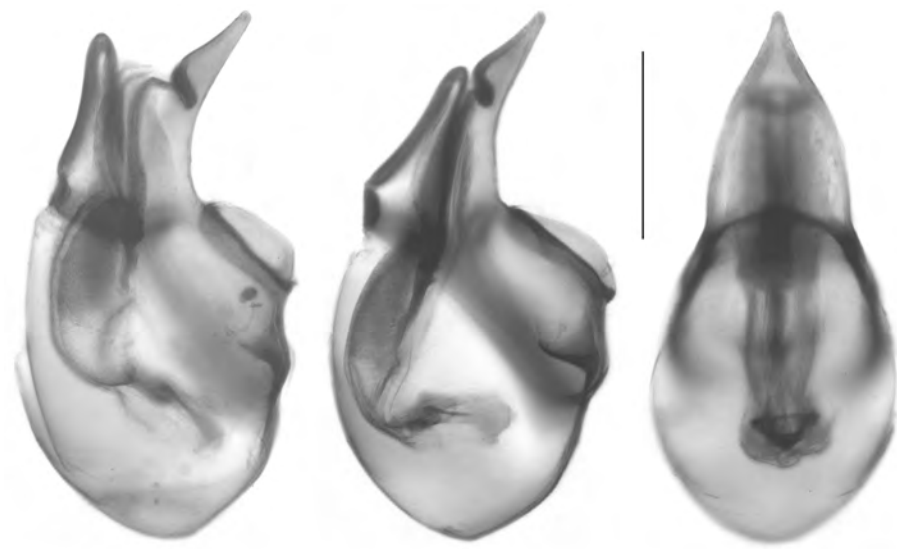
T y p e m a t e r i a l : Holotype ♂: "CHINA: Yunnan, Dali Bai Aut. Pref., Wuliang Shan, 20 km NW Weishan, 25°19'58"N, 100°07'59"E, 1900 m, creek valley, litter & old flood debris sifted, 17.IX.2009, leg. M. Schülke [CH09-58] / Holotypus ♂ *Tetrabothrus cavus* sp. n., det. V. Assing 2015" (cAss). Paratypes: 1♀: same data as holotype (cSch); 1♂: "CHINA: Yunnan, Wuding, Lion Mountain Scenic Area, 2200 m, 25°31'59"N, 102°22'36"E, stream valley with deciduous forest, moist litter sifted, 17.VIII.2014, leg. M. Schülke [CH14-11]" (cSch); 1♀: "CHINA: S-Shaanxi [CH12-02], Qinling Shan, 42 km SW Meixian, 34°01'32"N, 107°24'13"E, 1875 m, N-slope, secondary deciduous forest near creek, litter & grass sifted, 26.VII.2012, leg. M. Schülke" (cAss).

E t y m o l o g y : The specific epithet (Latin, adjective: concave) alludes to the posteriorly excised female sternite VIII.

D e s c r i p t i o n : Species of variable body size; body length 4.8-6.2 mm; length of forebody 2.1-2.6 mm. Coloration: body reddish-brown to dark-brown, with the posterior margins of the abdominal segments indistinctly reddish; legs yellowish, with the apices of the femora broadly and distinctly infuscate; antennae reddish to dark-brown.



Figs 1-8: *Tetrabothrus cavus* nov.sp. from Yunnan (**1-7**) and Shaanxi (**8**): forebody (**1**); antenna (**2**); abdomen (**3**); male tergite VIII (**4**); male sternite VIII (**5**); paramere (**6**); female sternite VIII (**7-8**). Scale bars: 1, 3: 1.0 mm; 2, 4-5, 7-8: 0.5 mm; 6: 0.2 mm.



Figs 9-11: *Tetrabothrus cavus* nov.sp. from western (**9**) and eastern Yunnan (**10-11**): median lobe of aedeagus in lateral view (**9-10**); median lobe of aedeagus in ventral view (**11**). Scale bar: 0.2 mm.

Head (Fig. 1) approximately 1.2 times as broad as long; posterior angles completely obsolete; punctation extremely fine and sparse; median dorsal portion impunctate; pubescence whitish and suberect; microsculpture absent. Eyes large and bulging, but noticeably shorter than distance from posterior margin of eye to posterior constriction in dorsal view. Antenna 1.3-1.5 mm long and shaped as in Fig. 2.

Pronotum (Fig. 1) transverse, 1.06-1.08 times as broad as long and 1.16-1.19 times as broad as head, broadest in posterior half, narrowly margined; anteriorly strongly tapering, anterior angles not visible in dorsal view; lateral margins weakly convex in dorsal view; posterior angles rounded, but noticeable; punctation sparse and very fine; midline broadly impuncate; pubescence whitish and suberect; microsculpture absent.

Elytra (Fig. 1) 0.88-0.96 times as long as pronotum; punctation and pubescence similar to those of pronotum; interstices without microsculpture. Hind wings present. Metatibia 0.85-1.10 mm long; metatarsus 0.64-0.70 times as long as metatibia; metatarsomere I approximately as long as the combined length of II and III.

Abdomen (Fig. 3) narrower than elytra, broadest at tergites IV-V; tergites III-VI with very deep anterior impressions, the impression of tergite VI as deep as that of tergite V; tergites III-VII without microsculpture and impunctate except for few punctures bearing long dark setae at the posterior margins; tergite VIII (Fig. 4) with thin and moderately long yellowish setae and with few interspersed longer and darker setae in posterior portion, posterior margin truncate or weakly convex; posterior margin of tergite VII with pronounced palisade fringe.

♂: sternite VIII (Fig. 5) transverse and with strongly convex posterior margin; median lobe of aedeagus 0.5 mm long and shaped as in Figs 9-11; paramere (Fig. 6) 0.7 mm long and with slender and moderately long apical lobe.

♀: posterior margin of sternite VIII weakly to distinctly concave (Figs 7-8).

Comment: The female from the type locality is distinctly smaller than the other type specimens. The female from Shaanxi differs from this specimen by the more distinctly concave posterior margin of sternite VIII (Figs 7-8). However, no additional differences were found suggesting that they should represent different species. Males from Shaanxi would be needed to confirm the hypothesis that the female from the Qinling Shan is conspecific with the holotype.

Comparative notes: *Tetrabothrus cavus* is distinguished from the two species previously recorded from China by the different shape of the median lobe of the aedeagus and additionally as follows:

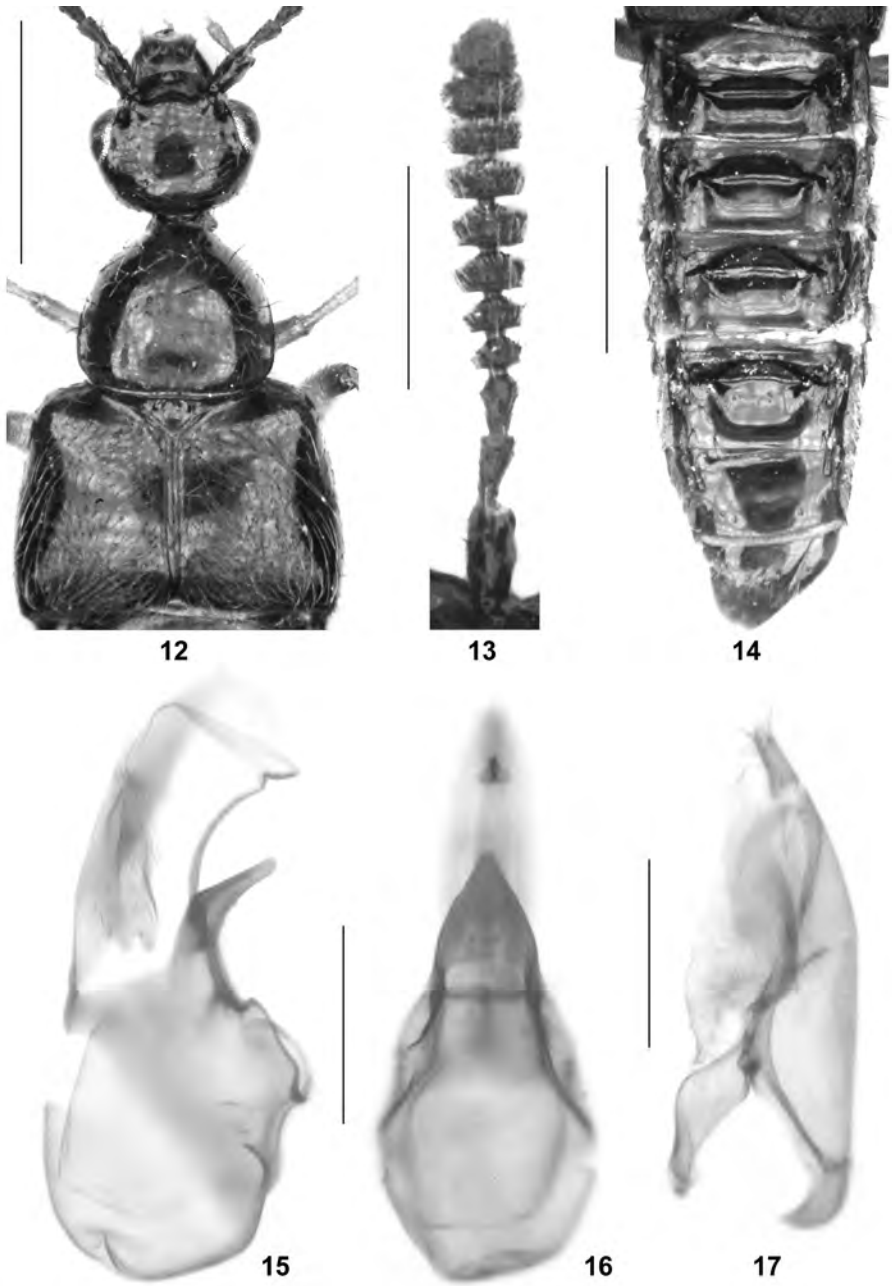
from *T. puetzi* (female unknown) by the different coloration of the legs (*T. puetzi*: uniformly brown), the broader, more transverse pronotum, the deeper impressions on the abdominal tergites III-VI, and by the much longer parameres with longer and more slender apical lobes (*T. puetzi*: parameres approximately 0.45 mm long);

from *T. chinensis* (female unknown) by the uniform coloration of the body (*T. chinensis*: forebody dark-brown, abdomen reddish-brown), the coloration of the legs (*T. chinensis*: legs brown with the femoral bases extensively yellow), the completely obsolete posterior angles of the head, the shorter and less massive antennae, the shape of the pronotum (*T. chinensis*: anterior angles visible in dorsal view, and by the longer paramere. For illustrations of *T. puetzi* and *T. chinensis* see ASSING (2009), Figs 29-32, and PACE (2012), respectively.

In external characters (habitus, coloration, anterior angles of pronotum not visible in dorsal view), *T. cavus* is most similar to *T. nepalensis* PACE, 1992 (Nepal), from which the new species differs by shorter antennae with less transverse antennomeres VII-X, the deeper anterior impressions of the abdominal tergites III-VI, and the smaller median lobe of the aedeagus with a smoothly curved ventral process (*T. nepalensis*: median lobe 0.6 mm long and with abruptly curved ventral process). For illustrations of *T. nepalensis* see PACE (1992).

Tetrabothrus septentrionalis KISHIMOTO, 1997 is similar to *T. cavus* in that the anterior angles of the pronotum are not visible in dorsal view, but distinguished by the more slender and anteriorly more strongly tapering pronotum, the uniformly yellowish legs, the paler coloration of the pronotum and elytra, the indistinctly bicolored elytra, and the much narrower and apically more acute (lateral view) ventral process of the aedeagus. For drawings of the habitus and the sexual characters of *T. septentrionalis* see KISHIMOTO (1997) and MARUYAMA & KISHIMOTO (1999), respectively.

Distribution and natural history: The known distribution is confined to two localities in Yunnan and one in southern Shaanxi (Map 1). The specimens were sifted from moist litter, flood debris, and grass in deciduous woodland at altitudes of 1875-2200 m.



Figs 12-17: *Tetrabothrus inflexus* nov.sp.: forebody (**12**); antenna (**13**); abdomen (**14**); median lobe of aedeagus in lateral and in ventral view (**15-16**); paramere (**17**). Scale bars: 12, 14: 1.0 mm; 13: 0.5 mm; 15-17: 0.2 mm.

***Tetrabothrus inflexus* nov.sp.** (Figs 12-17, Map 1)

Type material: Holotype ♂: "CHINA: Yunnan, Baoshan Pref., 10 km SE Kambaiti pass, 45 km NW Tengchong, 1700-1800 m, 25°21'13-29"N, 98°13'39-54"E, primary forest, litter and mushrooms sifted, 29.VIII.2009, leg. M. Schülke [CH09-15] / Holotypus ♂ *Tetrabothrus inflexus* sp. n., det. V. Assing 2015" (cAss). Paratype ♂: "CHINA: Yunnan, Baoshan Pref., mount. range 25 km S Tengchong, 1900 m, 24°48'21"N, 98°32'05"E, cleft with devast. primary forest, litter & mushr. sifted, 30.VIII.2009, leg. M. Schülke [CH09-18]" (cSch).

Etymology: The specific epithet is the past participle of the Latin verb inflectere (to bend) and alludes to the shape of the ventral process of the aedaegus in lateral view.

Description: Species of variable body size; body length 4.5-5.6 mm; length of forebody 2.0-2.4 mm. Coloration: body brown to dark-brown, with the posterior margins of the abdominal segments reddish; legs yellowish, with the apices of the femora narrowly and indistinctly infuscate; antennae blackish-brown, with antennomeres II and III dark-reddish.

Head (Fig. 12) approximately 1.2 times as broad as long; posterior angles weakly marked; punctation extremely fine and sparse; median dorsal portion impunctate; pubescence greyish and suberect; microsculpture absent. Eyes large and bulging, but noticeably shorter than distance from posterior margin of eye to posterior constriction of head in dorsal view. Antenna 1.1-1.3 mm long and shaped as in Fig. 13.

Pronotum (Fig. 12) transverse, 1.1 times as broad as long and 1.07-1.13 times as broad as head, broadest in posterior half, narrowly margined; lateral margins nearly straight in dorsal view; posterior angles rounded, but noticeable; anteriorly strongly tapering, anterior angles not visible in dorsal view; punctation sparse and very fine; midline broadly impuncate; pubescence greyish and suberect; microsculpture absent.

Elytra (Fig. 12) nearly as long as pronotum; punctation and pubescence similar to those of pronotum; interstices without microsculpture. Hind wings present. Metatibia 0.75-0.92 mm long; metatarsus 0.62-0.68 times as long as metatibia; metatarsomere I slightly shorter than the combined length of II and III.

Abdomen (Fig. 14) narrower than elytra, broadest at tergites III-V; tergites III-VI with deep anterior impressions, the impression of tergite VI as deep as that of tergite V; tergites III-VII without microsculpture and impunctate except for few punctures bearing long dark setae at the posterior margins; tergite VIII with thin and moderately long yellowish setae in posterior portion, posterior margin weakly convex; posterior margin of tergite VII with pronounced palisade fringe.

♂: sternite VIII transverse and with strongly convex posterior margin; median lobe of aedeagus (Figs 15-16) of very variable size, 0.38-0.48 mm long; ventral process short and strongly angled in the middle and in lateral view; paramere (Fig. 17) 0.53-0.58 mm long, with moderately slender and moderately long apical lobe.

♀: unknown.

Comparative notes: *Tetrabothrus inflexus* differs from other congeners recorded from China by the conspicuous morphology of the median lobe of the aedeagus. It is additionally distinguished from the externally similar *T. cavus* by the coloration of the femora, the slightly more slender pronotum, the less deep anterior impressions of the abdominal tergites III-VI, and by the smaller parameres with shorter and less slender apical lobes. Based on the similar morphology of the aedeagus (shapes of ventral process, internal sac, and internal structures), *T. inflexus* is closely allied to *T. malaysianus*

PACE, 2013, from which it is additionally distinguished by greater body size (*T. malaysianus*: 4.0 mm), the different coloration of the antennae, the smaller eyes, the absence of coarse punctures at the base of the abdominal tergite VII, and the absence of fossae on the male tergite VIII. For illustrations of *T. cavus* and *T. malaysianus* see Figs 1-11 and PACE (2013b), respectively.

The new species differs from *T. nepalensis*, with which it shares a strongly angled ventral process of the aedeagus, by distinctly shorter and less massive antennae (*T. nepalensis*: antenna approximately 1.6 mm long), the shape of the pronotum (*T. nepalensis*: anterior angles not clearly visible in dorsal view), the apically narrowly and indistinctly infuscate femora (*T. nepalensis*: femora apically broadly and distinctly infuscate), by the smaller median lobe of the aedeagus with an internal sac of different shape), and by the distinctly smaller parameres (*T. nepalensis*: paramere approximately 0.75 mm long). For illustrations of *T. nepalensis* see PACE (1992).

Distribution and natural history: The known distribution is confined to two localities in northwestern Yunnan, one of them close to the border with Burma (Map 1). The specimens were sifted from litter in primary forests at altitudes between 1700 and 1900 m.

***Tetrabothrus brevalatus* nov.sp.** (Figs 18-23, Map 1)

Type material: Holotype ♂: "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] / Holotypus ♂ *Tetrabothrus brevalatus* sp. n., det. V. Assing 2015" (cAss). Paratype ♀: same data as holotype (cSch).

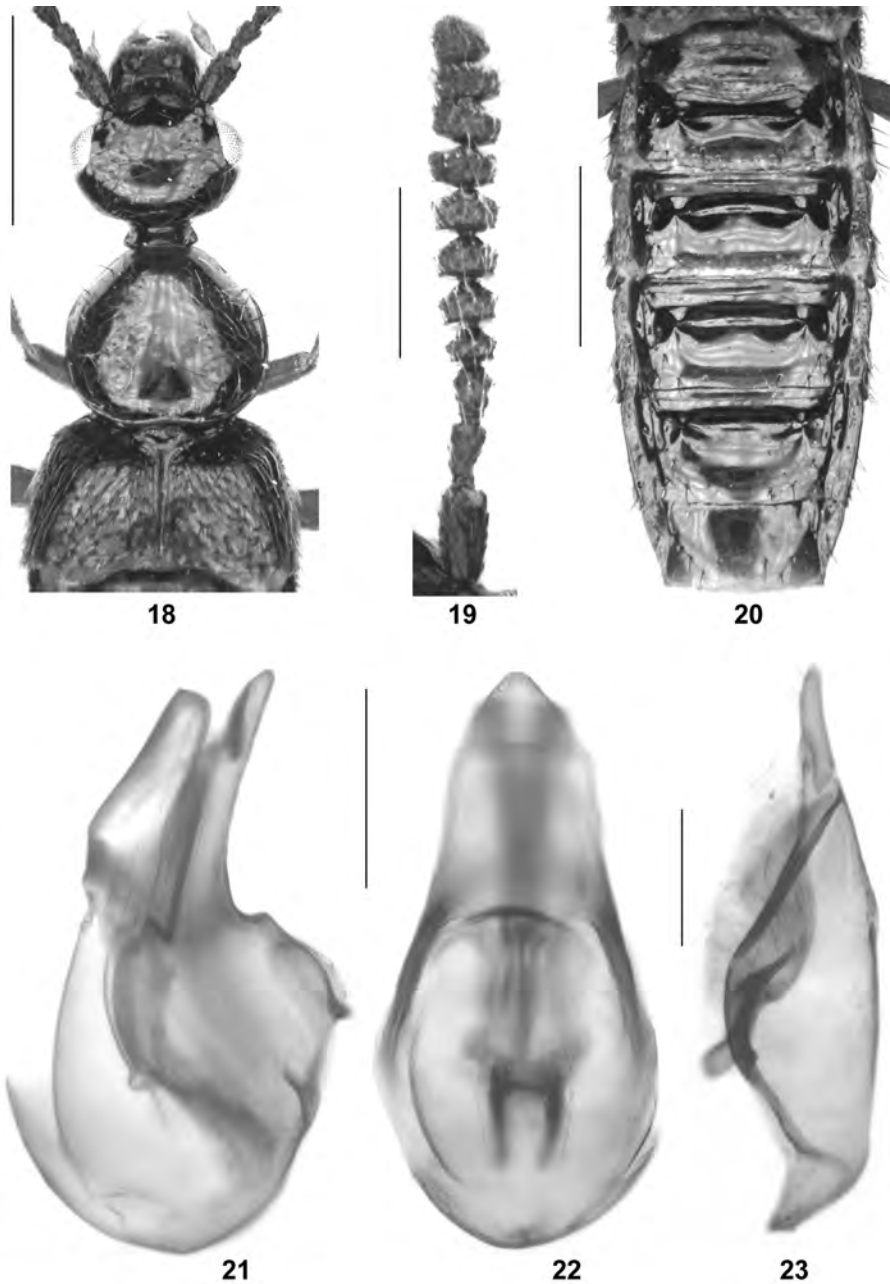
Etymology: The specific epithet is an adjective composed of the Latin adjectives brevis (short) and alatus (winged). It alludes to the conspicuously short elytra.

Description: Body length 6.3-7.0 mm; length of forebody 2.6-2.8 mm. Coloration: forebody body dark-brown to blackish-brown; abdomen blackish, with the apex (segments VIII-X) and the posterior margins of segments III-VII reddish-brown; legs reddish-brown, with the femoral bases slightly paler; antennae blackish-brown.

Head (Fig. 18) approximately 1.2 times as broad as long; posterior angles obsolete; punctation extremely fine and sparse; median dorsal portion impunctate; pubescence whitish and suberect; microsculpture absent. Eyes large and bulging, but noticeably shorter than distance from posterior margin of eye to posterior constriction in dorsal view. Antenna relatively long and massive, 1.7 mm long, shaped as in Fig. 19.

Pronotum (Fig. 18) transverse, 1.10-1.12 times as broad as long and 1.12-1.18 times as broad as head, broadest in the middle, narrowly margined; lateral margins weakly convex in dorsal view; posterior angles rounded, but noticeable; anterior angles both visible in dorsal view; punctation sparse and very fine; midline broadly impunctate; pubescence withish and suberect; microsculpture absent.

Elytra (Fig. 18) conspicuously short, approximately 0.55 times as long as pronotum; punctation sparse and fine; pubescence yellowish, conspicuously long, and suberect; interstices without microsculpture. Hind wings reduced. Legs long; metatibia 1.24-1.28 mm long; metatarsus 0.63-0.68 times as long as metatibia; metatarsomere I approximately as long as the combined length of II and III.



Figs 18-23: *Tetrabothrus brevalatus* nov.sp.: forebody (**18**); antenna (**19**); abdomen (**20**); median lobe of aedeagus in lateral and in ventral view (**21-22**); paramere (**23**). Scale bars: 18, 20: 1.0 mm; 19: 0.5 mm; 21-23: 0.2 mm.

Abdomen (Fig. 20) broader than elytra, broadest at tergite V; tergites III-VI with moderately deep anterior impressions, the impression of tergite VI as deep as that of tergite V; tergites III-VI without microsculpture and impunctate except for few punctures bearing long dark setae at the posterior margins; tergite VII posteriorly with several long blackish setae, with or without narrow rudiment of a palisade fringe; tergite VIII posteriorly with thin and moderately long yellowish setae, posterior margin weakly convex or truncate.

♂: sternite VIII transverse, posterior margin obtusely pointed in the middle; median lobe of aedeagus 0.6 mm long and shaped as in Figs 21-22; paramere (Fig. 23) 0.8 mm long and with long and slender apical lobe.

♀: posterior margin of sternite VIII strongly convex, in the middle truncate and with short marginal setae.

Comparative notes: *Tetrabothrus brevalatus* is readily distinguished from all other species recorded from China not only by the morphology of the aedeagus (shape of median lobe; longer paramere with longer apical lobe), but also by its larger size, the longer and more massive antennae, and particularly by the much shorter elytra, the reduced hind wings, and the reduced palisade fringe at the posterior margin of the abdominal tergite VIII. The geographically closest congeners with wings of reduced length are two species from Nepal and North India (ASSING 2006), *T. micropterus* PACE, 1992 and *T. curtipennis* ASSING, 2006, which differ from *T. brevalatus* by the different coloration of the legs alone (legs pale yellowish, with the femoral apices infuscate). For illustrations of *T. micropterus* and *T. curtipennis* see PACE (1992) and ASSING (2006), respectively.

Distribution and natural history: The type locality is situated in the Xue Shan in West Yunnan (Map 1). The specimens were sifted from leaf litter in a moist cleft with secondary pine forest with rhododendron undergrowth at an altitude of 2510 m.

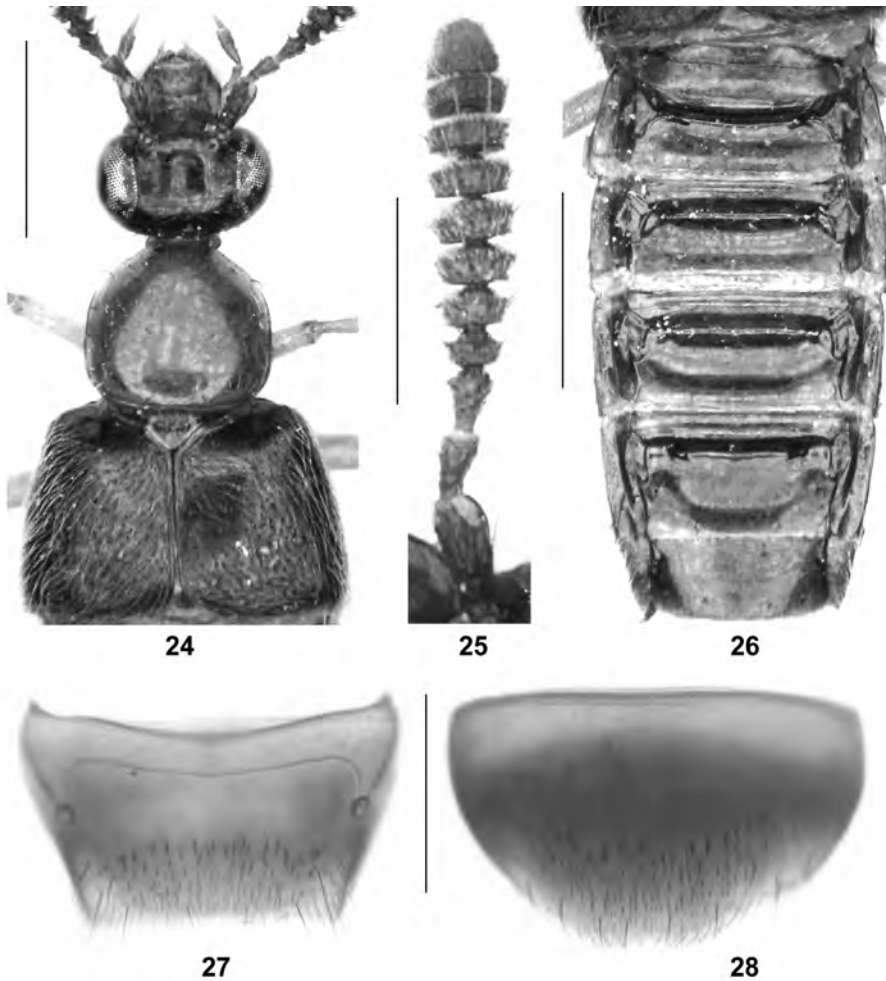
***Tetrabothrus rubricollis* nov.sp.** (Figs 24-28, Map 1)

Type material: Holotype ♀: "CHINA [27a] - S-Shaanxi [recte: Sichuan], Micang Shan, 42 km S Hanzhong, 32°40'52"N, 106°49'16"E, 1090 m, 14.VIII.2012, V. Assing / Holotypus ♀ *Tetrabothrus rubricollis* sp. n., det. V. Assing 2015" (cAss).

Etymology: The specific epithet (Latin, adjective) alludes to the reddish pronotum.

Description: Body length 6.5 mm; length of forebody 2.8 mm. Coloration distinctive: head blackish with the clypeus and the mouthparts reddish; pronotum pale-reddish; elytra blackish; abdomen blackish, with the posterior margins of the segments narrowly reddish; legs yellowish; antennae reddish, with antennomere I infuscate.

Head (Fig. 24) strongly transverse, 1.37 times as broad as long; posterior angles completely obsolete, posterior margin between posterior margin of eye and posterior constriction of head nearly straight; punctation extremely fine and very sparse; pubescence whitish and suberect; microsculpture absent. Eyes very large and bulging, much longer than distance from posterior margin of eye to posterior constriction in dorsal view. Antenna 1.5 mm long, shaped as in Fig. 25.



Figs 24-28: *Tetrabothrus rubricollis* nov.sp.: forebody (**24**); antenna (**25**); abdomen (**26**); female tergite VIII (**27**); female sternite VIII (**28**). Scale bars: 24, 26: 1.0 mm; 25, 27-28: 0.5 mm.

Pronotum (Fig. 24) transverse, 1.1 times as broad as long and 1.03 times as broad as head, broadest in the middle, narrowly margined; lateral margins straight in dorsal view; posterior angles rounded, but noticeable; anterior angles both visible in dorsal view; punctation sparse and very fine; midline broadly impuncate; pubescence withish and suberect; microsculpture absent.

Elytra (Fig. 24) approximately 0.9 times as long as pronotum; suture strongly gaping posteriorly; punctation fine and relatively dense; pubescence whitish, conspicuously long, suberect, and rather dense; interstices without microsculpture. Hind wings present. Legs long; metatibia 1.28 mm long; metatarsus 0.67 times as long as metatibia; metatarsomere I approximately as long as the combined length of II and III.

Abdomen (Fig. 26) narrower than elytra, broadest at tergite IV; tergites III-VI with

moderately deep anterior impressions, the impression of tergite VI distinctly less deep than that of tergite V; tergites III-VII without microsculpture and impunctate except for few punctures bearing long dark setae at the posterior margins; tergite VIII (Fig. 27) strongly transverse and with truncate posterior margin, with pubescence in posterior half; posterior margin of tergite VII with palisade fringe.

♂: unknown.

♀: sternite VIII (Fig. 28) strongly transverse, posterior margin convex, in the middle truncate.

Comparative notes: *Tetrabothrus rubricollis* is distinguished from all its congeners recorded from China by several external characters alone, particularly the coloration, the more strongly transverse head, the much larger eyes, the parallel lateral margins of the pronotum, the broad abdomen, the shallower anterior impression of the abdominal tergite VI, the more numerous long setae in the posterior portion of the abdominal tergite VII, the more extensive pubescence in the posterior portion of the more transverse tergite VIII, and the more transverse female sternite VIII. Based on the similar external characters (head shape, eye size, chaetotaxy of the elytra, broad abdomen with shallow anterior impressions on tergites III-VI), *T. rubricollis* is closely allied to *T. japonicus* NAKANE, 1991 (Japan, South Korea). It differs from this species by the coloration alone (*T. japonicus*: head dark-reddish; elytra and abdomen reddish). For illustrations of *T. japonicus* see MARUYAMA & KISHIMOTO (1999). The only other species with a reddish pronotum in the northern Oriental region is *T. vietnamiculus* PACE, 2013, which is distinguished from *T. rubricollis* by a yellowish-red forebody, smaller body size, and probably numerous additional characters, which are not indicated in the meagre original description (PACE 2013a).

Distribution and natural history: The type locality is situated in the Micang Shan, Sichuan, close to the border with Shaanxi (Map 1). The holotype was collected by tearing out the roots herbaceous vegation on sandy soil near a forest margin at an altitude of 1090 m.

***Tetrabothrus chinensis* PACE, 2012** (Figs 29-32, Map 1)

Type material examined: Holotype ♂: "CHINA: border Shaanxi-Sichuan Daba Shan pass, 20 km SSE Zhenping / 1700-1800 m, 31°44'N, 109°35'E 12.VII.2001, A. Smetana [C101] / Holotypus Tetrabothrus chinensis n. sp., det. R. Pace 2005 / Tetrabothrus chinensis n. sp., det. R. Pace 2005" (SDEI).

Comment: The original description is based on a unique male holotype from "China: border Shaanxi [sic], Daba Shan pass, 20 km SSE Zhenping" (PACE 2012). Since the original description is extremely short (little more than four lines) and contains only very general information, a redescription is provided.

Description: Body length 6.0 mm; length of forebody 2.6 mm. Coloration: forebody forebody dark-brown; abdomen reddish brown with the posterior margins of segments III-VI yellowish-red; legs dark-brown, with the basal half to two-thirds of the femora yellowish; antenna dark-brown, with antennomeres I-II reddish-brown.

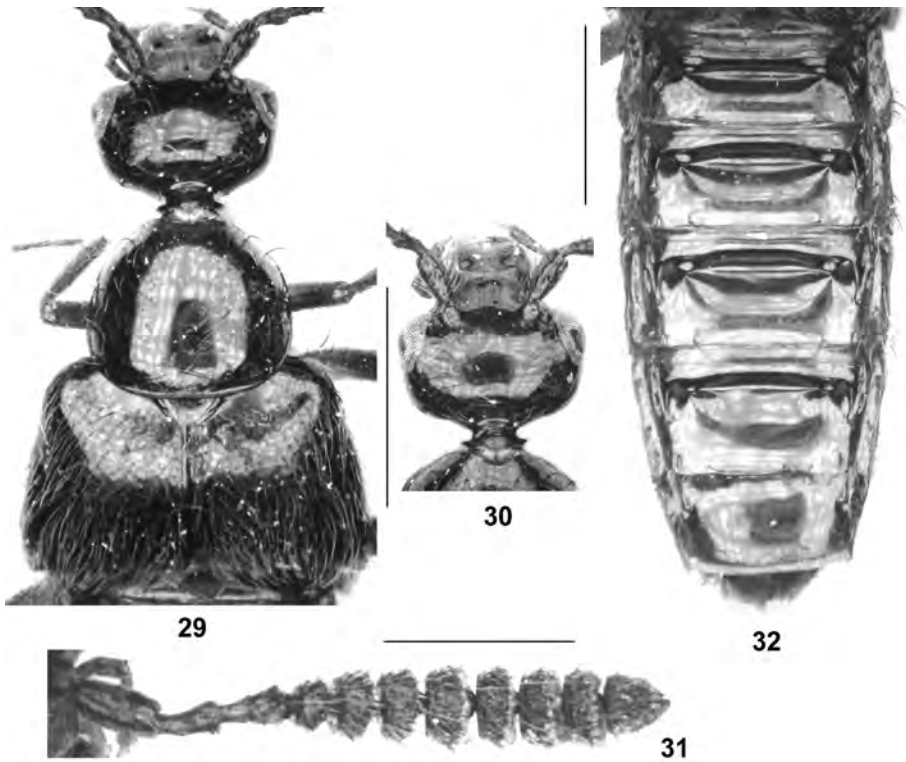
Head (Figs 29-30) approximately 1.3 times as broad as long; posterior portion of trapezoid shape in dorsal view, with obtusely marked posterior angles; punctation extremely fine and sparse; median dorsal portion impunctate; pubescence very long, whitish, and suberect; microsculpture absent. Eyes large and bulging, but shorter than distance from

posterior margin of eye to posterior constriction in dorsal view. Antenna relatively long and massive, 1.7 mm long, shaped as in Fig. 31.

Pronotum (Fig. 29) transverse, 1.1 times as broad as long and 1.07 times as broad as head, broadest in posterior half, narrowly margined; lateral margins very weakly convex in dorsal view; posterior angles rounded, but noticeable; anterior angles both visible in dorsal view; punctation sparse and very fine; midline broadly impuncate; pubescence long, withish, and suberect; microsculpture absent.

Elytra (Fig. 29) approximately as long as pronotum; punctation moderately and fine; pubescence long and suberect, much denser than that of pronotum; interstices without microsculpture. Hind wings present. Metatibia 1.0 mm long; metatarsus 0.66 times as long as metatibia; metatarsomere I nearly as long as the combined length of II and III.

Abdomen (Fig. 32) narrower than elytra, broadest at tergites IV-V; tergites III-VI with moderately deep anterior impressions, the impression of tergite VI as deep as that of tergite V; tergites III-VII without microsculpture and impunctate except for few punctures bearing long dark setae at the posterior margins; tergite VII with palisade fringe; tergite VIII posteriorly with thin and moderately long yellowish setae, posterior margin weakly convex.



Figs 29-32: *Tetrabothrus chinensis* PACE (holotype): forebody (**29**); head (**30**); antenna (**31**); abdomen (**32**). Scale bars: 29-30, 32: 1.0 mm; 31: 0.5 mm.

♂: sternite VIII with strongly convex posterior margin; median lobe of aedeagus 0.57 mm long and shaped as in PACE (2012: figures 20-21); paramere 0.63 mm long and with moderately long and slender apical lobe.

♀: unknown.

Comparative notes: *Tetrabothrus chinensis* is characterized particularly by the coloration of the legs, the shape of the head, the rather long and massive antennae, and by the male sexual characters. It additionally differs from the similar *T. inflexus* and *T. cavus* by the longer legs, from the latter also by the shape of the pronotum (both anterior angles visible in dorsal view).

Distribution and natural history: The type locality is situated in the Daba Shan, in the border region between Shaanxi, Chongqing, and Hubei. The holotype was collected at an altitude of 1700-1800 m.

***Tetrabothrus* sp.**

Material examined: China: 1♀: "CHINA, Sichuan, without location, 2009" (cSch).

Comment: The above specimen probably represents an undescribed species. It is remains unnamed because it is a female without distinctive external characters. Moreover, the locality indicated on the label is too vague.

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My thanks are extended to Lutz Behne (SDEI) for the loan of the holotype of *T. chinensis*, as well as to Michael Schülke (Berlin) for the opportunity to study the *Tetrabothrus* material from his collection and particularly for the permission to retain three holotypes.

Zusammenfassung

Fünf Arten der Gattung *Tetrabothrus* BERNHAUER, 1915 aus China werden beschrieben bzw. redeskribiert und abgebildet: *T. cavus* nov.sp. (Yunnan, Shaanxi), *T. inflexus* nov.sp. (Yunnan), *T. brevalatus* nov.sp. (Yunnan), *T. rubricollis* nov.sp. (Nord-Sichuan) und *T. chinensis* PACE, 2012. Für die sechs bisher aus China nachgewiesenen, beschriebenen Arten wird eine Bestimmungstabelle erstellt. Ihre Verbreitung wird anhand einer Karte illustriert. Das gesamte bisher aus China bekannte *Tetrabothrus*-Material umfasst nur zwölf Exemplare, von denen eines vermutlich zu einer unbeschriebenen Art gehört. Einschließlich der neuen Arten enthält die Gattung derzeit 28 Arten, von denen 18 aus der südlichen Ostpaläarktis nachgewiesen wurden.

References

ASSING V. (2006): On the Himalayan species of *Tetrabothrus* BERNHAUER (Insecta: Coleoptera: Staphylinidae: Aleocharinae). — Entomological Problems **36** (2): 49-54.

ASSING V. (2009): New species and additional records of Lomechusini from the Palaearctic region (Coleoptera: Staphylinidae: Aleocharinae). — Stuttgarter Beiträge zur Naturkunde Serie A, Neue Serie **2**: 201-226.

HLAVÁČ P., NEWTON A.F. & M. MARUYAMA (2011): World catalogue of the species of the tribe Lomechusini (Staphylinidae: Aleocharinae). — Zootaxa **3075**: 1-151.

KISHIMOTO T. (1997): The genus *Tetrabothrus* (Coleoptera, Staphylinidae, Aleocharinae) from Japan, with description of a new species from Hokkaido. — Elytra, Tokyo **25** (2): 445-450.

MARUYAMA M. & T. KISHIMOTO (1999): A revision of the Japanese species of the genus *Tetrabothrus* (Coleoptera, Staphylinidae, Aleocharinae). — Elytra, Tokyo **27** (2): 503-517.

PACE R. (1992): Aleocharinae nepalesi del Museo di Ginevra. Parte VI: Myrmedoniini (Coleoptera, Staphylinidae). — Revue suisse de Zoologie **99** (1): 125-145.

PACE R. (2010): Thamiaraeini, Lomechusini, Oxypodini, Hoplandriini e Aleocharini di Taiwan (Coleoptera, Staphylinidae). — Bollettino del Museo Civico di Storia Naturale di Verona **34**: 19-54.

PACE R. (2012): Biodiversità delle Aleocharinae della Cina: Lomechusini e Thamiaraeini (Coleoptera, Staphylinidae). — Beiträge zur Entomologie, Keltern **62** (1): 77-102.

PACE R. (2013a): Nuovo contributo alla conoscenza delle Aleocharinae della Regione Orientale (Insecta: Coleoptera: Staphylinidae). — Vernate **32**: 371-381.

PACE R. (2013b): New distributional data, new species and three new genera of Aleocharinae from Malaysia, Vietnam and Taiwan (Coleoptera: Staphylinidae). — Tropical Zoology **26** (1): 33-63.

SCHÜLKE M. & A. SMETANA (in press): Staphylinidae. — In: LÖBL I. & D. LÖBL (eds), Catalogue of Palaearctic Coleoptera. New, updated Edition. Volume 2 Hydrophiloidea – Staphylinioidea. — Brill, Leiden and Boston.

SMETANA A. (2004): Staphylinidae, subfamily Aleocharinae, pp. 353-494. — In: LÖBL I. & A. SMETANA (eds), Catalogue of Palaearctic Coleoptera. II. Hydrophiloidea – Histeroidea – Staphylinoidea. — Stenstrup, Apollo Books: 942 pp.

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