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Four new species of the genus *Nebria* Latreille, 1802 (*Eonebria* Semenov-Tian-Shanskij et Znojko, 1928) from Sichuan (Coleoptera: Carabidae)

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Abstract. Four new species of the genus *Nebria* Latreille, 1802 (subgenus *Eonebria* Semenov-Tian-Shanskij et Znojko, 1928) from the southwestern part of Sichuan Province are described: *Nebria* (*Eonebria*) *lingulata* sp. n., *Nebria* (*Eonebria*) *xiangchengica* sp. n., *Nebria* (*Eonebria*) *bowashanensis* sp. n. and *Nebria* (*Eonebria*) *mirkae* sp. n.

INTRODUCTION

The subgenus *Eonebria* Semenov-Tian-Shanskij et Znojko, 1928 of the genus *Nebria* Latreille, 1802 comprises presently 65 species and 2 subspecies distributed mostly in China. Only 3 species range out of Chinese territory. Ledoux & Roux (2005, 2007) report total review on this subgenus.

During our entomological trips to the mountains south of Dao-Cheng and Xiang-Cheng in southwestern part of Sichuan in 2006 we collected four species of genus *Nebria* Latreille, 1802, subgenus *Eonebria* Semenov-Tian-Shanskij et Znojko, 1928, new to science. The species are described in the present paper.

MATERIAL AND METHODS

The descriptions are based on the holotypes. If necessary, variability is mentioned in the paragraph "Variation" and includes features exhibited by paratypes. The body length was measured from the apex of the left mandible to the apex of the left elytron. Pronotal length was measured along mid-line. The male genitalia of the species described in this paper were dissected out of water-softened adults. The aedeagus was glued on a white card pinned beneath the relevant specimen.

Abbreviations:

CAMP private collection Adolf Mikyška, Poděbrady, Czech Republic,
CMJP private collection Miroslav Janata, Prague, Czech Republic.

DESCRIPTIONS

***Nebria* (*Eonebria*) *lingulata* sp. n.**
(Figs 1, 5)

Type material. Holotype (♂): "China, Sichuan, Yading Nat. Res. N: 28°27′ E: 100°20′, 24.-26.vi. 2006, 3800-4200 m, lgt. A. Mikyška", (CAMP). Paratypes: (1 ♂, 4 ♀♀): the same data as holotype, (CAMP); (17 ♂♂, 6 ♀♀): "China S.W. Sichuan, Yading reserve 4450 m, N: 28°22′ 34.8′′ E:100°20′59.8′′, 25.vi.2006, lgt. Janata M.", (CMJP).

Description. Pitchy reddish-brown. Mouth-parts, antennae, tarsi, knees and narrow strip along elytral suture reddish brown. Body length 9.8 -11.2 mm (in holotype 10.1 mm).

Head. Vertex with clear red spot. Frons with a few transversal furrows and roughnesses. Vertical part between eyes with two more or less distinct foveae. Eyes convex, of usual size. Temples evenly concavely narrowed, neck laterally dilated backwardly. Dorsal constriction of neck distinct. Antennae extending mid-lenght of elytra in males, first third of elytral length in females. First antennomere long, subcylindrical, unisetose, the second one bearing single seta on ventral side. Lingula long, onward, well conspicuous between mandibles. The penultimate labial palpomere trisetose. Submentum with 3 setae on each side. Front and neck with traces of microsculpture.

Pronotum strongly convex, subcordate, 1.3 times as wide as long. Maximal width at anterior third of pronotal length. Anterior angles rounded, lobe-shaped. Sides of pronotum convexly narrowed to obtusely rounded hind angles. Marginal gutter narrow, with one seta close to broadest part and with seta before hind angle. Base straight, 0.7 times narrower than anterior margin. Basal depression, marginal gutter and anterior depression sparsely and superficially punctured. Basal foveae shallow. Microsculpture fine, consists of transverse cells.

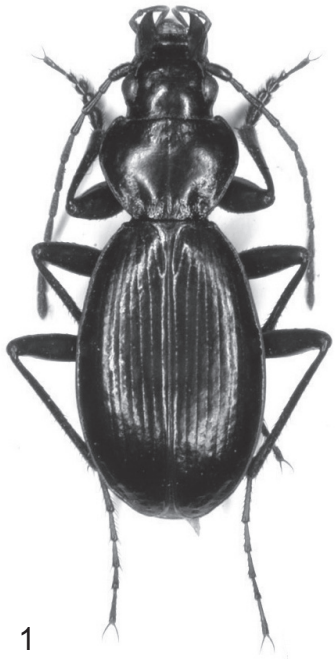
Elytra moderately convex, oval, 1.55 times as long as wide, 1.4 times as wide as pronotum. Maximum width just behind the middle of elytral length. Striae shallow but distinct, finely punctured. Punctuation evanescent apically and laterally. Intervals rather convex, predominantly on disc, flattened apically and laterally. Scutellar pore present on left elytron. Single dorsal puncture close to base, the other one approximated to elytral apex at interval 3. Basal margin slightly concave; next to elytral suture straight joining lateral margin at obtuse angle. Shoulders evanescent, humeral carina with distinct little tooth. Apical carina lacking. Microsculpture consists of transverse cells.

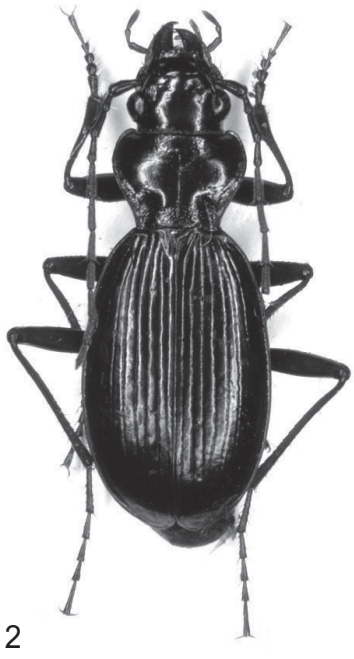
Venter glabrous, metaepisterna slightly longer than wide. Prosternal process edged at the sides. Ventrites 4-6 with one seta on both sides. Last visible ventrite with 1 seta in male, with 2 setae in female on each side. Penultimate metatarsomere truncate at apex.

Male genitalia. Median lobe of aedeagus as in Fig. 5.

Variation. Scutellar pores absent in 52 % of paratypes, present unilaterally in 31 %, bilaterally in 17 % of paratypes.

Differential diagnosis. The new species belongs to the group of species characterized by long





Figs 1-4. Habitus: 1- *Nebria lingulata* sp. n., holotype; 2- *Nebria xiangchengica* sp. n., holotype; 3- *Nebria bowashanensis* sp. n., holotype; 4- *Nebria mirkae* sp. n., holotype.

lingula that is well visible between mandibles (the *Nebria sifanica* Semenov-Tian-Shanskij et Znojko, 1928 group - see Ledoux et Roux 2005). This group comprises 11 species. Among them only *Nebria lingulata* sp. n. and *Nebria agilis* Ledoux et Roux, 1996 bear humeral little tooth. *Nebria lingulata* sp. n. differs from *N. agilis* by distinctly convex sides of pronotum without sinuation and by widely rounded hind angles of pronotum.

Name derivation. The name remembers presence of long lingula in the new species.

Nebria (*Eonebria*) *xiangchengica* sp. n.
(Figs 2, 6)

Type material. Holotype (♂): "China Sichuan, 20 km SE of Xiangcheng, N:28°48′ E: 99°52′, 4200- 4500 m, 7-8.vii.2006, lgt. A. Mikyška", (CAMP). Paratypes (4 ♂♂): the same data as holotype, (CAMP).

Description. Pitchy brown, tibiae, tarsi, antennae and mouth-parts reddish-brown. Body length 10.3-11.0 mm, (in holotype 10.7 mm).

Head. Vertex with distinct reddish-brown spot. Dorsal cervical constriction detectable. Eyes strongly convex, temples short, neck cylindrical. Antennae extending mid-length of elytra in male, female unknown. First antennomere massive, conical in the proximal half and cylindrical in the distal half, bisetose, the second one bearing single seta on ventral side. The penultimate labial palpomere trisetose. Submentum with 5 setae on each side. Microsculpture - isodiametric, slightly developed.

Pronotum cordate, weakly convex, 1.4 times as wide as long. Maximal width at anterior third. Anterior angles widely rounded, protracted anteriorly. Sides of pronotum distinctly concavely sinuate in the basal fourth. Posterior angles almost rectangular. Marginal gutter wide, passing to deep and long basal fovea. One seta close to the broadest part of gutter and posterior seta before hind angle. Base of pronotum feebly emarginate, 0.85 times narrower than anterior margin. Base and lateral gutter sparsely clearly punctate, anterior depression very shallowly punctate. Microsculpture consists of fine transverse cells.

Elytra flattish, 1.6 times as long as wide and 1.45 times as wide as pronotum, oblong oval, the broadest part shortly behind the middle of elytral length. Striae fine, distinct, evanescent toward apex. Intervals convex basally and on disc, flattened apically and laterally. Scutellar pore present. Interval 3 with 6 punctures. Basal margin moderately concave, joining lateral border in unobtrusive obtuse angle. Humeral carina fine, distinct, without small tooth. Apical carina lacking. Microsculpture of elytra consists of transverse cells.

Venter glabrous. Metaepisterna slightly longer than wide, with some indistinct punctures. Prosternal process edged. Ventrites 4-6 with 2 to 4 setae on each side. Last visible ventrite with 1 seta on each side in male, female unknown. Penultimate metatarsomere with fine projection.

Male genitalia. Median lobe of aedeagus as in Fig. 6.

Variation. The number of setae varies from 3 to 5 on each side of submentum, from 2 to 4

on each side of ventrites, from 4 to 6 in third interval of elytra.

Differential diagnosis. *Nebria xiangchengica* sp. n. belongs to the group of species *Nebria civilis* Ledoux et Roux, 1998, *N. simplex* Ledoux et Roux, 1996, *N. negrei* Ledoux et Roux, 1991, *N. nigricans* Ledoux et Roux, 2000, *N. guttulata* Ledoux et Roux, 2000 and *N. fairmairei* Ledoux et Roux, 1992. From all the above mentioned species *N. xiangchengica* sp. n. differs by the shape of the first antennomere. It is robust, in the proximal half conical and cylindrical apically. The first antennomere is slimmer, cylindrical in *N. simplex, N. negrei, N. guttulata, N. nigricans*, oval in *N. civilis*, or slightly conical in *N. fairmairei*. The pronotum and elytra of the new species are flatter than in the species compared. From *N. civilis* and *N. simplex* the new species differs by number of setae on the ventrites 4-6 (in the new species there are 2-4 setae on each side of ventrites 4-6, in the species compared only 1 seta on each side of ventrites 4-6); from *N. nigricans* it differs by wider anterior angles of pronotum and by larger size; from *N. guttulata* it differs by different shape of elytra (flat and elongate in comparison with gibbous and guttiform in *N. guttulata*); from *N. negrei* it differs by presence of scutellar setiferous puncture, by number of dorsal setiferous punctures and by different shape of aedeagus. *N. xiangchengica* sp. n. differs from *N. fairmairei* by more convex eyes, more sinuate sides of pronotum and by rectangular hind angles in comparison to the obtuse hind pronotal angles in *N. fairmairei.*

Name derivation. The name is derived from the name of town Xiangcheng in Sichuan.

Nebria (*Eonebria*) *bowashanensis* sp. n.

(Figs 3, 7, 9)

Type material. Holotype (♂): "China Sichuan, 20 km S of Daocheng, N:28°53′ E:100°17′, Bo-Wa-Shan pass, 4500 m, lgt. 20-21.vi.2006, A. Mikyška", (CAMP). Paratypes: (12 ♂♂, 10 ♀♀): the same data as holotype, (CAMP); (13 ♂♂, 6 ♀♀): "China, S.W. Sichuan, 4500 m, pass Daocheng-Jianding, N:28°53′46′′ E:100°17′12.4′′, 20.vi.2006, lgt. Janata M.", (CMJP).

Description. Dark reddish-brown, tibiae, tarsi, antennae, mouth-parts, epipleurons and suture of elytra light. Body length 10.0-11.5 mm (in holotype 10.1 mm).

Head. Vertex with distinct red spot. Eyes convex, temples short, neck cylindrical with distinct dorsal constriction. Antennae extending behind the first third of elytra in both sexes. First antennomere stout, subcylindrical, bisetose, the second one bearing single seta on ventral side. The penultimate labial palpomere trisetose. Submentum with 3 setae on each side. Microsculpture isodiametric, developed in some places only.

Pronotum convex, subcordate, 1.4 times as wide as long. Maximal width at anterior third. Anterior angles rounded, developed anteriorly in small lobes. Sides of pronotum slightly concave in the basal fourth. Posterior angles obtuse; rounded. Marginal gutter narrow, dilated posteriorly, with single seta close to the broadest part and with posterior seta close to the hind angle. Base of pronotum slightly emarginate, 0.75 times narrower than anterior margin. Basal

depression, marginal gutter and anterior depression sparsely punctured, punctures rather large and shallow. Microsculpture isodiametric.

Elytra oval, 1.55 times as long as wide; 1.4 times as wide as pronotum; broadest in the middle. Striae deepest near base, getting shallow apically and laterally. Punctuation very fine. Intervals slightly convex, flattened apically and laterally. Scutellar pore missing. Single dorsal puncture in the anterior part of interval 3, four punctures in basal fourth. Basal margin concave, joining lateral margin at obtuse angle. Shoulders rounded, humeral carina fine, humeral tooth absent. Without apical carina. Microsculpture consists of fine transverse cells.

Venter glabrous, metaepisterna slightly longer than wide, very superficially sparsely punctured. Prosternal process edged. Ventrites 4-6 with one seta on each side. Last visible sternite with 1 seta in male, with 2 setae in female on each side.

Male genitalia. Median lobe of aedeagus as in Fig. 7.

Variation. Some specimens are reddish-brown, the others pitchy-brown. Intensity of emargination of lateral sides of pronotum before hind angles variable. Number of setae on the first antennomere variable (1+1, 2+1, 2+2). Number of dorsal setae varies from 2 to 5 on each elytron. Scutellar pore developed only on one elytron in some paratypes.

Differential diagnosis. *Nebria bowashanensis* sp. n. is similar to *Nebria lenis* Ledoux et Roux, 1995 and *N. spinosa* Ledoux et Roux, 1995. The first antennomere is cylindrical in *N. lenis*, while it is slightly conical in *N. bowashanensis*, in *N. spinosa* it is oblong conical (as in Fig. 9). *N. bowashanensis* is reddish-brown, *N. lenis* pitchy-brown. *N. bowashanensis* is smaller than *N. lenis. N. bowashanensis* differs from *N. spinosa* by more convex eyes, by obtuse, rounded hind angles of pronotum while hind angles of pronotum are pointed in *N. spinosa.* The new species also differs by wider humeral part of elytra. Distinct humeral tooth present in *N. spinosa*, missing in *N. bowashanensis.*

Name derivation. The name is derived from the name of the type locality Bo-wa-shan pass.

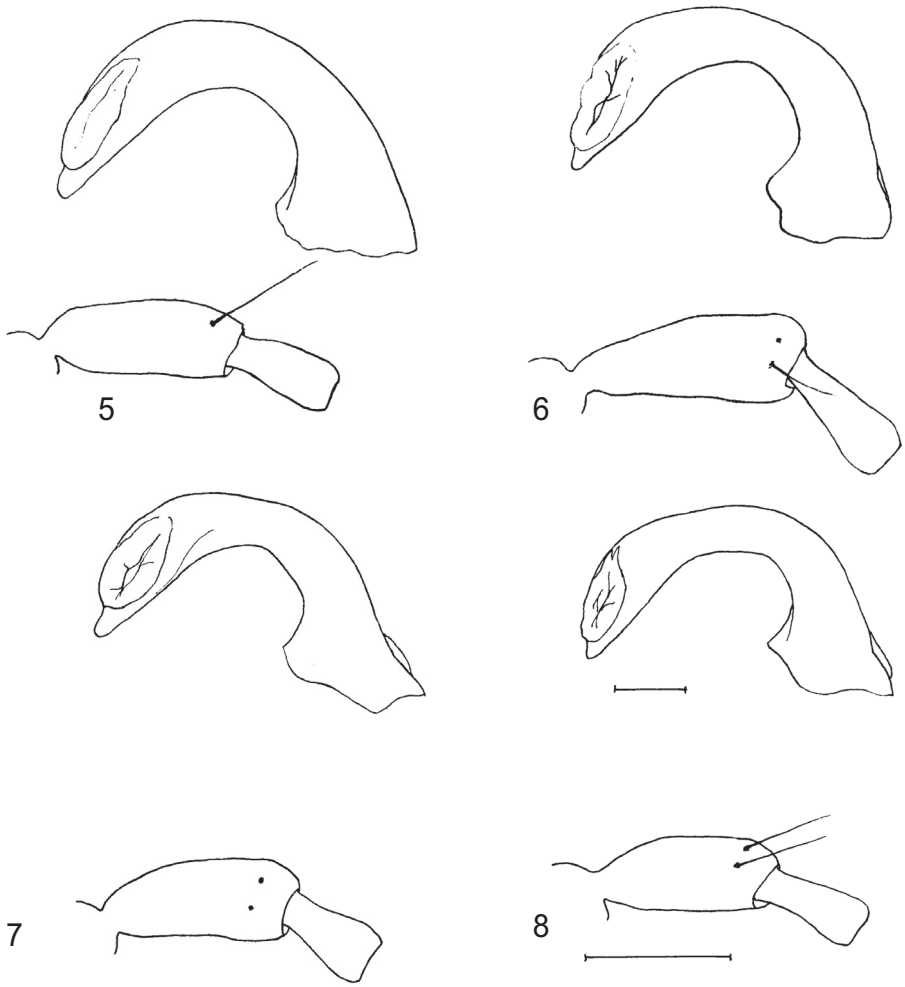
***Nebria* (*Eonebria*) *mirkae* sp. n.**

(Figs 4, 8)

Type material. Holotype (♂): "China, S.W. Sichuan, 4500 m, pass Daocheng - Jiading N:28°53′46′′ E:100°17′12.4′′, 20.vi.2006, lgt. Janata M.", (CMJP). Paratypes (11 ♂♂, 1 ♀): " China S.W. Sichuan, Yading reserve, 4450 m N:28°22′34.8′′ E:100°20′59.8′′, 25.vi.2006, lgt. Janata M.", (CMJP).

Description. Dark brown, tibiae, tarsi, antennae and mouth-parts light. Body length 9.5-10.2 mm (in holotype 10 mm).

Head. Vertex with less distinct red spot. Eyes convex, temples short, neck cylindrical with slight dorsal constriction. Antennae reaching mid-length of elytra in both sexes. First



Figs 5-8. Median lobe of aedeagus and first antennomere, holotypes: 5- *Nebria lingulata* sp. n.; 6- *Nebria xiangchengica* sp. n.; 7- *Nebria bowashanensis* sp. n.; 8- *Nebria mirkae* sp. n. (scale = 0.5 mm)

antennomere cylindrical, bisetose, the second one bearing single seta on ventral side. The penultimate labial palpomere trisetose. Submentum with 5 setae on each side. Without microsculpture.

Pronotum cordate, 1.4 times as wide as long. Maximal width at anterior third of pronotal length. Anterior angles lobe-shaped, prominent anteriorly. Anterior margin distinctly emarginate. Marginal gutter narrow, passing to deep basal fovea, slightly dilated anteriorly. Pronotal lateral margin slightly elevated anteriorly. Lateral sides of pronotum distinctly concave before posterior rectangular angles. Base of pronotum distinctly emarginated, 0.8 times narrower than anterior margin. Basal depression and lateral gutter sparsely and deeply

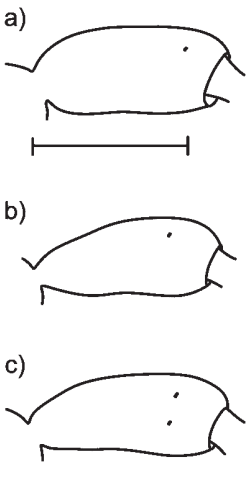


Fig 9. First antennomere of holotype: a- *Nebria lenis* Ledoux et Roux, 1995; b- *Nebria spinosa* Ledoux et Roux, 1995; c- *Nebria bowashanensis* sp. n. (scale = 0.5 mm)

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punctured than anterior depression. Lateral gutter with single seta close to the broadest part, posterior seta present. Microsculpture consists of transverse very fine cells.

Elytra oval, 1.6 times as long as wide; 1.5 times as wide as pronotum. Maximum width in the middle of their length. Striae fine, distinct, evanescent apically; finely punctured. Intervals convex near the base and on disc, flattened apically and laterally. Scutellar pores present. Interval 3 with 4 punctures. Basal margin slightly concave, joining lateral margin at less distinct obtuse angle. Humeral carina short, distinct, without tooth. Apical carina not developed. Microsculpture consists of fine transverse cells.

Venter glabrous. Metaepisterna slightly longer than wide, finely and sparsely punctured in male, glabrous in females. Prosternal process edged. Ventrites 4-6 with 2 to 3 setae on both sides. Last visible ventrite with 1 seta on both side in male, with two setae in female. Penultimate segment of metatarsi distinctly protracted. Apex of segment 3 protracted slightly.

Male genitalia. Median lobe of aedeagus as in Fig. 8.

Variation. The number of punctures in elytral interval 3 varies from 3-5 in some of the paratypes.

Differential diagnosis. *Nebria mirkae* sp. n. is similar to *Nebria civilis, N. simplex, N. fairmairei, N. nigricans, N. negrei, N. guttulata* and *N. xiangchengica* sp. n. While body in *N. civilis, N. simplex, N. negrei* and *N. nigricans* is black, the body in the new species is brown. The new species differs from *N. civilis* also by posteriorly projected hind angles of pronotum; from *N. fairmairei, N. simplex* and *N. nigricans* by longer emargination of pronotal sides before hind angles. New species differs from *N. guttulata* by narrower gutter of pronotum, by flat elytra and by thick first antennomere. It differs from *N. xiangchengica* sp. n. by narrow gutter of pronotum, by short elytra, by cylindrical shape of first antennomere and by flattened

eyes. The new species differs from *N. negrei* by different shape of aedeagus, by different number of submental setae, by different number of setae on last visible ventrite in males and by presence of scutellar punctures.

Name derivation. The new species is named after Mirka Janatová, the daughter of one of the authors.

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