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Two new species of *Lederina* Nikitsky & Belov, 1982 (Coleoptera: Melandryidae: Melandryinae) from Yunnan, China

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Abstract: *Lederina elongata* sp. nov. and *L. ovata* sp. nov. from Yunnan, China are described and illustrated. The other species known from Mainland China, *L. mozolevskayae* Nikitsky, 2001, is also illustrated.

Keywords: False darkling beetles, Orchesiini, taxonomy, Jizu mountain, Gaoligong mountain.

INTRODUCTION

Lederina Nikitsky & Belov, 1982 are small apterous Orchesiini (Melandryidae, Melandryinae) living in forest floor litter (Nikitsky & Pollock, 2011). They can be distinguished from the other genera of the tribe by the distinct antennal club formed by the three apical antennomeres, the completely edged lateral margins of the pronotum, the absence of a scutellar shield, the metanepisterna separated from the metaventrite by a complete suture, as well as the metacoxae directed antero-laterally and gradually narrowed (Nikitsky & Belov, 1982; Nikitsky, 1994). In this study, two new species are described from Yunnan, People's Republic of China, and the only species previously known from Mainland China (Nikitsky & Belov, 1982; Nikitsky, 2020), *L. mozolevskayae* Nikitsky, 2001, is illustrated.

MATERIAL AND METHODS

This work is based on the study of 35 specimens housed in the Naturhistorisches Museum of Basel (NMB) and in the Muséum d'histoire naturelle de Genève (MHNG). Images were acquired with a Leica DFC425 camera mounted on a Leica M205–C compound microscope, and subsequently stacked using Zerene Stacker (version 1.04) and processed with GIMP (version 2.10.30.).
Part of the material examined was made very fragile due to its preservation history. In order to minimize potential damages on these specimens quite rare in collections, several of them were not removed from their mounting cards and could therefore not be sexed. For convenience of the readers the locality data are given in standardized format.

TAXONOMY

Lederina elongata sp. nov.

Figs 1-6

Type material:
Holotype: NMB-COLEO0008591; 1♂; Yunnan, Gaoligong mts., 24.57N 98.45E, 2200-2500 m, 8-16.V.1995, leg. Vít Kubán (housed in NMB).
Paratypes (23): NMB and MHNG; 14♂, 2♀, and 7 unsexed; same data as holotype.

Diagnosis: Among all described *Lederina* species, *L. elongata* is the only one to have such elongate shape with weakly curved lateral sides. Its deep and large metaventral depression is similar to the metaventral depression of all of the Taiwanese species of high elevation (Cosandey, 2023) and separates it at once from both of its sympatric congeners, *L. mozolevskayae* and *L. ovata*, which have a flat medial area on the metaventrite.

Etymology: The name of this species refers to its elongate shape.

Description: Length: 1.75-2.15 mm; width: 0.92-1.22 mm; depth: 0.68-0.90 mm.

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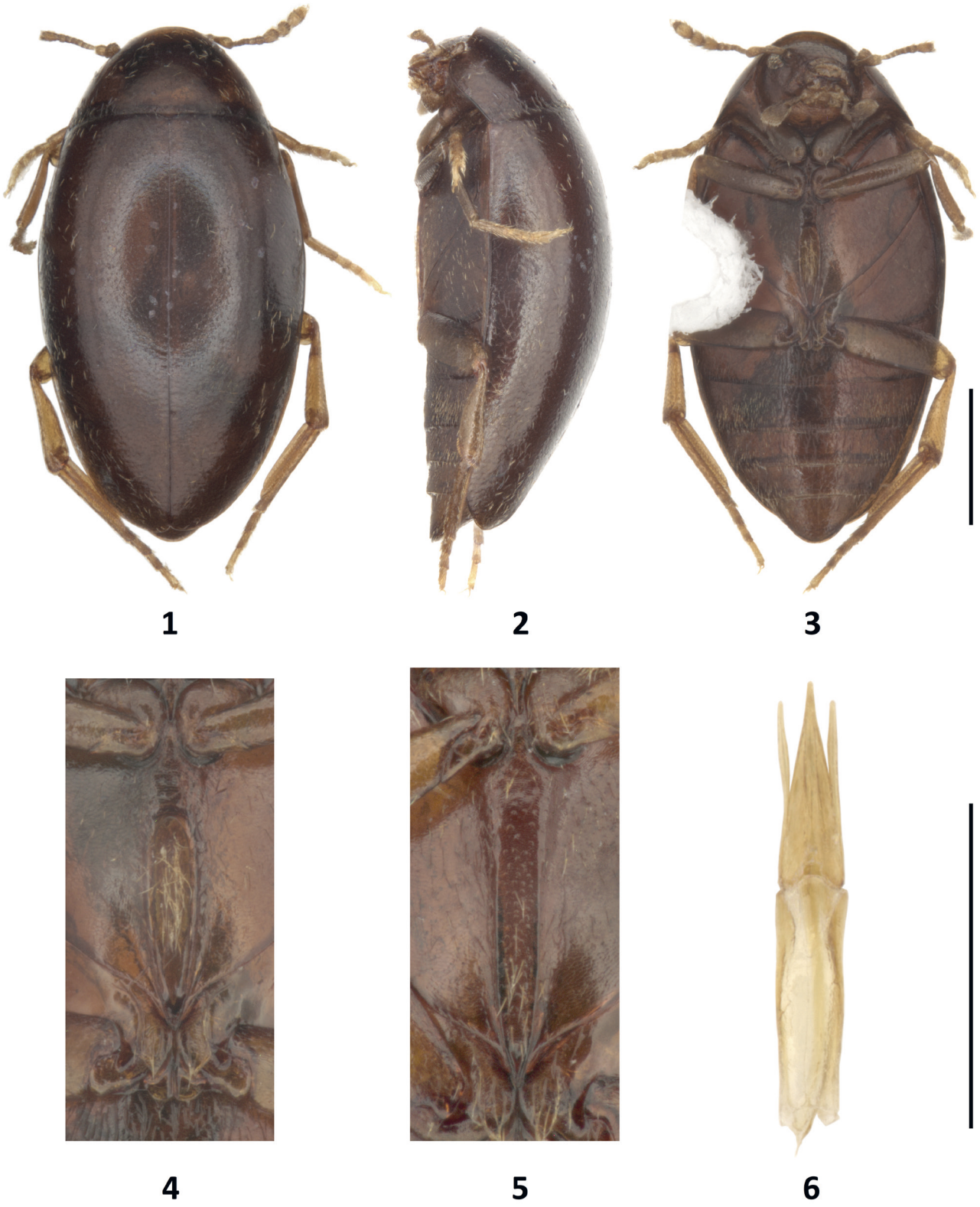


Figs 1-6. *Lederina elongata* sp. nov. Habitus in (1) dorsal, (2) lateral, and (3) ventral views. Metaventral medial area in (4) males, and (5) females. (6) Aedeagus. Scale bars = 0.5 mm.

Body (Figs 1-3) elongate, oval with regular arched lateral sides, around 1.8 times longer than wide, widest at middle; moderately convex in lateral view, more elongate posteriorly than anteriorly. Body dark brown; base of pronotum yellowish; legs and antennae brownish, distal half of antennomere 11 yellowish; body pubescence yellowish. Dorsal surface dull to slightly shining; ventral surface shining.

Head slightly shining, with strong setiferous punctation, surface with very finely polyhedral microreticulation. Antennae with distinct but loose club, relative length of antennomeres: 8 – 9 – 2 – 3 – 2 – 2 – 3 – 3 – 6 – 6 – 12; antennomeres 1 and 2 twice longer than wide, 3 to 10 about as long as wide and antennomere 11 twice longer than wide. Maxiliary palpi with distal article 1.3 times longer than wide, internal margin sub-orthogonal angled and external margin evenly rounded, penultimate article 1.3 times longer than wide, with angular internal margin and straight external margin.

Pronotum around 0.4 times as long as wide, widest at base, complete surface covered with regular transverse microreticulation and fine to very fine punctation. Elytra 1.5 times longer than wide, widest between middle and anterior third, whole surface covered by rough punctation and transverse microreticulation, dull at elytral bases but becoming more shining around apex. Metaventrite covered by shallow microreticulation, superficial punctation and fine pubescence with exception of restricted posterior part, glabrous and shining. Protarsi and mesotarsi not enlarged; length of metatarsal spurs slightly unequal, longer spur about 0.9 times as long as metatarsomere 1; metatarsomeres relative length: 40 – 8 – 7 – 10.

Abdomen evenly convex on ventral side, lacking depression, surface shining, covered with fine punctation and shallow transverse microreticulation, uniformly pubescent.

Male: Metaventrite (Fig. 4) with anterior third slightly raised and posterior two thirds occupied by deep depression. Metaventral depression 3.7 times longer than wide, widest near anterior third; lateral sides subparallel, narrowed posteriad, shortly rounded anteriorly; margins well edged; inner area deep, bearing long pubescence. Aedeagus (Fig. 6) small, ca. 0.7 mm long, median lobe straight at its basis then regularly narrowed until apex, slightly longer than parameres; parameres narrow and straight; phallobase strait, slightly longer than half of aedeagus total length.

Female: Metaventrite (Fig. 5) with anterior half slightly raised and posterior half slightly depressed. Metaventral depression 4.7 times longer than wide; edged posteriorly and laterally, not anteriorly; inner area shallow, progressively deepening posteriad, with short pubescence.

Distribution and natural history: This species is recorded from the Gaoligong mountains, Yunnan, China at elevations from 2200 to 2500 meters above sea level.

Comments: The shapes of the metaventral depression and of the aedeagus of *L. elongata* are similar to those of *L. armadillo* Cosandey, 2023. Both species have a very different general aspect: elongate for *L. elongata*, while strongly rounded and convex for *L. armadillo*. It is interesting to note that these two mountain species could be related even though their known distributions are separated by sea.

Lederina mozolevskayae Nikitsky, 2001

Figs 7-12

Lederina mozolevskayae Nikitsky, 2001: 23.

Material examined: NMB and MHNG; 1♂ and 4♀; Yunnan, Jizu mts., 25.58N 100.21E, 2800 m, 30.V – 3.VI.1993, leg. Bolm. – NMB and MHNG; 2♂, 1♀ and 1 unsexed; Yunnan, Jizushan mts., 25.58N 100.21E, 2500-3100 m, 30.V – 3.VI.1993, leg. Vít Kubán – NMB; 1♀ Yunnan, Jizu mts., 2300 m, 18-20.1995, leg. Bolm.

Comments: This species was only recorded in the upper area of the Jizu mountains at an elevation between 2300 and 3100 meters above sea level. *Lederina mozolevskayae* is probably closely related to *L. ovata*: the males of both species show a characteristic metaventral medial flat area (Figs 10, 16) and a similar general aedeagus shape (Figs 12, 17). They can be distinguished by the metaventral medial area: widest around its anterior third as well as narrowed anteriorly and posteriad in *L. mozoleskayae*, while triangular in *L. ovata*: widest just before mesocoxae, extremely narrowed posteriad. Females of *L. ovata* are still unknown but the punctation of their metaventrite is probably much finer than in *L. mozoleskayae*.

Lederina ovata sp. nov

Figs 13-17

Type material:

Holotype: MHNG-ENTO-0105360; 1♂; China, Yunnan prov., Heishui, 35 km N Lijiang, 27.13N 100.19E, 1. – 19.VII.1992, leg. S. Becvar (housed in MHNG).

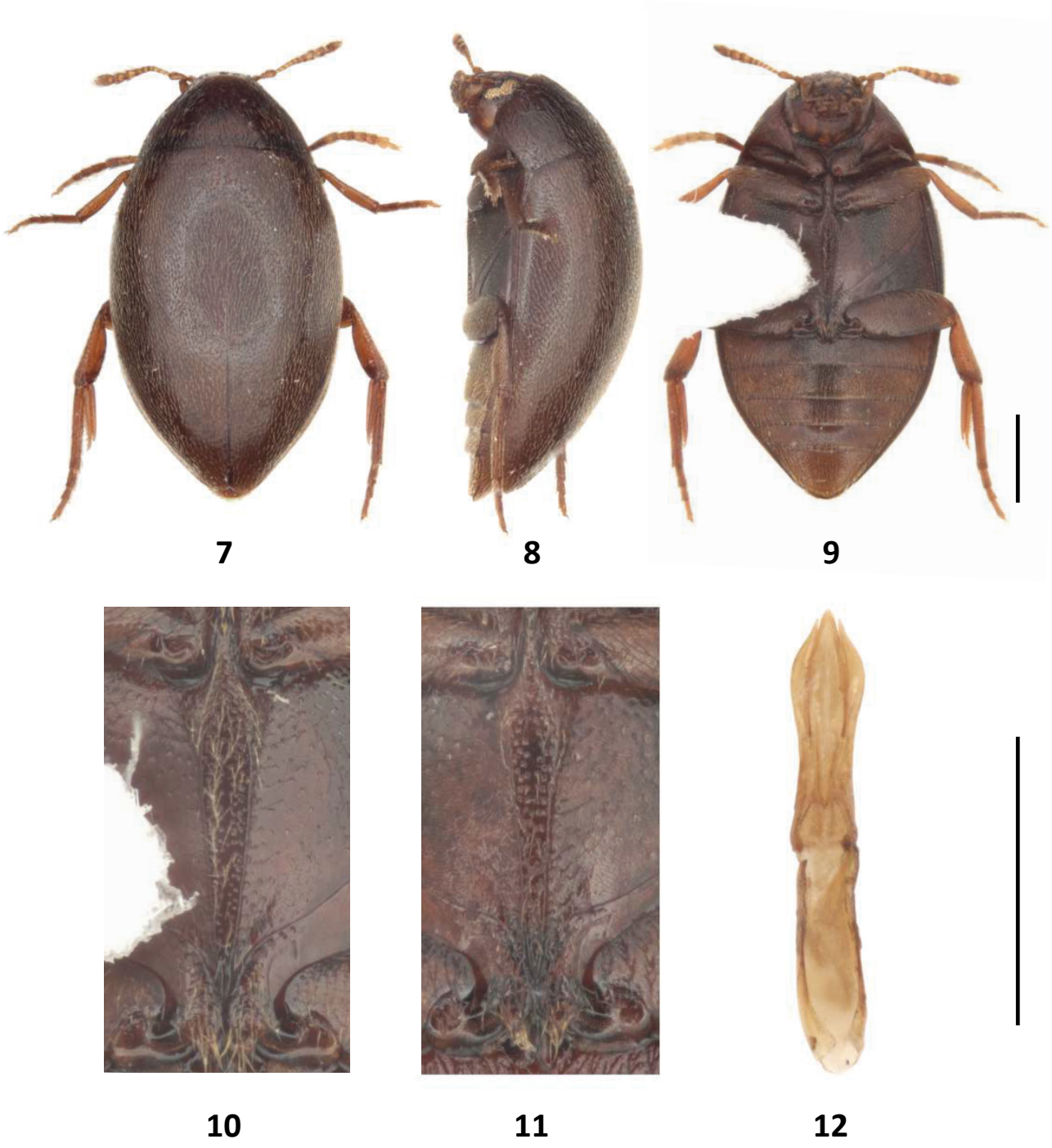
Diagnosis: Among congeners, *L. ovata* and *L. mozolevskayae* are the only species to have a flat medial area on the metaventrite. *Lederina ovata* can easily be distinguished from *L. mozolevskayae* by its smaller size, its finely punctured metaventrite, and by the very elongate triangular shape of the metaventral medial flat area, which is widest just before the mesocoxae, and strongly narrowed posteriad.

Etymology: The specific epithet refers to the oval shape of this species, notably with respect to *L. elongata*.

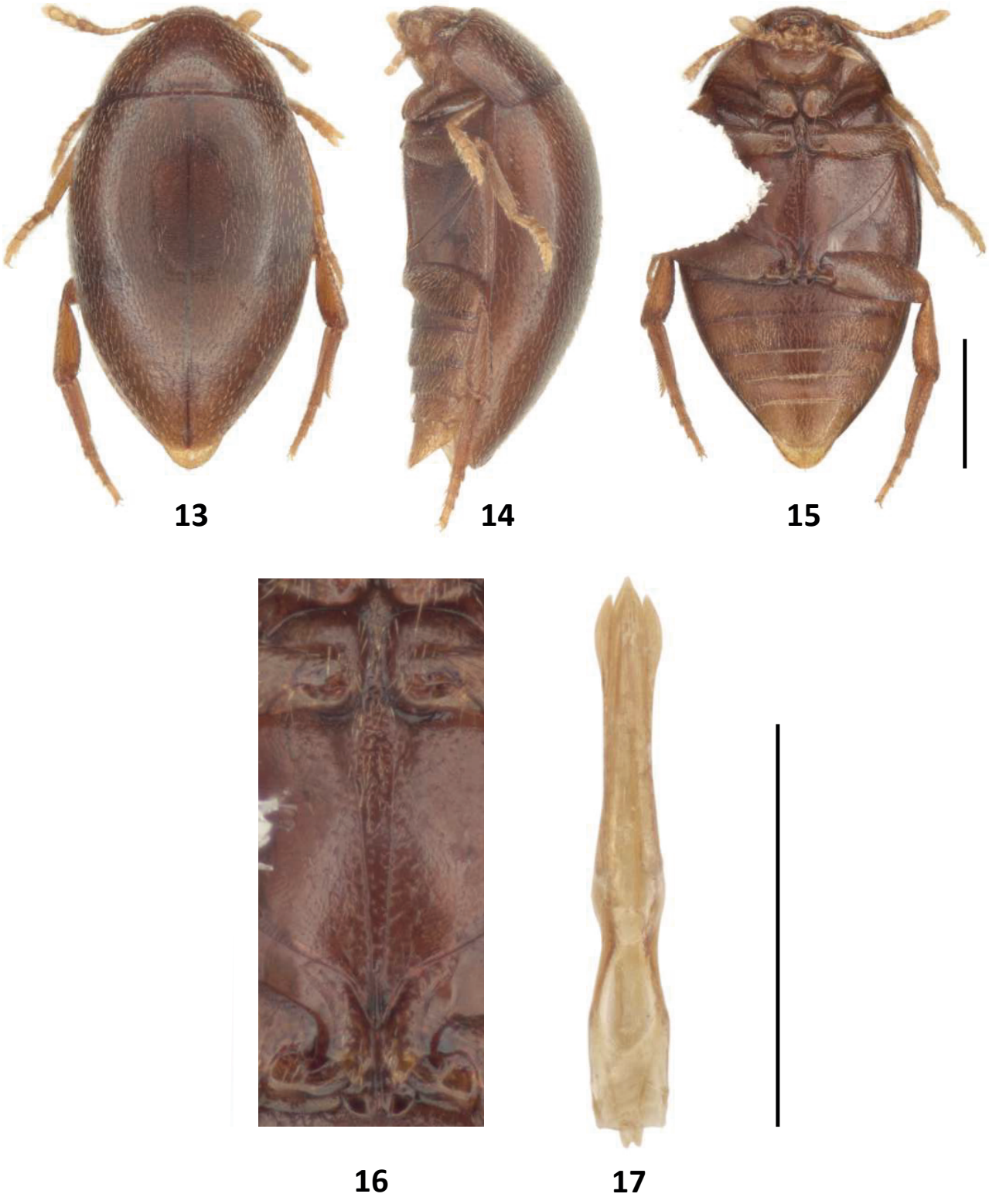
Description: Length: 1.67 mm; width: 0.95 mm; depth: 0.72 mm.

Body (Figs 13-15) oval in dorsal view, 1.76 times longer than wide, widest slightly before middle, more shortly anteriorly rounded than posteriorly; convex in lateral view but more elongate posteriorly than anteriorly. Body rufous, anterior pronotonal margin and posterior quarter of elytra yellowish; legs and metatarsomere 1 reddish to yellowish; tarsi, palpi, and antennae yellowish; body pubescence yellowish. Dorsal and ventral surface slightly shining.

Head with strong setiferous punctation; surface covered by microreticulation formed of elongate transverse meshes. Antennae narrow with distinct but weakly marked club; antennomeres relative length: 16 – 16 – 6 – 5 – 5 – 4 – 5 – 5 – 12 – 10 – 18; antennomeres 1 and 2 twice as long as wide, antennomeres 3, 4, 5, 7, 8, 9, and 10 elongate, antennomere 6 as long as wide, antennomere 11 almost twice as long as wide. Maxillary palpi with apical article 1.3 times longer than wide, internal margin



Figs 7-12. *Lederina mozolevskayae* Nikitsky. Habitus in (7) dorsal, (8) lateral, and (9) ventral views. Metaventral medial area in (10) males, and (11) females. (12) Aedeagus. Scale bars = 0.5 mm.



Figs 13-17. *Lederina ovata*, sp. nov. Habitus in (13) dorsal, (14) lateral, and (15) ventral views. (16) Male metaventral medial area. (17) Aedeagus. Scale bars = 0.5 mm.

subangular, external margin straight in basal two thirds, rounded in apical third, apex orthogonal with rounded tip; penultimate article 1.5 times longer than wide, with angular internal margin and straight external margin.
Pronotum around 0.4 times as long as wide, widest at base; surface covered with uniform shallow transverse microreticulation and very weak punctation. Elytra about 1.5 times longer than wide, widest at anterior third; surface of elytral bases covered by distinct transverse microreticulation and fine punctation, both more marked than on pronotonal surface, elytral punctation becoming progressively stronger and rougher toward apex while microreticulation almost disappears, elytra more shiny at apex than at basis. Metaventrite covered antero-laterally by pubescence, fine punctation, and transverse microreticulation, completely smooth and shining posterior-medially. Metatarsal spurs slightly unequal in length, longer spur 0.87 times as long as metatarsomere 1; relative length of metatarsomeres: 30 – 7 – 5 – 7.
Abdomen evenly convex on ventral side, lacking medial depression; sternites pubescent, surface covered by transverse microreticulation, punctation fine, except on strongly punctured apical sternite.
Male: Protarsi and mesotarsi slightly enlarged. Metaventrite with few rows of erect hairs on lateral sides of medial area. Metaventral medial area triangular (Fig. 16), widest briefly before mesocoxae, extremely narrowed posteriad; surface flat, elevated in anterior third, punctured and pubescent except on posterior quarter, lateral sides smoothly edged between posterior apex and anterior fifth.
Aedeagus (Fig. 17) small, ca. 0.7 mm long, median lobe regularly narrowed posteriorly, acuminated at apex, slightly longer than parameres; parameres only distinct from median lobe apically where they are strongly widened; junction between median lobe and parameres with phallobase wide; phallobase constricted in posterior half, slightly longer than one third of aedeagus total length.
Female: Unknown.

Distribution and natural history: This species is known only from a single male collected at an unknown elevation. It is however reasonable to hypothesize that it was collected between 2500 and 3500 meters given the locality, Heishui, situated at an elevation of approximately 3000 meters above s.l., on the foot of the Jade Dragon Snow Mountain (Yulong mountains), which culminates at more than 5500 meters above sea level. In addition, the other *Lederina* species from Yunnan were found at similar elevations: 2200 to 2500 meters above s.l. for *L. elongata*, and 2300 to 3100 meters above s.l. for *L. mozolevskayae*.

Comments: The general shape of the aedeagus of *L. ovata* is similar to that of *L. mozolevskayae* but its distal part (median lobe and parameres) is about twice as long as the phallobase in *L. ovata*, while both parts have a similar length in *L. mozolevskayae*. These two species are probably closely related, given the morphological resemblance of their aedeagi and metaventral medial area. Females of *L. ovata* are yet unknown. The protarsi and mesotarsi are more enlarged in males of many species of *Lederina* (for example: *L. angusticanalis* (Sasaji, 1987) or *L. smetanai* Cosandey, 2023), while not in others (e.g., *L. mozolevskayae*). Therefore, the reliability of the enlargement of the pro- and mesotarsi as a secondary sexual character remains unknown for *L. ovata*.

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