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## **A revision of Palaearctic *Lobrathium*. VI. Two new species from Armenia and Taiwan, and additional records (Coleoptera: Staphylinidae: Paederinae)**

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**A b s t r a c t :** Two species of *Lobrathium* MULSANT & REY, 1878 are described and illustrated: *L. ancoriferum* nov.sp. (Armenia) and *L. biuncinatum* nov.sp. (Taiwan). Additional records of 13 species are presented. *Lobrathium* is now represented in the Palaearctic region (including Myanmar and Vietnam) by 144 described species and one subspecies.

**K e y w o r d s :** Coleoptera, Staphylinidae, Paederinae, *Lobrathium*, Palaearctic region, Armenia, Taiwan, new species, new records.

### **Introduction**

According to ASSING (2014a), 135 species and one subspecies of *Lobrathium* MULSANT & REY 1878 were known from the Palaearctic region (including Myanmar and North Vietnam). In the meantime, seven additional species have been described, one from Turkey, three from China, and three from Japan (ASSING 2014b, ITO 2013, 2014, LÜ & LI 2014, PENG et al. 2016). Including these species, the genus was previously represented in the Palaearctic region by 142 species and one subspecies, with a total of 43 species recorded from mainland China and 20 from Taiwan. Only one species had been reported from Armenia, *L. rugipenne* (HOCHHUTH, 1851).

The present paper is based on *Lobrathium* material examined in the past three years. It includes two new species, as well as additional records of twelve previously described species.

### **Material and methods**

The material treated in this paper is deposited in the following public and private collections:

- MNB ..... Museum für Naturkunde, Berlin (J. Frisch, J. Willers)
- NHMW ..... Naturhistorisches Museum Wien, H. Schillhammer (NHMW)
- NME..... Naturkundemuseum Erfurt (M. Hartmann)
- NMP..... National Museum of Natural History, Prague (J. Hájek)
- SMTD ..... Staatliches Museum für Tierkunde, Dresden (O. Jäger)
- cAss..... author's private collection
- cFel ..... private collection Benedikt Feldmann, Münster
- cKal..... private collection Mark Kalashian, Yerevan

cKoc..... private collection Matúš Kocian, Prague  
 cSha..... private collection Alexey Shavrin, Daugavpils  
 cSme..... private collection Aleš Smetana, Ottawa

The morphological studies were conducted using a Stemi SV 11 microscope (Zeiss Germany) and a Jenalab compound microscope (Carl Zeiss Jena). The images were created using a photographing device constructed by Arved Lompe (Nienburg) and CombineZ software, as well as a digital camera (Nikon Coolpix 995).

Body length was measured from the mandibles (in resting position) to the abdominal apex, the length of the forebody from the mandibles to the posterior margin of the elytra, head length from the anterior margin of the frons to the posterior margin of the head, elytral length at the suture from the apex of the scutellum to the posterior margin of the elytra, 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.

### Species descriptions and additional records

#### *Lobrathium multipunctum* (GRAVENHORST, 1802)

**M a t e r i a l e x a m i n e d :** Spain: 1 ♂, Toledo, Los Yebenes, 39.37°N, 3.93°W, arroyo seco, 30.IV.2014, leg. Shavrin (cSha).

#### *Lobrathium anale* (LUCAS, 1846)

**M a t e r i a l e x a m i n e d :** Tunisia: 1 ex., Jendouba, 10 km S Tabarka, 36°52'N, 8°43'E, shore of reservoir, 60 m, 2.III.2012, leg. Hetzel (cFel). Spain: 6 exs. [partly teneral]: Toledo, Los Yebenes, 39.38°N, 3.92°W, under bridge, 30.IV.2014, leg. Shavrin (cSha, cAss); 1 exs., Andalucía, Algeciras env., Garganta de la Fuente Santa, 36.135°N, 5.497°W, 12.-13.V.2014, leg. Shavrin (cSha).

#### *Lobrathium rugipenne* (HOCHHUTH, 1851)

**M a t e r i a l e x a m i n e d :** Turkey: 5 exs., Istanbul, Belgrad Ormanı, Bahçeköy, 41°11'N, 29°00'E, mixed broadleaf forest, brook, V.2014, leg. Hetzel (cFel); 1 ex., Bolu, Abant Dağı, 1300 m, 7.V.1976, leg. Korge (MNB); 8 exs. [partly teneral], Antalya, Anamur env., 26.IV.1992, leg. Kocian (cKoc, cAss); 1 ♀, Antalya, ESE Manavgat, 6.III.2013, leg. Snižek (NME); 1 ex., Kayseri, Dereşimli, 8.IV.1992, leg. Hovorka (cKoc); 2 exs., Adana, Kozan, Eskiye geçidi env., 13.VI.1998, leg. Snižek (MNB, cAss); 1 ex., Hatay, Harbiye, 11.IV.1992, leg. Hovorka (cKoc); 1 ♀, Hatay, 15 km WSW Antakya, Batiyaz, 500 m, pitfall, 6.-23.IV.2014, leg. Reuter (cFel).

#### *Lobrathium schillhameri* ASSING & SCHÜLKE, 2002

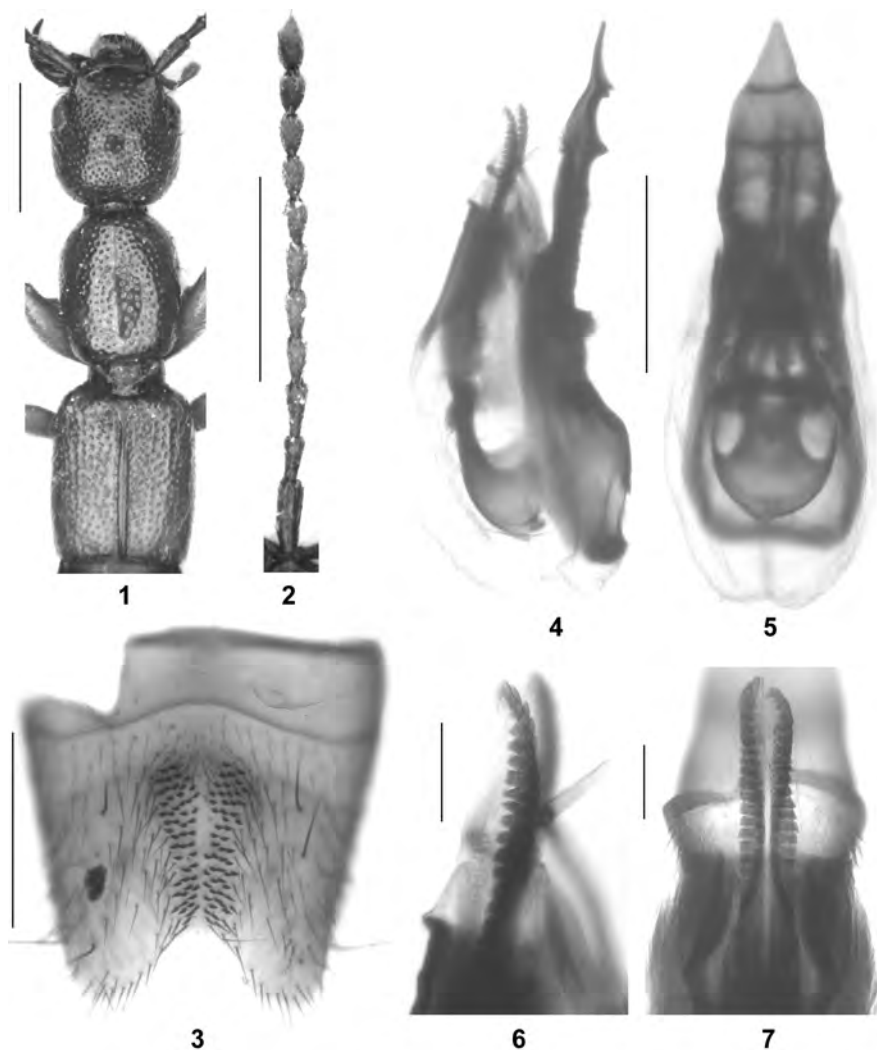
**M a t e r i a l e x a m i n e d :** Turkey: 9 exs., Adıyaman, Nemrut Dağı, 28.VI.1993, leg. Hovorka (cKoc, cAss).

**C o m m e n t :** The known distribution of *L. schillhameri* is confined to Şanlıurfa and Adıyaman provinces, South Turkey (ASSING 2013).

#### *Lobrathium farsicum* ASSING, 2007

**M a t e r i a l e x a m i n e d :** Iran: 1 ♂, Fars, Kazerun env., Bisapur, 10.V.1999, leg. Klima (NMP).

**C o m m e n t :** This species has been recorded only from Southwest Iran (ASSING 2013). For a distribution map see ASSING (2007).



**Figs 1-7:** *Lobrathium ancoriferum* nov.sp.: (1) forebody; (2) antenna; (3) male sternite VIII; (4-5) aedeagus in lateral and in ventral view; (6-7) apical internal structures in lateral and dorsal view. Scale bars: 1-2: 1.0 mm; 3-5: 0.5 mm; 6-7: 0.1 mm.

***Lobrathium ancoriferum* nov.sp.** (Figs 1-7)

**Type material:** Holotype ♂: "Erevan, Asni, ASSR. 13.5.55 / Holotypus ♂ *Lobrathium ancoriferum* sp. n., det. V. Assing 2017" (cKal).

**Etymology:** The specific epithet (Latin, adjective: carrying an anchor) alludes to the shape of the basal internal structure of the aedeagus in lateral and in dorsal view.

**Description:** Body length 8.0 mm; length of forebody 4.1 mm. Coloration: head and pronotum reddish; elytra pale-reddish; abdomen with segments III-VI blackish-

brown, VII brown, and VIII-X reddish; legs pale-reddish; antennae dark-reddish.

Head (Fig. 1) 1.06 times as long as broad; dorsal surface weakly convex in cross section; lateral margins behind eyes weakly converging in dorsal view; posterior angles weakly marked; punctation dense and moderately coarse, sparser in median and in antero-median dorsal portion. Eyes approximately half as long as distance from posterior margin of eye to posterior constriction of head. Antenna (Fig. 2) 2.7 mm long.

Pronotum (Fig. 1) 1.24 times as long as broad and 0.94 times as broad as head; punctation similar to that of head, but less dense than that in lateral and posterior portions of head; impunctate median band narrow.

Elytra (Fig. 1) 0.92 times as long as pronotum and 1.1 times as broad as head; humeral angles moderately marked; punctation coarse and partly arranged in irregular rows; interstices without microsculpture.

Abdomen as broad as elytra; punctation moderately dense and moderately fine; anterior impressions of tergites III-VII with pronounced microreticulation, remainder of tergal surfaces with fine transverse microsculpture; posterior margin of tergite VII with palisade fringe.

♂: posterior margin of tergite VIII convex; sternite VII strongly transverse and with extensive postero-median impression, pubescence unmodified; sternite VIII (Fig. 3) weakly transverse, along middle with extensive impression, this impression with two oblong clusters of numerous modified, short and stout black setae, posterior excision large and approximately one-fifth as deep as length of sternite; aedeagus (Figs 4-5) 1.5 mm long; ventral process large, blade-shaped, and apically acute, ventrally with two transverse carinae in apical half and numerous granules in basal half; internal sac with a large anchor-shaped basal structure, with an apical pair of two strongly curved spines and with an apical pair of long series of small spines (Figs 6-7).

♀: unknown.

**Comparative notes:** *Lobrathium ancoriferum* is distinguished from all its congeners by the male primary and secondary sexual characters. Regarding the shape of the ventral process of the aedeagus, *L. ancoriferum* somewhat resembles *L. schillhammeri* and *L. rugipenne*, from which the new species differs as follows:

from *L. schillhammeri* by completely different coloration (*L. schillhammeri*: body black, except for two yellowish spots in the posterior portion of the elytra), larger size, a more oblong head, shorter elytra with less pronounced humeral angles, the different shape and chaetotaxy of the male sternite VIII, and a much larger aedeagus (*L. schillhammeri*: aedeagus barely 1 mm long) of different shape;

from the similarly large *L. rugipenne* by different coloration (*L. rugipenne*: head and pronotum black, elytra bicoloured), a less convex head in cross-section, shorter and more slender elytra with less pronounced humeral angles, and by the shape and chaetotaxy of the male sternite VIII (*L. rugipenne*: posterior margin of sternite VIII with a conspicuous fringe of dense dark setae).

From the widespread *L. multipunctum*, which is sometimes of similarly pale coloration and which may have similarly short elytra, *L. ancoriferum* is readily distinguished by slightly larger size, a less convex head (cross-section), much less coarse and less regularly seriate punctation of the elytra, less fine and less dense punctation of the abdomen, by the shape and chaetotaxy of the male sternite VIII, and by the completely different shape of the aedeagus.

**Distribution:** The type locality is situated near Yerevan, Armenia. Additional data are not available.

***Lobrathium ochreonotatum* (CHAMPION, 1922)**

**Material examined:** Nepal: 1♂, Annapurna, Modi Khola valley, Himal Pani Lodge env., 1500 m, 10.VI.2000, leg. Schmidt (SMTD); 1♂, 20 km W Pokhara, Panchasa mountain, NE-slope, 2000 m, bank of torrent, 18.V.1997, leg. Jäger (cAss); 1♀, SE Dhaulagiri, Rahughat Khola, S Chimkhola, 28°28'N, 83°32'E, 1770 m, 9.V.2002, leg. Jäger (SMTD).

**Comment:** The distribution of *L. ochreonotatum* ranges from Uttarakhand to East Nepal (ASSING 2012, 2014a).

***Lobrathium wittmeri* COIFFAIT, 1982**

**Material examined:** Nepal: 1♂, 1♀ [brachypterous], Dhaulagiri, S-slope Ruyachaur Duri, ca. 28°33'N, 83°26'E, 2400-2700 m, 22.VI.1998, leg. Berndt & Schmidt (SMTD, cAss); 1♂ [brachypterous], 6♀ [4 macropterous, 2 brachypterous], Annapurna, Telbrung Danda, 2600-2800 m, 13.VI.1997, leg. Schmidt (SMTD, cAss); 1♀ [brachypterous], Manaslu, NE-slope of Bhudi Gandaki valley, Kal Tal, 3600 m, 28.V.2006, leg. Schmidt (NME); 1♀ [brachypterous], Manaslu, E-slope of Ngali Khola valley, 28°22'N, 84°29'E, 2000-2300 m, 15.V.2005, leg. Schmidt (cAss); 7 exs. [brachypterous], Milke Danda, Faidei, 27°27'N, 87°27'E, 3800 m, 2.VI.2010, leg. Tamang (NME, cAss).

**Comment:** This species had been reported primarily from Central Nepal, with a tentative female-based record also from Mechi, East Nepal (ASSING 2012, 2014a). The above record from Milke Danda confirms the presence of *L. wittmeri* in East Nepal.

***Lobrathium sinuatum* ASSING, 2012**

**Material examined:** India: 1♂, Uttarakhand, 14 km E Uttarkashi, 30°45'N, 78°34'E, 1450 m, 10.-12.IV.2012, leg. Shavrin (cAss).

**Comment:** *Lobrathium sinuatum* was previously known only from Central Nepal (ASSING 2012). The above specimen represents the first record from India.

***Lobrathium kleebergi* ASSING, 2012**

**Material examined:** India: 1♂, Arunachal Pradesh, Tawang, 27°35'N, 91°52'E, 2700 m, 22.VI.2008, leg. Reuter (NHMW).

**Comment:** The original description of *Lobrathium kleebergi* is based on material from several localities in Nepal (ASSING 2012). The above specimen represents the first record from India.

***Lobrathium tortile* ZHENG, 1988**

**Material examined:** China: 1♂ [teneral], Sichuan, Pingwu, 7.VI.1997, leg. Kučera (NMP); 1♂, Wolong National Nature Reserve, Namasi vill., 31°01'N, 103°10'E, 2150 m, stream valley with shrubs, 23.VI.2014, leg. Hájek & Růžička (NMP).

**Comment:** This species is rather widespread and common in China. For a distribution map see ASSING (2013).

***Lobrathium bispinosum* ASSING, 2012**

**Material examined:** China: 6 exs., Guizhou, Fanjing Shan, 27°45'N, 108°42'E, 900-1300 m, pitfall, 5.-11.VI.2014, leg. Reuter (cFel, cAss).

**Comment:** The description of *L. bispinosum* is based on material from Guizhou (ASSING 2012). In the meantime, the species appears to have been reported also from Jiangxi (SCHÜLKE & SMETANA 2015).

***Lobrathium pengi* LI & LI, 2013**

**Material examined:** China: 1♂, 1♀, Guangxi, Shiwandashan National Forest Park, 21°54'N, 107°54'E, 290-360 m, forested river valley, in river, 5.-9.IV.2013, leg. Fikáček et al. (NMP, cAss); 2♀, Guangdong, W Qixing, Heishiding nature reserve, 23°28'N, 111°54'E, 190-260 m, 1.-3.V.2011, leg. Fikáček & Hájek (NMP).

**Comment:** This species was previously known only from the type locality in Shiwanda Shan Forest Park, Guangxi (LI et al. 2013). The above record from Guangdong should be considered tentative, as it is exclusively based on females.

***Lobrathium stimulans* ASSING, 2010**

**Material examined:** Taiwan: 1♀, Kaohsiung Hsien, road above Tona Forest Station, km 16-17, 1700-1800 m, 28.IV.1998, leg. Smetana (cSme).

**Comment:** This species has been recorded only from Peinantashan, Kaohsiung Hsien, southern Taiwan (ASSING 2010).

***Lobrathium biuncinatum* nov.sp. (Figs 8-11)**

**Type material:** Holotype ♂: "Taiwan, Taitung Hsien, Hsinkangshan above Chengkang 750 m 21.IV.1998 A. Smetana [T185] / Holotypus ♂ *Lobrathium biuncinatum* sp.n., det. V. Assing 2015" (cAss). Paratypes: 1♀ [teneral]: same data as holotype (cSme); 1♀: same data, but "18.IV.1998... [T182]" (cAss); 1♀: same data, but "800 m 27.IV.1995... [T168]" (cSme).

**Etymology:** The specific epithet (Latin, adjective: with two hooks) alludes to the shape of the apex of the aedeagus.

**Description:** Large species; body length 8.8-10.0 mm; length of forebody 5.1-5.5 mm. Coloration: body blackish-brown; legs: forelegs dark-brown with reddish tarsomere V, mid- and hindlegs dark-yellowish with dark-brown tibiae; antennae basally blackish-brown, gradually becoming paler towards apex, apical antennomeres reddish.

Head (Fig. 8) approximately as broad as long and of subcircular shape, posterior angles obsolete; punctation very dense, moderately coarse, and umbilicate. Eyes approximately as long as, or slightly longer than, distance from posterior margin of eye to posterior constriction of head. Antenna approximately 3.2 mm long.

Pronotum (Fig. 8) 1.15-1.18 times as long as broad and approximately as broad as head; punctation slightly less dense, less distinctly umbilicate, and coarser than that of head; impunctate median band narrow, extending to anterior and posterior margins, or nearly so.

Elytra (Fig. 8) approximately 0.7 times as long as pronotum; humeral angles marked; lateral parts with fine submarginal line; punctation coarse and partly arranged in very irregular, oblique, confluent rows; interstices without microsculpture.

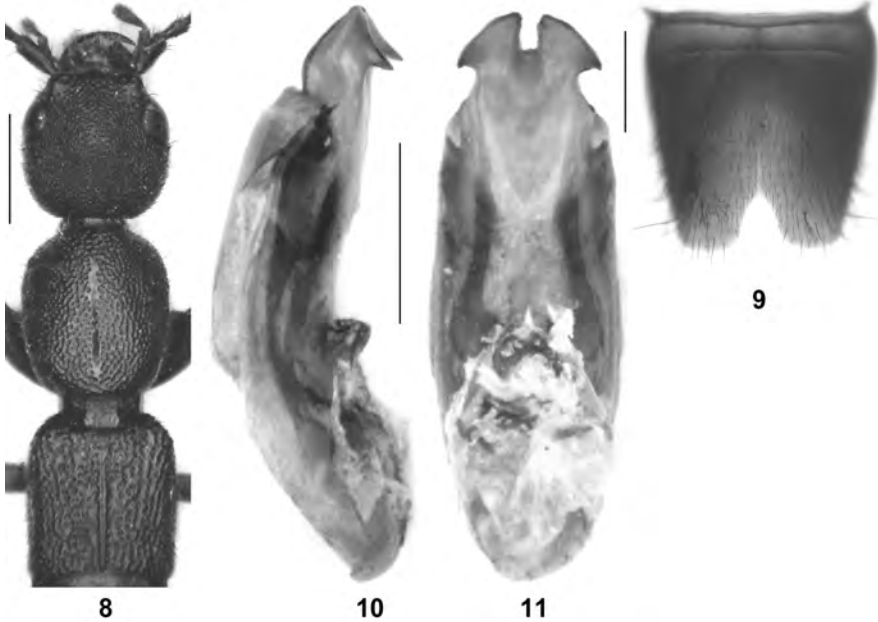
Abdomen slightly broader than elytra; punctation dense; interstices with fine and shallow microreticulation; posterior margin of tergite VII without palisade fringe.

♂: posterior margin of tergite VIII indistinctly angled in the middle; sternites V-VI without impressions; sternite VII with weakly concave posterior margin; sternite VIII (Fig. 9) with shallow oblong postero-median impression, without peg-setae, posterior excision

0.22 times as deep as length of sternite; aedeagus (Figs 10-11) apically with a pair of hook-shaped processes.

♀: tergite VIII posteriorly acutely angled in the middle.

**Comparative notes:** Based on the external and male sexual characters, *L. biuncinatum* belongs to the lineage including *L. stimulans* and related species, all of which are locally endemic in Taiwan. It is distinguished from them particularly by the shape of the apex of the aedeagus. For illustrations of the *Lobrathium* species previously known from Taiwan see ASSING (2010).



**Figs 8-11:** *Lobrathium biuncinatum* nov.sp.: (8) forebody; (9) male sternite VIII; (10-11) aedeagus in lateral and in ventral view. Scale bars: 8: 1.0 mm; 9-11: 0.5 mm.

**Distribution and natural history:** The type specimens were collected in two close localities in Hsinkang Shan, Taitung Hsien, Taiwan, at altitudes of 750 and 800 m. They were sifted from leaf litter and other debris along walls of an abandoned forest road (T182, T185) and from wet leaf litter and debris at the base of a vertical rockwall (T168) (SMETANA pers. comm.).

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## Zusammenfassung

Zwei Arten der Gattung *Lobrathium* MULSANT & REY, 1878 werden beschrieben und abgebildet: *L. ancoriferum* nov.sp. (Armenien) und *L. biuncinatum* nov.sp. (Taiwan). Weitere Nachweise von 13 Arten werden gemeldet. *Lobrathium* ist in der Paläarktis (einschließlich Myanmar und Vietnam) derzeit mit 144 beschriebenen Arten und einer Unterart vertreten.

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