

ORIGINAL ARTICLE

A new species of the genus *Eodorcadion* Breuning from Alxa desert in Inner Mongolia, China (Coleoptera: Cerambycidae)

Mikhail L. Danilevsky¹, Xuefeng Chen², Meiying Lin³*

¹A.N. Severtzov Institute of Ecology and Evolution, Russian Academy of Sciences, Leninsky prospect 33, Moscow 119071 Russia, E-mails: danilevskym1@rambler.ru, danilevsky@cerambycidae.net

²Qingshan District, Jiashinweiye, Baotou City, Inner Mongolia 014030, China, E-mail: 1057811980@qq.com

³Key Laboratory of Zoological Systematics and Evolution, Institute of Zoology, Chinese Academy of Sciences, Beijing 100101, China

*Corresponding author, E-mail: linmeiying@ioz.ac.cn

Abstract A new species, *Eodorcadion* (*Ornatodorcadion*) *zhaoi* sp. nov., is described from the Alxa desert in Inner Mongolia, China. A key to species of the subgenus *Eodorcadion* (*Ornatodorcadion*) is provided. The type specimens are deposited in IZCAS, CCXF and CMD, respectively.

Key words Lamiinae, taxonomy, new species, Palearctic Region.

1 Introduction

The genus *Eodorcadion* Breuning, 1947 was recently revised (Danilevsky, 2007) with 37 species and 16 subspecies from China, Kazakhstan, Mongolia and Russia. Subsequently, 5 more species and 6 subspecies were described as new and 5 synonymized species and subspecies names were validated (Lin & Danilevsky, 2011; Danilevsky & Lin, 2012a, b; Yang & Danilevsky, 2013; Danilevsky, 2014).

The genus was divided into 3 subgenera, *Eodorcadion* s. str. (sixteen species/subspecies reported from China), *E. (Humerodorcadion)* (four species/subspecies reported from China) and *E. (Ornatodorcadion)* (Danilevsky, 2007). Seventeen species/subspecies belonging to *E. (Ornatodorcadion)* were recorded from China (Lin & Tavakilian, 2019). Now a description of a new beautiful species of this subgenus is proposed. An identifying key to species of the subgenus *E. (Ornatodorcadion)* is provided, which is based on characters that do not need dissection for practice convenience.

2 Materials and methods

Specimens examined in this study were collected during daytime. Photographs of the beetles were taken with a Canon EOS 7D + Macro 100 mm and stacked by Helicon software®. Ecological and landscape pictures were taken with an iPhone camera. Specimens studied are deposited in the following collections:

CCXF—Collection of Xuefeng Chen, Inner Mongolia, China;

CMD—Collection of Mikhail L. Danilevsky, A.N. Severtzov Institute of Ecology and Evolution, Russian Academy of Sciences, Moscow, Russia;

IZCAS—Institute of Zoology, Chinese Academy of Sciences, Beijing, China.

urn:lsid:zoobank.org:pub:76D9387A-091B-4D52-840E-8B9C73B56CCC

Received 28 January 2019, accepted 20 April 2019

Executive editor: Fuqiang Chen

3 Taxonomy

Eodorcadion (Ornatodorcadion) zhaoi sp. nov. (Figs 1–6)

Type locality. China, Inner Mongolia, Alxa Left Banner, Tengger Desert, elev. 1314 m, 38°28'N, 105°13'E.

Diagnosis. The new species is close to *E. (O.) potanini* (Jakovlev, 1889) described from “Ordos” because of the usually similar (red-brown) body color, comparable pronotal and elytral sculpture, and nearly equal antennal length and proportions. But in *E. (O.) zhaoi* sp. nov., the body is relatively wider (especially in males), more curved laterally, and more attenuated posteriorly. The head is relatively wider, and the cicatrix is considerably obliterated. The elytral carinae are not distinct, the humeral carinae are never roughly sculptured, the external dorsal and humeral elytral stripes are not complete, the marginal elytral stripes are never regularly wide up to the anterior elytral margin, and in females, small traces of the internal dorsal elytral stripes can be visible.

Description. Body length. Male 18.5–23.5 mm, width 6.2–8.0 mm; female 25.4–27.6 mm, width 8.5–9.5 mm. Body reddish-brown including legs and antennae; prothorax, head and ventral side of body considerably darker; head big, wider than anterior pronotal margin; frons about as long as wide in females, while a little narrower in males; lower eye-lobe about as long as gena; clypeus and gena covered with dense white pubescence; frons with irregular white spots; vertex usually with two white stripes; antennae in males a little longer than elytra, surpassing elytral apex by 2 or 3 apical segments; antennae in females reaching elytral apex by last segment; 1st antennal segment with poorly developed cicatrix; 1st segment in males about as long as 3rd, while in females a little longer; other segments much shorter, gradually diminished in length; in females basal halves of 3rd–4th segments (Fig. 4) covered with dense white pubescence (sometimes poorly developed or lost, Fig. 5), as well as bases of other segments; dark portions of antennal segments covered with very fine sparse dark-brown pubescence (Fig. 6).

Prothorax in males and females about as long as basal width (or about 1.1 times shorter than basal width); anteriorly thorax wider than posteriorly; lateral spines long and acute, slightly located in front of middle; pronotum convex; most of pronotal area glabrous, roughly sculptured, with small irregular punctation and often with small scattered white spots; each dot bears a small short pale seta; central elongated area more or less smooth, irregular, surrounded by white curved lines often partly reduced, which can be accompanied with bigger elongated white spots (in the most pubescent female), sometimes pronotum without any white spots (in the least pubescent male).

Scutellum triangular, with glabrous wide or narrow area along middle and dense white pubescence laterally. Elytra moderately wide, widest near middle, or sometimes before middle, in males about 2.1 times longer than middle width, in females 1.9–2.0 times longer than middle width; strongly attenuated posteriorly in males, or moderately attenuated in females; humeral angles distinct, but rounded; elytral punctation large, dense, irregular, partly joined; dorsal elytral carinae hardly visible or totally obliterated; humeral carinae obliterated, smooth, with about same punctation as dorsal elytral surface; sutural white stripe very narrow, often partly or totally lost; humeral and external dorsal stripes strongly reduced; in males only apical parts of stripes developed; in females external dorsal stripes nearly complete, though irregular and many times interrupted anteriorly, or represented in anterior half by a row of spots only; humeral stripes in females never reaching elytral anterior half; sometimes in females internal dorsal elytral stripes also presented as a row of small white spots anteriorly; marginal stripes usually complete, but in males strongly narrowed anteriorly or totally disappearing in elytral anterior half (holotype); in females marginal stripes rather wide along elytral posterior half, became narrow anteriorly and here partly reduced or several times interrupted.

Legs long and thin; hind tibiae in males less than 2.0 times of length of hind tarsi; hind tibiae in females more than 2.0 times of length of hind tarsi; 2nd and 3rd tarsal segments subequal in length; 1st segment of hind tarsus about 2.0 times longer than 2nd or 3rd segments; 3rd tarsal segment emarginated near middle or a little deeper; claw segments of anterior tarsi in males a little shorter than 2nd and 3rd segments combined; claw segments of anterior tarsi in females longer than 2nd and 3rd segments combined; femora nearly pubescent externally, especially in females; femora in males usually partly glabrous externally; internal sides of middle and posterior femora nearly glabrous, internal sides of anterior femora partly pubescent; all tibiae and tarsi covered with very dense white pubescence.

Abdomen covered with dense white recumbent pubescence, with scattered small glabrous spots in males, less numerous in females; pygidium in males widely rounded, postpygidium and last abdominal sternite shallowly emarginated; last abdominal tergite narrowly rounded and last abdominal sternite narrowly truncated in females.

Material examined. Holotype male, Inner Mongolia, Alxa Left Banner, Tengger Desert, elev. 1314 m, 38°28'N, 105°13'E, host plant: *Psammochloa villosa* (Trin.) Bor, 3.X.2018, leg. Xuefeng Chen (IZCAS, IOZ(E) 2002909). Paratypes (8 specimens). 2 males, 2 females, same data as holotype (one male and one female in IZCAS, IOZ(E) 2002910 and IOZ(E) 2002911, another two in CMD); 1 male, 1 female, same data to holotype but 2.X.2018 (CCXF); 1 female, Inner Mongolia,

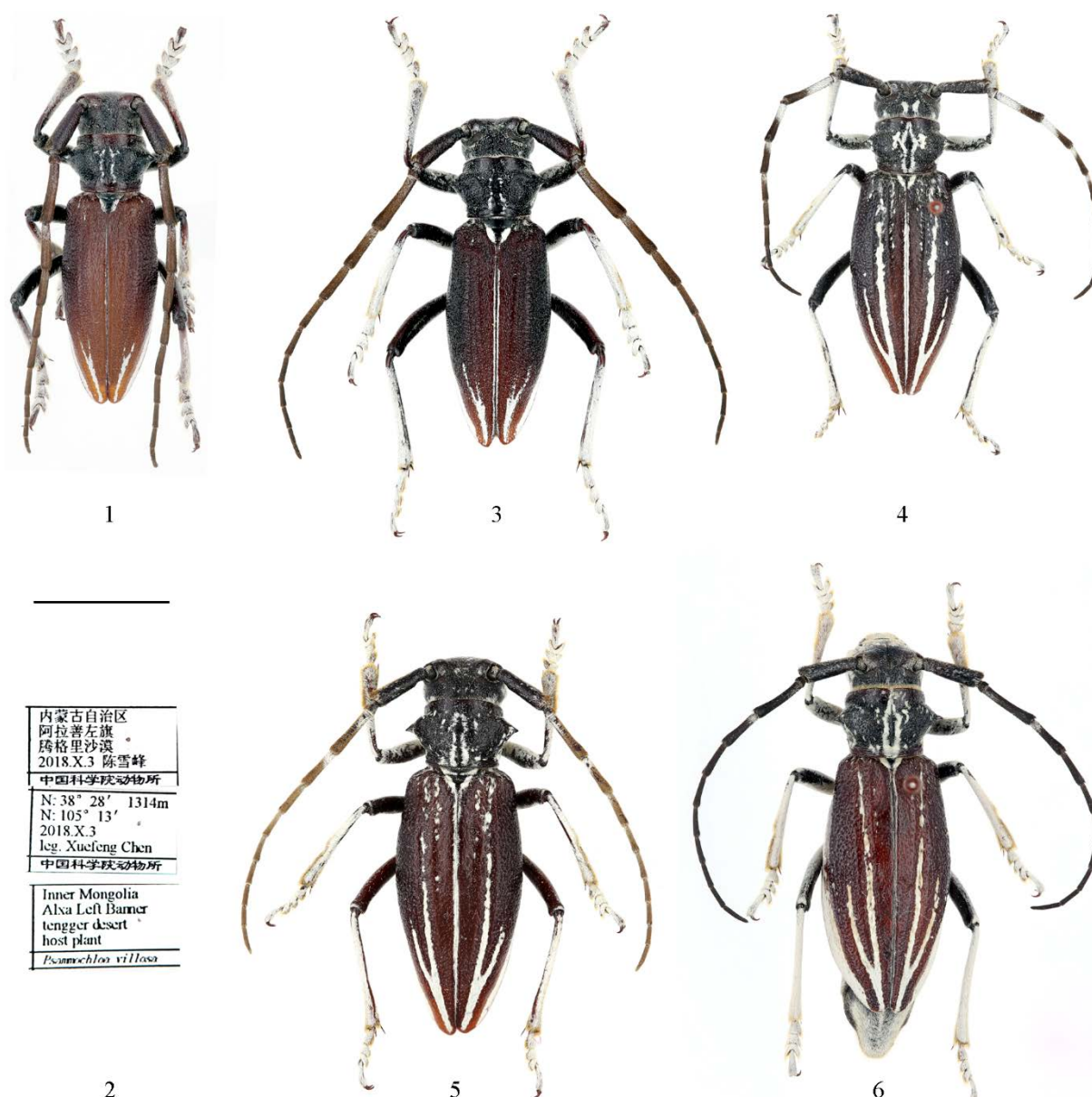
Alxa Left Banner, Tengger Desert, elev. 1314 m, 38°28'N, 105°13'E, host plant: *Psammochloa villosa* (Trin.) Bor, 13.VIII.2018, leg. Jianhu Shen (IZCAS, IOZ(E) 2002912); 1 male, Inner Mongolia, Alxa Left Banner, Tengger Desert, elev. 1312 m, 38°31'N, 105°01'E, 1.X.2017, leg. Xinxin Zhao (IZCAS, IOZ(E) 2002913).

Host Plant. *Psammochloa villosa* (Trin.) Bor (Figs 7–8).

Biology. Adults are active in the daytime in the sandy deserts (Figs 9–10) from the middle of August to the beginning of October; the first specimen collected on 1.X.2017, was found at 10: 00 am, while those collected on 3.X.2018 were found during 9:30–15:00 eating leaves and stems of *Psammochloa villosa* (Trin.) Bor. Oviposition takes place on bases of the stems of host plants. Beetles try to escape by quick crawling (cannot fly for hind wings reduced). One individual was videoed on 19.VIII.2018, at the locality which is beside the Tian'ehu (Swan lake) of Alxa Left Banner, Tengger Desert (personal communication with Li Ren and Bao Li, video taken by Jun Du), showing that it can crawl quite fast on the sand.

Distribution. China (Inner Mongolia).

Etymology. The species is named after Mr. Xinxin Zhao (Inner Mongolia, China), who collected the first specimen of the type series and kindly donated it to IZCAS.



Figures 1–6. *Eodorcadion (Ornatodorcadion) zhaoi* sp. nov. 1. Holotype, male. 2. Labels of the holotype. 3. Paratype, male. 4–6. Paratypes, females. Scale bar = 10 mm.



Figures 7–10. Biological pictures of *Eodorcadion (Ornatodorcadion) zhaoi* sp. nov. 7. Male on the food plant. 8. Female before oviposition. 9–10. Landscape of the localities.

4 Discussion

Before the new taxon, 22 species had been described in the subgenus *Eodorcadion (Ornatodorcadion)* (Tavakilian & Chevillotte, 2019). Among them, five species have two subspecies, the subspecies are not included in the key, they are: *E. (O.) dorcas scabrosum* Namhaidorzh, 1972, *E. (O.) exaratum argali* (Jakovlev, 1889), *E. (O.) intermedium kozlovi* (Suvorov, 1912), *E. (O.) jakovlevi fangzhoui* Lin & Danilevsky, 2011 and *E. (O.) kaznakovi zhilini* Lin & Danilevsky, 2011. All taxa are distributed in China except the following 10 taxa which are endemic to Mongolia: *E. (O.) consentaneum* (Jakovlev, 1899), *E. (O.) dorcas dorcas* (Jakovlev, 1901), *E. (O.) exaratum argali* (Jakovlev, 1889), *E. (O.) exaratum argali* (Jakovlev, 1889), *E. (O.) gorbunovi* Danilevsky, 2004, *E. (O.) intermedium intermedium* (Jakovlev, 1889), *E. (O.) intermedium kozlovi* (Suvorov, 1912), *E. (O.) oryx* (Jakovlev, 1895), *E. (O.) savitskyi* Danilevsky, 2014 and *E. (O.) zichyi* (Csiki, 1901). Most of

these were recorded from Inner Mongolia by Hua (2002), without specimens referenced. We followed Danilevsky (2007), Löbl & Smetana (2010) and Lin & Tavakilian (2019), to exclude them from China fauna.

Key for distinguishing species of male *Eodorcadion* (*Ornatodorcadion*) (exceptional glabrous forms not included).

1. Elytra without white sutural stripe 2
Elytra usually with white sutural stripe 4
2. Elytra without carinae and white stripes *E. (O.) consentaneum* (Jakovlev, 1899) 3
Elytra usually with longitudinal carinae and white stripes 3
3. Elytra between stripes with relatively smooth sculpture; body smaller (length 12.5–24.0 mm, width 4.9–8.2 mm); glabrous forms rather rare in east part of the area, but can dominate in west *E. (O.) egregium* (Reitter, 1897) 3
Elytra between stripes with relatively rough sculpture; body bigger (length 18.9–24.6 mm, width 7.0–9.0 mm); glabrous forms unknown *E. (O.) brandtii* (Gebler, 1841) 3
4. Only sutural white stripe always present; all other elytral white stripes (dorsal, humeral and marginal) absent *E. (O.) oreadis* (Reitter, 1897) 5
Dorsal, humeral and marginal elytral stripes usually distinct 5
5. White elytral stripes irregular with corroded margins, often diffused; elytra between stripes with very rough sculpture; glabrous forms dominate in certain populations *E. (O.) dorcas* (Jakovlev, 1901) 6
White elytral stripes regular in form of straight line, though sometimes partly reduced 6
6. Body cuticle and antennae usually more or less reddish, legs reddish 7
Body cuticle always black, antennae and legs also usually black with rather rare exceptions 10
7. Dorsal elytral stripes never complete, more or less reduced anteriorly, sometimes represented by apical portions only; totally glabrous forms unknown *E. (O.) zhaoi* sp. nov. 8
External dorsal elytral stripes always complete 8
8. Elytra widely oval; interspaces rather smooth, shining; glabrous forms unknown 9
Elytra elongated with rather rough sculpture between white stripes; glabrous forms unknown *E. (O.) potanini* (Jakovlev, 1889) 9
9. Elytral cuticle, antennae and legs more or less reddish *E. (O.) jakovlevi* (Suvorov, 1912) 10
Elytral cuticle and antennae black, legs partly reddish *E. (O.) wenhsini* Yang & Danilevsky, 2013 10
10. Elytra between white stripes relatively smooth, shiny 11
Elytra between white stripes more or less roughly sculptured; glabrous forms impossible 13
11. Elytral stripes very narrow, filiform, much narrower than interspaces; glabrous forms known but very rare *E. (O.) novitzkyi* (Suvorov, 1909) 12
Elytral stripes more or less wide, wider or about as wide as interspaces, or a little narrower 12
12. Sutural stripe about always diffusely widened with irregular margins; glabrous forms unknown *E. (O.) oryx* (Jakovlev, 1895) 13
Sutural stripe about always filiform with straight margins; rare glabrous forms known in many populations *E. (O.) exaratum* (Ménétriés, 1854) 13
13. Sutural stripe usually accompanied by more or less complete internal dorsal stripes often partly or totally fused with sutural stripe making it very wide 14
Sutural stripe usually not accompanied by internal dorsal stripes 17
14. Internal dorsal elytral stripes very short and narrow, not fused with sutural stripe *E. (O.) argaloides* Breuning, 1947 15
Internal dorsal elytral stripes often complete or fused (totally or partly) with sutural stripe 15
15. Antennal segments usually with white basal rings 16
Antennal segments without white basal rings *E. (O.) savitskyi* Danilevsky, 2014 16
16. Sutural stripe and internal dorsal stripes never totally fused forming central white area; humeral stripe and external dorsal stripe usually without humeral fusion; vertex with dense pubescent areas hiding cuticle; antennae and legs nearly always totally black *E. (O.) gorbunovi* Danilevsky, 2004 17
Sutural stripe and internal dorsal stripes often totally fused forming central white area; humeral stripe and external dorsal stripe often with humeral fusion; vertex usually without dense pubescent area hiding cuticle; antennae and legs sometimes reddish *E. (O.) intermedium* (Jakovlev, 1889) 17
17. Body very big, more than 20 mm and up to 25 mm (biggest known in Dorcadionini) 18
Body small, up to 20 mm 19
18. Elytra rather flat; all femora reddish *E. (O.) heros* (Jakovlev, 1899) 19
Elytra rather convex; all femora black *E. (O.) zichyi* (Csiki, 1901) 19
19. Elytra elongated; basal rudiments of internal dorsal stripes always distinct *E. (O.) ornatum* (Faldermann, 1833) (*E. (O.) pseudornatum* Danilevsky & Lin, 2012—male unknown) 20
Elytra wide, regularly oval; internal dorsal stripes totally absent 20
20. Body big and relatively wide 21
Body small (up to about 15 mm) and relatively narrow; a single male known *E. (O.) potaninellum* Danilevsky & Lin, 2012 21
21. Antennae much longer than body *E. (O.) kaznakovi* (Suvorov, 1912) 22
Antennae hardly longer than body (a single male without exact locality known) *E. (O.) licenti* (Pic, 1939) 22

Funding This work was supported by NSFC programs 31472029 (Meiying Lin) and J1210002, and partly by a grant (Y229YX5105) from the Key Laboratory of the Zoological Systematics and Evolution of the Chinese Academy of Sciences.

Acknowledgement We express our gratitude to Mr. Xinxin Zhao and Mr. Jianhu Shen for supplying us with specimens for study and to Steven Lingafelter (Arizona, USA) and Gérard L. Tavakilian (Paris, France) for reviewing the original draft of this paper. We thank Alexey Moseyko (Russia) for transferring the materials between the first and third authors.

References

- Breuning, S. 1947. Nouveaux cérambycides paléarctiques (Col.) (4e notes). *Miscellanea Entomologica*, 43 [1946]: 141–149.
- Danilevsky, M.L. 2007. *Revision of the genus Eodorcadion Breuning, 1947 (Coleoptera, Cerambycidae). Collection systématique, Vol. 16.* Magellanes, Andréy. 227pp.
- Danilevsky, M.L. 2014. *Longicorn Beetles (Coleoptera, Cerambycoidea) of Russia and Adjacent Countries. Part 1.* Higher School Consulting 1, Moscow. 518pp, 36pls.
- Danilevsky, M.L., Lin, M.Y. 2012a. A contribution to the study of China Dorcadionini (Coleoptera, Cerambycidae). Part 1. *Humanity space, International Almanac*, 1(Suppl. 4): 4–19.
- Danilevsky, M.L., Lin, M.Y. 2012b. A contribution to the study of China Dorcadionini (Coleoptera, Cerambycidae). Part 2. *Humanity space, International Almanac*, 1(Suppl. 4): 20–35.
- Hua, L.Z. 2002. Cerambycidae. In: Hua, L.Z. (ed.). *List of Chinese Insects, Vol. II.* Zhongshan University Press, Guangzhou. pp. 189–237.
- Lin, M.Y., Danilevsky, M.L. 2011. Two new subspecies of *Eodorcadion* Breuning, 1947 (Coleoptera, Cerambycidae) from Helan Mountains (Helanshan), Inner Mongolia. *Euroasian Entomological Journal*, 10(3): 381–382, 380, pl. 8.
- Lin, M.Y., Tavakilian, G. 2019. Subfamily Lamiinae. In: Lin, M.Y., Yang, X.K. (eds.). *Catalogue of Chinese Coleoptera Volume IX Chrysomeloidea: Vesperidae, Disteniidae, Cerambycidae.* Science Press, Beijing. in press
- Löbl, I., Smetana, A. 2010. *Catalogue of Palaearctic Coleoptera. Vol. 6. Chrysomeloidea.* Apollo Books, Stenstrup. 924 pp.
- Tavakilian, G., Chevillotte, H. 2019. Titan: base de données internationales sur les Cerambycidae ou Longicornes. Version. Available from <http://titan.gbif.fr/index.html> (accessed 17 January 2019).
- Yang, C.W., Danilevsky, M.L. 2013. Description of a new species of the genus *Eodorcadion* Breuning, 1947 from Inner Mongolia, China (Coleoptera, Cerambycidae, Lamiinae, Dorcadionini). In: Lin, M.Y., Chen C.C. (eds.). *In Memory of Mr. Wenhsin Lin.* Formosa Ecological Company, Xinbei (Sin-pak). pp. 93–95.