

# Les cahiers Magellanes

Review of *Eodorcadion* Breuning, 1946 of « *intermedium*-group » from Mongolia & China with a description of a new species (*Coleoptera*, *Cerambycidae*)



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## Review of *Eodorcadion* Breuning, 1946 of « *intermedium*-group » from Mongolia and China with a description of a new species (Coleoptera, Cerambycidae)

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#### Summary

Five species are regarded as closely related: *E. intermedium* (Jakovlev, 1889), *E. oryx* (Jakovlev, 1895), *E. heros* (Jakovlev, 1899), *E. zichyi* (Csiki, 1901) and *E. gorbunovi* sp. n. *E. gorbunovi*, sp. n. described from Mongolia (south part of East-Gobi aimak) is very close to *E. intermedium*. *E. i. kozlovi* (Suvorov, 1912), stat. n. is regarded as eastern subspecies of *E. intermedium*. A short morphological diagnosis of each taxon is supplied with colour photographs of several specimens, determination of its type-locality, description of its geographical distribution, taxonomical remarks and the list of studied specimens. Three new synonyms are proposed: *Neodorcadion intermedium* Jakovlev, 1889 = *N. mongolicum* Jakovlev, 1895 = *Eodorcadion kaszabi* Heyrovsky, 1965, syn. n.

#### Résumé

Cinq espèces sont considérées comme apparentées : *E. intermedium* (Jakovlev, 1889), *E. oryx* (Jakovlev, 1895), *E. heros* (Jakovlev, 1899), *E. zichyi* (Csiki, 1901) et *E. gorbunovi* sp. n. *E. gorbunovi*, sp. n. décrite de Mongolie (partie sud d'East-Gobi aimak) est très proche d' *E. intermedium*. *E. i. kozlovi* (Suvorov, 1912), stat. n. est considérée comme une sous-espèce orientale de *E. intermedium*. Pour chaque taxon, on trouvera la diagnose morphologique, quelques photos en couleur, la détermination de la localité typique, l'aire de répartition, les notes taxonomiques, la liste des spécimens étudiés. Trois synonymes nouveaux sont établis : *Neodorcadion intermedium* Jakovlev, 1889 = *N. mongolicum* Jakovlev, 1895 = *Eodorcadion kaszabi* Heyrovsky, 1965, syn. n.

#### Key words

Coleoptera, Cerambycidae, *Eodorcadion*, taxonomy, new species, Mongolia, China.

Eodorcadion « intermedium »—group consists of 5 species: E. intermedium (Jakovlev, 1889), E. oryx (Jakovlev, 1895), E. heros (Jakovlev, 1899), E. zichyi (Csiki, 1901) and E. gorbunovi sp. n. distributed in Mongolia and North China. The group is characterized by well developed white elytral design (glabrous forms are unknown). Usually two dorsal elytral stripes present (only in E. zichyi a form with one dorsal stripe is dominated and in E. heros only such form is known), though internal dorsal stripe is often totally or partly fused with sutural stripe.

All species of the group are vicariants. All taxa are connected with Lasiagrostis, which is the food plant for larvae and imagos.

Abbreviations used in the text : ZIN – collection of Zoological Institute, St.-Petersburg; MD – author's collection.

#### Eodorcadion intermedium (Jakovlev, 1889) (Figs. 1-19)

Neodorcadion intermedium Jakovlev, 1889 : 246-247 (« Nord du Gobi, près de la fontaine Ourdjume et à Outben-Kotel »— South-Gobi Aimak).

Neodorcadion mongolicum Jakovlev, 1895 : 508-510 (« de Mongolie »), **syn. n.**Eodorcadion kaszabi Heyrovsky, 1965 : 42, 44-45 (« Bajanchongor Aimak : 5km S von Somon Bogd, umveit von Tujn gol, 1200 m » and « Ubur-changai Aimak : arc Bogd ul, Umgebung Somon Chovd, 1600 m »), **syn. n.** 

Diagnosis. - Body moderately large. Elytral sculpture very rough; elytra usually more or less granulated anteriorly and dentated along shoulders; internal dorsal elytral stripe free or fused (partly or totally) with sutural stripe forming large central white area; tibiae and usually certain parts of antennae are more or less reddish; elytral carinae usually indistinct, obliterated or sometimes slightly exposed.

Distribution. - Mongolia from north part of Gobi-Altai aimak (Dzabkhan River Valley) to Baian-Khongor aimak, Uver-Khangai aimak (totally), south part of Ara-Khangai aimak, south part of Central aimak, Central-Gobi aimak, South-Gobi aimak, north half of East-Gobi aimak.

Remarks. - E. intermedium was described after two syntypes. According to B. Namhaidorzh (1972), the type locality, Kotel-Usu well or Khutel-Us, is situated in South-Gobi aimak between two mountain ridges, Tost-Ula and Nemegt-Ula (south-west part of the aimak). Both syntypes (Figs. 1-2 - same specimens were studied by Namhaidorzh before 1972) do not match closely enough the original description. Both are males, while B. Jakovlev mentioned male and female; both males are about 16.5mm long, while Jakovlev's male must be 15mm and « female » – 18mm. Elytra of both males are abnormal and rather different, but such situation is not reflected in the original description, which is too general. Still, I regard both specimens as true syntypes, as they are characterized by very special characters reflected in the original description – antennae, legs, elytral borders and frons (in part) are red.

Neodorcadion mongolicum was described after series of specimens « trouvés en 1893 en Mongolie par M.Clemenz ». B. Jakovlev mentioned the size of one male (« 17mm ») and one female (« 20 mm »), but according to the text he used several males for his description.

Now in Zoological Institute (St.-Petersburg) three similar males (Fig. 3) - 14.5-16.5 mm long – are equipped with original Jakovlev's red type labels, but all without any geographical labels. A female (Fig. 4) - 19.5 mm - undoubtedly belongs to syntype series, though has only one original label in Russian [« V. Jakovlev's coll. »]. Besides, there is a very similar pair of males (17.5 mm and 20 mm) without Jakovlev's labels, but with the geographical labels in Russian [« N-W Mongolia, 20.VI-7.VII.1894, Clemenz » and « N-W Mongolia, 9.VII-10.VIII.1894, Clemenz »]. All these specimens look like members of one population.

The syntype series of *N. mongolicum* does not allow to identify exactly its geographical origin, as very similar specimens (collection of Zoological Museum, St.-Petersburg) are known from very wide area from Dzabkhan River Valley in the north part of Gobi-Altai aimak (Fig. 5) to Ushugin-Obo Mt. in the east part of Uver-Khangai aimak (Fig. 6). Besides, I've got similar specimens from near Beger in the east part of Gobi-Altai aimak. So the type locality of *N. mongolicum* could be delimited as Mongolian area southwards Chingan Mountain Ridge.

The syntypes of N. intermedium do not possess any character which could distinguish E. intermedium as a species from E. mongolicum. In general elytral and thoracic punctation and design are similar. The type locality of E. intermedium is situated at the south part of E. mongolicum type area. So, E. intermedium = E. mongolicum, syn. n.

*E. kaszabi* was described from two localities: Bogd environs in Baian-Khongor aimak and Khovd environs in Uver-Khangai aimak. Both localities are inside the area of *E. intermedium*. The original description is equipped with photographs of a male and a female; besides I've studied a syntype female in Heyrovsky collection in Prague Narodni Museum. The specimens used by L. Heyrovsky for his description are nearly identical to syntypes of *E. mongolicum*. So, *E. intermedium* = *E. kaszabi*, syn.n.

Heyrovsky did not compare his new species with any other species, but mentioned: « Dem *E. ornatum* Fald. nahestehend. », which was totally out of the reality.

All localities, mentioned above, are situated westwards from 103°E. So, I accept the area of the nominative form as the western half of the species area.

I can suppose now several local subspecies inside the very large area of *E. intermedium*, but now all infraspecific names belong to the nominative form and to *E. i. kozlovi* (Suvorov, 1912), **stat. n.** 

#### Eodorcadion intermedium intermedium (Jakovlev, 1889) (Figs. 1-9)

Material. - 1 male, SYNTYPE of Neodorcadion intermedium with two labels: « Mong. centr., 20-21.VIII.1886, G. Potanin », « Type », (ZIN); 1 male, SYNTYPE of Neodorcadion intermedium with two labels: « Mong. centr., 20-21.VIII.1886, G. Potanin » « intermedium Jak. type » (ZIN); 3 males, SYNTYPES of N. mongolicum, each with two labels: « Type », « Jakovlev's coll. » (ZIN); 1 female, SYNTYPE of Neodorcadion intermedium (?) with one label: « V.Jakovlev's coll. » (ZIN); 2 males, « NW Mongolia, 20.6-7.7.1894 and 9.7.-10.8.1894, Clementz » (ZIN); 1 male, « North Mongolia » (ZIN); 1 male, « left bank of Dzapkhyn River [Dzabkhan], 14.8.1927, Sevko leg. »(ZIN); 1 male, « Uver-Khangai aimak, south slope of Ushugin-Obo Mt., 2.8.1969, Zaitzev leg. » (ZIN); 1 female, PARATYPE of E. kaszabi, Bajankhongor Aimak, 5 km S somon Bogd, am Tujn gol, 1200 m, 24.6.1964, Kaszab exp. (Národní Muzeum, Praha-Kunratíce); 2 males and 1 female, Mongolia, Gobi-Altai Aimak, 45 km SE Beger, 45°30'N, 97°36'E, 2000 m, 26.VI.2002, S.Churkin leg. (MD); 1 male and 3 females, Uver-Khangai Aimak, Nugryn-Els, 15 km ESE Barun-Baian-Ulan, 19.8.1976, L. Medvedev leg. (MD); 1 female, Ara-Khangai Aimak, Tevshrulekh, VII.1972 (MD); 2 females, Central Aimak, Undzhul, 1976 (MD); 1 female, Baian-Khongor Aimak, Khulsyn River, 20 km SW Bon-Tszaium Lake, 5-6.7.1975, L. Medvedev leg. (MD); 1 female, Baian-Khongor Aimak, Bakhar, 30-31.VII.1980 (MD).

*Diagnosis.* - Elytra with regular dorsal white stripes, which are usually not fused; without wide white sutural area.

Body length in males: 14.5-21 mm, in females: 18-25.3 mm; body width in males: 4.7-8.2 mm, in females: 6.2-9.7 mm.

Distribution. - Mongolia: in general along east and south foothills of Khingai Mountain Ridge and in Lakes Valley eastwards to about 103°E. Known localities are: Gobi-Altai aimak: north part - Dzabkhan River Valley; east part - Beger; Baian-Khongor aimak: Khulsyn River, 20 km SW Bon-Tszaium Lake; Bakhar; middle level of Tuin-Gol River Valley (Namhaidorzh, 1972 – as E. mongolicum); Orog-Nur lake (Namkaidorzh, 1972 – as E. kozlovi); Erdene-Tzogt (Namhaidorzh, 1972 – as E. mongolicum); 5 km S Bogd (Heyrovsky, 1965 – as E. kaszabi); Uver-Khangai aimak: Nugryn-Els, 15 km ESE Barun-Baian-Ulan (Figs 7-8); south slope of Ushugin-Obo Mt.; 70 km E Bogdo (Namhaidorzh, 1972 – as E. kozlovi); between Arbai-Here and Gun-Nariyn (Namhaidorzh, 1976 – as E. mongolicum); Khovd environs, Artz-Bogdo Ridge (Heyrovsky, 1965 – as E. kaszabi); Ara-Khangai aimak: Tevshrulekh; Central aimak: Undzhul (the locality is situated far north-eastwards from the known area of the subspecies, but only two available females are not enough for exact identification of the population at infraspecific level).

*Remark.* - In general the taxon is characterized by great individual variability. A population from Nygryn-Els seems to consist of very big roughly sculptured specimens (Figs. 7-9), which are often covered with yellow pubescence (Fig. 9).

#### Eodorcadion intermedium kozlovi (Suvorov, 1912), stat. n., (Figs. 10-19)

Neodorcadion kozlovi Suvorov, 1912 : 71-73 (« Zentral Mongolei; Chutzen-chanda Brunnen » – South-Gobi Aimak).

Eodorcadion princeps, Namkhaidorzh, 1972 : 529 (« Barun-Sair, somon Altan-Shire »), not Jakovlev, 1899.

Materials. - 1 female, SYNTYPE of Neodorcadion kozlovi, with two labels: « Cent. Mongolia, Khutzen-Shanda well, 16.7.1909, Kozlov's exp. » and « Neodorcadion kozlovi, type m., G.Suvorov det. » (ZIN); 1 male, SYNTYPE? (not mentioned in the original description) with two labels: « Cent. Mongolia, Tzosto River [?], 28.VI-2.VII.1909, Kozlov's exp. » and « Neodorcadion kozlovi, type m., G. Suvorov det. » (ZIN); 1 male, East-Gobi aimak, 10 km NW Erdene, 13.8.1975, Gurieva leg. (ZIN) (with Namhaidorzh hand label : « Eodorcadion oryx, d. Namhaidorzh »); 1 male, θmnogov aimak (= South-Gobi aimak), Mandal-Obo, 26.7.1967, B.Namhaidorzh leg. (ZIN); 661 specimens in author's collection: 1 male and 3 females, South-Gobi aimak, Bulgan, 1.8.1970, 27.7.1971, 17.7-15.8.1972, L. Medvedev leg.; 6 males and 1 female, Mongolia, Central-Gobi Aimak, 100 km S Mandal-Gobi, 44°52'N, 105°23'E, 24.VII.1988, Szabóki leg.; 1 female, Central-Gobi Aimak, 90 km S Mandal-Gobi, 45°10'N, 105°39'E, 3.VIII.2002, 1250 m, M. Danilevsky leg.; 3 females, South-Gobi Aimak, Manlai, 44°03'N, 107°02'E, 1300 m, M. Danilevsky leg.; 262 males and 44 females, Mongolia, East-Gobi Aimak, 2 km SE Mandakh, 44°24'N, 108°13'E, 1300 m, 5-7.VIII.2002, M. Danilevsky leg.; 5 males and 1 female, Mongolia, East-Gobi Aimak, 11 km S Sain-Shand, 44°47'N, 110°07'E, 950 m, 11.VIII.2002, O. Gorbunov leg.

Diagnosis. - Elytra with usual humeral fusion between humeral and external dorsal stripes (Figs. 12-13, 17-18); internal dorsal stripe usually totally or partly fused with sutural stripe forming wide white sutural area widened anteriorly (Figs. 10, 12-13, 15-17, 19), similar to those of *E. oryx*; sometimes all stripes are more or less free (Figs. 11, 18); very rarely humeral and external dorsal stripes are totally fused (Figs. 15-16, 19); the last aberration is similar to the holotype of Neodorcadion princeps Jakovlev 1899.

Body length in males: 13.5-21.5 mm, in females: 17.2-35 mm; body width in males: 4.5-6.7 mm, in females: 6.5-9 mm.

Distribution. - The east part of the species area, in general eastwards from about 103°E: Central-Gobi aimak, South-Gobi aimak and East-Gobi aimak. Known to me localities are: South-Gobi aimak: Chutzen-Shanda well, near Mandal-Obo, 44°08'N, 104°05'); Mandal-Obo; Bulgan; Manlai, 44°03'N,

107°02'E; Khurmen environs (Namhaidorzh, 1972, as *E. kozlovi*); Khongoryn-Els sands, 60 km WNW Baian-Dalay (Namhaidorzh, 1972, as *E. kozlovi*); Central-Gobi aimak: 100 km S Mandal-Gobi, 44°52'N, 105°23'E; 90 km S Mandal-Gobi, 45°10'N, 105°39'E; 10 km NE Delger-Khangai (Namhaidorzh, 1972, as *E. kozlovi*); 30 km NE Delger-Khangai (Namhaidorzh, 1972, as *E. kozlovi*); 30 km S Delger-Khangai (Namhaidorzh, 1972, as *E. kozlovi*); 20 km W Lus (Namhaidorzh, 1972, as *E. kozlovi*); East-Gobi aimak: 2 km SE Mandakh, 44°24'N, 108°13'E; 11 km S Sain-Shand, 44°47'N, 110°07'E; 10 km NW Erdene; Barun-Sair near Altan-Shire (Namhaidorzh, 1972, as *E. kozlovi* and *E. princeps*); Argalant (Heyrovsky, 1964, as *E. intermedium*).

Remarks. - Neodorcadion kozlovi was described from « Zentral Mongolei; Chutzen-Shanda Brunnen 16.VII.1909 (Expedition P.K. Kozlov, coll. P. P. Semenov-Tian-Shansky). » on series of males (16-20 mm) and a female (22 mm). Now a series with original Suvorov's type labels preserved in Zoological Museum (St.-Petersburg) consists of two specimens: male (15.5 mm – Fig. 10) and a female (22.5 mm – Fig. 11). Namhaidorzh (1972) had in his disposal 10 syntypes. According to I. Kerzhner (2003, personal communication), the well Chutzen-Shanda is situated in the north part of South-Gobi aimak near Mandal-Obo (44°08'N, 104°05'E). One more male is preserved in the museum from the type locality (« 0mnogov aimak, Mandal-Obo, 26.7.1967, B. Namhaidorzh leg. »). All specimens from type locality are very similar to my series collected in 2002 (Figs 12-19). I regard all these populations as E. intermedium ssp. kozlovi. Still certain specimens of E. i. kozlovi are indistinguishable from the nominative form.

Plavilstshikov (1958) used in the key only one character for separation of his «  $E.\ mongolicum$  » from his «  $E.\ kozlovi$  » the wide fusion between humeral elytral stripe and external dorsal stripe at elytral base. According to the original description only one syntype male (the biggest) had a connection between humeral elytral stripe and external dorsal stripe at elytral base. This character is really absent in all known to me  $E.\ i.\ intermedium$ , but present in about 80% of  $E.\ i.\ kozlovi$  (Figs. 12-13, 17-18).

A male of « E. princeps », mentioned by Namhaidorzh (1972) as the first record of the species for Mongolia, must be just a corresponding form of E. i. kozlovi (normal « E. kozlovi » was also mentioned by him from same locality).

The description of *Neodorcadion princeps* Jakovlev, 1899 was based on a single male (« 18mm ») without exact geographical data. The holotype (18 mm) without geographical label (Fig. 20), preserved in Zoological Museum (St.-Petersburg), has an original label by Ménetries' hand « *D. ornatum* var. » mentioned in the original description and totally corresponds to it. The holotype is characterized by totally fused humeral and external dorsal elytral stripes forming rather wide joined humeral stripe, sutural stripe is also wide. In fact such elytral design is simply a very rare aberration known to me in many different taxa: *E. argali rugipenne*, *E.* 

*i. intermedium*, *E. i. kozlovi*, *E. oryx*. Among more than hundred *E. i. kozlovi*, collected by me in East-Gobi aimak only 6 males and 2 female have similar elytral design.

I treat the holotype of N. princeps as the corresponding aberration of E. ornatum (as it was reflected in the original label by Ménetries) because of: black legs, black antennae, absence of internal dorsal elytral stripe (so, not E. intermedium or E. oryx), moderately rough elytral sculpture near humeri similar to E. argali rugipenne Heyrovsky, 1967 (so not E. intermedium, or E. zichyi, or E. heros — besides much smaller than E. heros or E. zichyi), rather rough elytral sculpture near middle — just same as in syntype female of E. ornatum (so, not E. argali rugipenne). Besides, the syntype female of E. ornatum has very special strongly developed white pubescence of pronotum which is unknown to me in any specimen of related species, but just same as in holotype of N. princeps. So, E. ornatum = E. princeps, syn. n.

E. ornatum (Faldermann, 1833) was described (as Dorcadion) from « Mongoliae » on at least one male and one female (without size data). The original description is equipped with good colour drawing of a male. A syntype female (22.5 mm) is preserved in Zoological Institute (St.-Petersburg) without any geographical label (Fig. 21). It has the very same elytral design as pictured male with one dorsal white stripe. According to B. Namhaidorzh (1972) only glabrous form of E. ornatum is represented in Mongolia. So, the species was described from NE China.

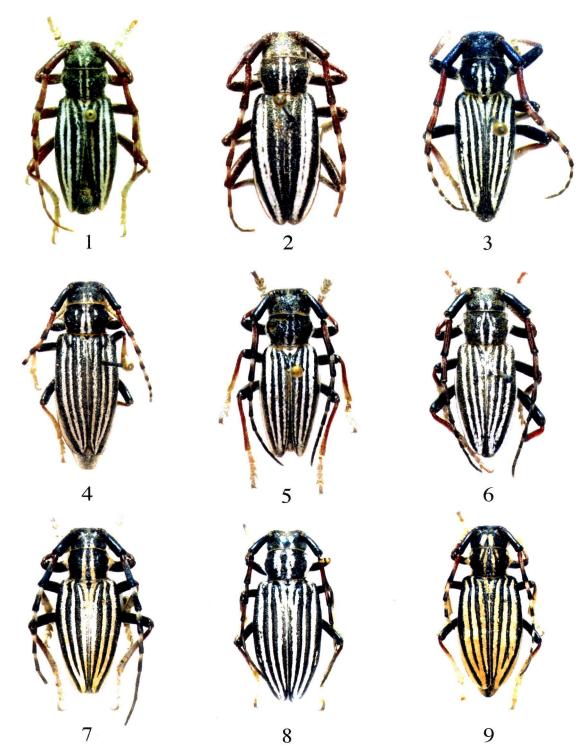
#### Eodorcadion gorbunovi sp. n. (Fig. 22-31)

Type locality. - Mongolia, East-Gobi Aimak, 7 km SW Khatan-Bulak, 43°07'N, 109°03'E, 1120 m.

Typical material. - Holotype, male: Mongolia, East-Gobi Aimak, 7 km SW Khatan-Bulak, 43°07'N, 109°03'E, 1120 m, 8-9.VIII.2002, M. Danilevsky leg. (author's collection); 87 PARATypes in author's collection: 10 males and 9 females, same days, same locality, M. Danilevsky and O. Gorbunov leg.; 34 males and 15 females, Mongolia, East-Gobi Aimak, 11 km SE Khatan-Bulak, 43°06'N, 109°16'E, 1240 m, 9.VIII.2002, M. Danilevsky and O.Gorbunov leg.; 15 males and 3 females, Mongolia, East-Gobi Aimak, 24 km SE Khatan-Bulak, 43°01'N, 109°23'E, 1000 m, 9.VIII.2002, M. Danilevsky and O. Gorbunov leg.; 1 male, Mongolia, East-Gobi Aimak, 23 km SE Khatan-Bulak, 43°04'N, 109°25'E, 1000 m, 9.VIII.2002, O. Gorbunov leg.

*Description.* - The new species is very close to *E. i. kozlovi*, but differs with some rather constant characters.

Body moderately big, black, usually without any brown cuticula area, with white pubescence; females often partly autochromal with partly yellow or brown pubescence (Figs. 29-31).



Figs. 1-9. Eodorcadion intermedium intermedium (Jakovlev, 1889) 1 - syntype (male) of *Neodorcadion intermedium* Jak. (« Mong. centr., 20-21.VIII.1886, G. Potanin »), 2 - syntype (male) of *Neodorcadion intermedium* Jak. (« Mong. centr., 20-21.VIII.1886, G. Potanin »), 3 - syntype (male) of *N. mongolicum* Jak. (« Type », « Jakovlev's coll. »), 4 - (?) syntype (female) of *N. mongolicum* Jak. (« V Jakovlev's coll. »), 5 - male (« left bank of Dzapkhyn River [Dzabkhan], 14.8.1927, Sevko *leg.* »), 6 - male(« Uver-Khangai aimak, south slope of Ushugin-Obo Mt., 2.8.1969, Zaitzev *leg.* »), 7 - male (Uver-Khangai Aimak, Nugryn-Els, 15 km ESE Barun-Baian-Ulan, 19.8.1976, L. Medvedev *leg.*), 8 - female, (same locality), 9 - female (same locality).

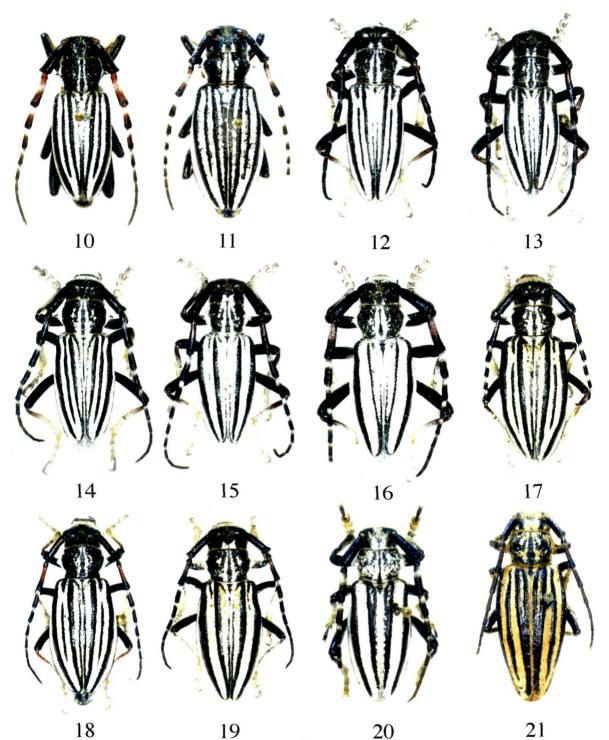
Head black, only antennal tubercles often brown; frons with fine punctation, covered with very dense pubescence totally hiding cuticula (as well as lateral head parts beneath and behind eyes; antennal tubercles internally glabrous shining with small sparse or big, rugose punctation; interantennal depression very deep, rugosely punctated with sparse .pubescence; vertex exposed with deep and dense relatively regular punctation, always with large areas covered by dense pubescence, hiding cuticula (usually absent in *E. i. kozlovi*); vertex pubescent areas sometimes smaller and triangular, or larger, reaching antennal tubercles, but always present (absent only in one specimen).

Antennae always black (in *E. i. kozlovi* - 2<sup>nd</sup> joint and basal areas of 1<sup>st</sup>, 3<sup>rd</sup> -4<sup>th</sup> and more joints usually red-brown), in males always considerably longer than body, surpassing elytral apex by 2 or 4 apical joints; in females – usually a little shorter than body, or a little longer, sometimes much shorter than body, attaining only last elytral fourth; 1<sup>st</sup> antennal joint with distinct cicatrix, with small regular double punctation (interspaces between bigger dots with very fine punctation, which is indistinct in females and sometimes in males), with strong short semierect black setae, lateral sides with sparse white pubescence; 3<sup>rd</sup> - 8<sup>th</sup> joints with wide white basal pubescent rings, white ring of 8th joint sometimes narrow or indistinct, sometimes (especially in females) narrow rings are also distinct on 9<sup>th</sup>-10<sup>th</sup> joints; antennal rings in females wider, denser, with distinct semierect black setae; apical joint with a constriction near apex; 1<sup>st</sup> joint slightly longer than 3<sup>rd</sup> (or slightly shorter), usually about as long as 2<sup>nd</sup> and 3<sup>rd</sup> combined, about 1.3-1.6 times longer than 4<sup>th</sup>.

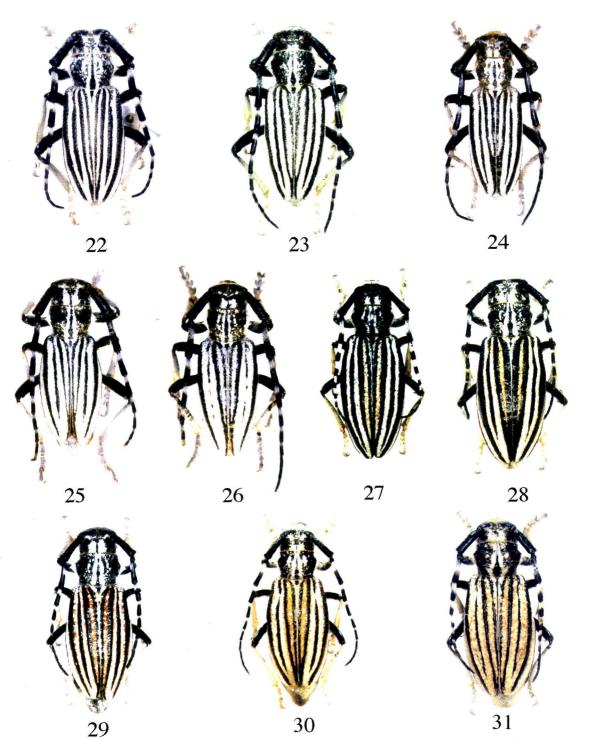
Prothorax anteriorly a little wider than posteriorly, transverse; in males about 1.1 times shorter than basal width, or about as long as basal width, in females from 1.2 to 1.3 times wider than basal width; thoracic spines long and acute; pronotum usually with relatively wide and smooth central longitudinal glabrous shining line dilated posteriorly (in *E. kozlovi* usually narrower and roughly sculptured); glabrous line divides more or less wide area of dense white pubescence, which can be dilated anteriorly or posteriorly; if white areas are narrow, they are accompanied by a pair or several small white spots, which can be joined in short white stripes anteriorly; lateral denuded pronotal areas are very roughly sculptured, each with at least a pair of tubercles and depressions, covered with short semierect stout setae.

Scutellum transverse, semicircular, covered with dense white pubescence, with usually wide central glabrous shining line.

Elytra convex, humeral elytral depression distinct or indistinct, anteriorly parallel sided or slightly widened at middle, or in females often oval, strongly widened at middle; in males from 1.8 to 2.2 times longer than wide; in females from 1.5 to 1.9 times longer than wide; in females curved elytral margin often strongly exposed laterally; humeri usually roughly sculptured anteriorly, granulated or dentated; normal sculpture is represented by four long exposed carinae on each elytron (humeral, external dorsal, internal dorsal and praesutural) with white dense stripes in between (lateral, humeral, external dorsal, internal dorsal and sutu-



Figs. 10-19. *Eodorcadion intermedium kozlovi* (Suvorov, 1912). 10 - (?) syntype (male) of *Neodorcadion kozlovi* Suv. (« Cent. Mongolia, Tzosto River [?], 28.VI-2.VII.1909, Kozlov's exp. »), 11 - syntype (female) of *Neodorcadion kozlovi* Suv. (« Cent. Mongolia, Khutzen-Shanda well, 16.7.1909, Kozlov's exp. »), 12 - male (Mongolia, East-Gobi Aimak, 2 km SE Mandakh, 44°24'N, 108°13'E, 1300 m, 5-7.VIII.2002, M. Danilevsky *leg.*), 13 - male, (same locality), 14 - male (same locality), 15 - male (same locality), 16 - male (same locality), 17 - female (same locality), 18 - female (same locality), 19 - female (same locality). Figs. 20-21. *Eodorcadion ornatum* (Faldermann, 1833). 20 - holotype (male) of *Neodorcadion princeps* Jak., 21 - syntype (female) of *Dorcadion ornatum* Fald.



Figs. 22-31. *Eodorcadion gorbunovi*, sp.n.: holotype (22) and paratypes (23-31). 22 - holotype, male (Mongolia, East-Gobi Aimak, 7 km SW Khatan-Bulak, 43°07'N, 109°03'E, 1120 m, 8-9.VIII.2002, M. Danilevsky *leg.*), 23 - male (Mongolia, East-Gobi Aimak, 24 km SE Khatan-Bulak, 43°01'N, 109°23'E, 1000 m, 9.VIII.2002, M. Danilevsky *leg.*), 24 - male (Mongolia, East-Gobi Aimak, 23 km SE Khatan-Bulak, 43°04'N, 109°25'E, 1000 m, 9.VIII.2002, O. Gorbunov *leg.*), 25–26 - males (Mongolia, East-Gobi Aimak, 11 km SE Khatan-Bulak, 43°06'N, 109°16'E, 1240 m, 9.VIII.2002, M. Danilevsky *leg.*), 27-28 - females (same locality), 29 - female (Mongolia, East-Gobi Aimak, 23 km SE Khatan-Bulak, 43°04'N, 109°25'E, 1000 m, 9.VIII.2002, M. Danilevsky *leg.*), 30 - female (Mongolia, East-Gobi Aimak, 11 km SE Khatan-Bulak, 43°06'N, 109°16'E, 1240 m, 9.VIII.2002, M. Danilevsky *leg.*), 31 - female (Mongolia, East-Gobi Aimak, 7 km SW Khatan-Bulak, 43°07'N, 109°03'E, 1120 m, 8-9.VIII.2002, M. Danilevsky *leg.*)

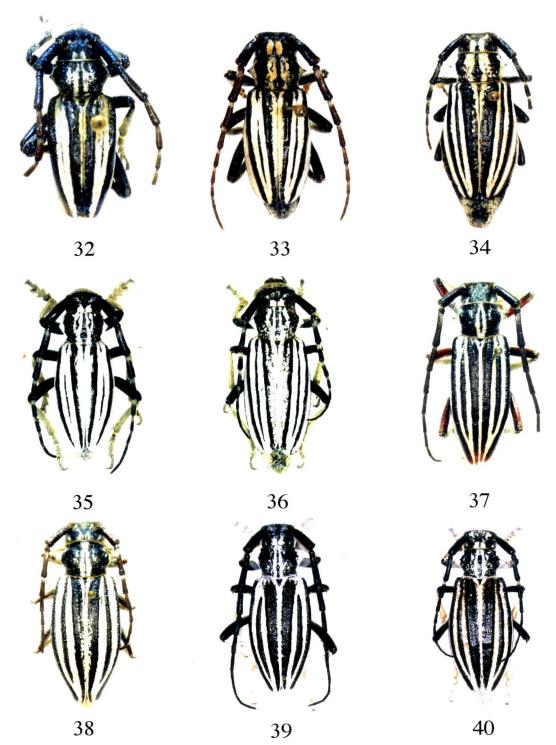
ral. Very rarely carinae obliterated, indistinct, looking like slightly exposed glabrous lines. In females white stripes are often spotted with vellow or brown pubescence (Figs. 29-31). Sometimes only internal dorsal stripes are spotted with brown (Fig. 28) and much darker than others. In E. i. kozlovi elytral carinae usually indistinct, obliterated or sometimes slightly exposed; praesutural carinae often absent. All carinae roughly sculptured, anteriorly granulated; humeral carinae reach elytral apices or not (Fig. 24). Humeral stripes are nearly always widely or narrowly joined apically with external dorsal stripes; sutural stripes always very narrow, a little wider anteriorly and sometimes indistinct posteriorly (Figs. 23, 28); sometimes internal dorsal and praesutural carinae are fused behind middle, so internal dorsal white stripes become short, disappear behind middle (Fig. 23); sutural stripe and internal dorsal stripes are never totally fused forming central white area (usual situation in E. i. kozlovi and typical for E. oryx); internal dorsal stripes never disappear forming large glabrous area between sutural and external dorsal stripes (like in E. heros or E. zichyi); very often internal dorsal stripes are narrower than humeral or external dorsal stripes, which are about equal (Fig. 22); or all stripes are about equal in width; usually white stripes are a little wider than glabrous interspaces; sometimes much wider (Fig. 25, 31), or humeral and external dorsal stripes are nearly fused (Fig. 26); humeral fusion between humeral and external dorsal stripes (typical for E. i. kozlovi) present very rare. Strong semierect short elytral setae distinct only along glabrous areas, dark or pale (especially in females). Epipleurae usually reddish.

Legs always black (in *E. i. kozlovi* all tibiae and femora bases usually redbrown); only one (!) specimen with reddish anterior tibiae and reddish bases of middle and posterior tibiae; all tarsi and tibiae densely covered with white pubescence totally hiding cuticula; femora more or less glabrous apically, middle and posterior femora totally glabrous on internal side; setae brushes of anterior and middle legs light-yellow.

Abdomen with pygidium and postpygidium, as well as last female tergite more or less broadly rounded, sometimes in females truncate; last abdominal sternites truncate apically or slightly emarginated. Ventral body side covered with very dense white pubescence totally hiding cuticula.

Body length in males: 14.5-21.2 mm, in females: 15.9-25.7 mm; body width in males: 4.7-6.9 mm, in females: 6-9.3 mm.

Distribution. - Mongolia: the investigated area of the new species is situated in the southernmost part of East-Gobi Aimak southwards sandy landscapes of Gulon-Mankhany-Els and Elsen-Usny-Els. All known populations were discovered in the nearest south environs of somon Khatan-Bulak to about 20 km southwards. The species inhabits depressions of stony hilly landscapes covered with big and numerous plants of Lasiagrostis. Males and females were often observed feeding rather high on the stems of the plants.



Figs. 32-36. *Eodorcadion oryx* (Jakovlev, 1895). 32 - holotype (male) of *Neodorcadion oryx* Jak., 33 - male (« Nordl. Mongolei, Changai, Leder »), 34 - female (« Nordl. Mongolei, Changai, Leder »), 35 - male (Mongolia, Uver-Khangai Aimak, 50 km NW Aiverkhei, 45°51'N, 101°58'E, 1800 m, 19.VII.2002, S. Churkin *leg.*), 36 - female (same locality). Figs. 37-38. *Eodorcadion heros* (Jakovlev, 1899). 37 - holotype (male) of *Neodorcadion heros* Jak. (« China »), 38 - female (« S Alashan, VI and beginning of VII.1873, Przhevalsky »). Figs. 39-40. *Eodorcadion zichyi* (Csiki, 1901). 39 - male (Mongolia, East-Gobi Aimak, 18 km SSW Khuvsgel, 43°28'N, 109°35'E, 1300 m, 9-10.VIII.2002, M. Danilevsky *leg.*), 40 - female (Mongolia, East-Gobi Aimak, 2 km SE Khuvsgel, 43°36'N, 109°41'E, 940 m, 10.VIII.2002, O. Gorbunov *leg.*).

No *Eodorcadion* were known before from the region. The area of *E. gorbunovi* is delimited from the area of *E. i. kozlovi* (the most similar species) by the area of *E. zichyi*.

Remarks. E. intermedium is very similar to E. gorbunovi sp.n. but differs from the new species by many small characters connected with cuticula colour, punctation and pubescence: antennae and legs are usually partly red-brown (very rarely totally black); vertex usually without dense pubescent areas hiding cuticula; elytral carinae usually indistinct, obliterated or sometimes slightly exposed, with less rough sculpture; praesutural carinae often absent, so elytra with wide white central pubescent area; humeral stripe and external dorsal stripe often with humeral fusion.

I preliminary identify as *E. gorbunovi* sp. n. two males (which are not included in paratype series) with the label: « Dornogov aimak [East-Gobi aimak], 30 km SSE Tenger-Nur Lake, 4.8.1971 » (ZIN), collected by « B.Namhaidorzh » and « D. Magmarsuren » and identified by B.Namhaidorzh as « *E. oryx* ». The materials were published (Namhaidorzh, 1976) as « *E. oryx* » tegether with specimens from two closely situated localities: Sulan-Here and Shokhoi-Nur Lake, though all three localities were attributed to South-Gobi aimak. All three localities are situated in 30-90 km southwards the area of my series of *E. gorbunovi* sp.n. The specimen are similar to *E. gorbunovi* sp.n., with very rough elytral sculpture and similar white elytral stripes, though in one male internal stripe is strongly reduced; antennae are totally black as in *E. gorbunovi* sp.n., but size is relatively small (15-15.5 mm long) and all tibiae are reddish. Most probably this southernmost population of *E. gorbunovi* could be described as its subspecies.

#### Eodorcadion oryx (Jakovlev, 1895) (Figs. 32-36)

Neodorcadion oryx Jakovlev, 1895: 506-509.

*Material.* - 1 male, HOLOTYPE, with two labels : « *oryx* Jak. » and « Type » [red](ZIN); 3 males and 1 female, with label : « Nordl. Mongolei, Changai, Leder » (ZIN); 6 specimens in author's collection : 1 male, Mong. mer., Barun-Bajan—Ulan [Uver-Khangai aimak], 18.8.1966, Dlabola *leg.*; 2 males and 3 females, Mongolia, Uver-Khangai Aimak, 50km NW Aiverkhei, 45°51'N, 101°58'E, 1800 m, 19.VII. 2002, S.Churkin *leg*.

Diagnosis. - Body small. Elytra relatively smooth, much smoother than in *E. intermedium*; humeri often with several granules, which can be totally indistinct; antennae and legs are totally black; humeral and external dorsal stripes very wide with rather narrow black line in between; internal dorsal stripe fused with sutural stripe forming large white sutural area.

Body length in males: 13.5-17.3 mm, in females: 17.5-20.7 mm; body width in males: 5-6.1 mm, in females: 6.8-7.8 mm.

Distribution. - Only two localities are definitely known to south-east from Khangai Mountains in Uver-Khangai aimak: Barun-Baian-Ulan and 50km NW Aiverkhei, 45°51'N, 101°58'E.

Remarks. - E. oryx was described without any geographical data (and without size data). The original description was undoubtedly based on a single male (15.4 mm long) preserved now in the collection of Zoological Museum. The holotype (Fig. 32) is characterized by exceptional elytral design (abnormally narrow sutural white stripe and so abnormally wide internal dorsal glabrous carinae), which is precisely reflected in the original description. Other 4E oryx in the Museum's collection (identified by Suvorov and Baeckmann) are sure conspecific with holotype, though differ from the latter by less deep elytral punctation and by normally wide sutural stripe and narrower glabrous dorsal internal carinae. All 4 specimens and holotype have several granules near humeri, which are nearly indistinct in one male; so the main Plavilstshikov's (1958: 480) distinguishing character of E oryx – the presence of humeral granules – is wrong. These granules are also indistinct in all my specimens of E oryx.

As far as I know, no exact distributional data on *E. oryx* were published up to now. Three localities from East-Gobi aimak (near Tenger-Nur Lake, near Shokhoi-Nur Lake and near Sulan-Khere) published by Namhaidorzh (1976) [and wrongly attributed by him to South Gobi aimak], as it was mentioned above concern *E. gorbunovi* sp. n. (I've studied two males from near Tenger-Nur, preserved in Zoological Institute, St.-Petersburg, and identified by Namhaidorzh as *E. oryx*).

So, *E. oryx* seems to be represented by several small populations near south-east part of Khangai mountains. It must be in vicariant relations with neighbour populations of *E. intermedium*.

 $E. \ oryx$  easily differs from  $E. \ intermedium$  by smooth elytra and from  $E. \ argali$  by wide sutural white stripe.

Neodorcadion oryx var. hedini Pic, 1935 (with red legs) is in fact E. intermedium kozlovi. A male of the taxon (most probably holotype) is preserved in Pic's collection (Paris) with the label (by Pic's hand): « S Mongoliet 1927 » and « Sven Hedins Exp. Ctr. Asien Dr. Hummet ». The record of E. oryx (based on one elytron only) from East-Gobi aimak by L. Heyrovsky (1964) also belongs to E. intermedium kozlovi.

#### Eodorcadion heros (Jakovlev, 1899) (Figs. 37-38)

Neodorcadion heros Jakovlev, 1899 : 237-239 (« montibus Alaschanicis meridionalibus... »)

*Materials*. - 1 male with 3 labels:  $1^{st}$  - in Russian: [« China »],  $2^{nd}$  - « *heros* m. », 3d - in Russian: [« coll. of V. Jakovlev »] (ZIN); 1 female, HOLOTYPE with 2 labels:  $1^{st}$  - in Russian: [« S Alashan, VI and beginning of VII.1873, Przhevalsky »],  $2^{nd}$  - « *heros* ».

*Diagnosis*. - Very big. Elytra with very rough sculpture, strongly granulated anteriorly; only one dorsal elytral stripe present on each elytron; internal dorsal elytral stripes absent; elytral stripes in female much wider than in male; male elytra relatively flat; antennae black; all femora are reddish.

Body length in male : 21.5 mm, in female : 24.6 mm; body width in male : 7 mm, in female : 9 mm.

Distribution. - Alashan area in North China. No exact localities are known.

Remarks. - Neodorcadion heros Jakovlev, 1899 was described after one female (« 24mm »). Only two specimens are known to me.

*E. heros* is very close to *E. zichyi* and was regarded as its synonym by B. Namhaidorzh (1972). It differs from *E. zichyi* by rather flat male elytra, less rough pronotal sculpture and red femora (that is impossible in *E. zichyi*). Besides the area of *E. zichyi* is delimited from Alashan Desert by the area of *E. gorbunovi* sp. n. So *E. heros* and *E. zichyi* are different species.

#### Eodorcadion zichyi (Csiki, 1901) (Figs. 39-40)

Neodorcadion zichyi Csiki, 1901: 115 (« Wüste Gobi, Naran beschrieben »). Eodorcadion heros, Namhaidorzh, 1972: 528-529 (part.) (« = zichyi, syn. n. »), not Jakovlev, 1899.

*Material.* - 146 specimens in author's collection: 2 males with labels in Mongolian: « Omnogov, Khatan-Bulak sum., Gashuuny els, 15.7.1974 and 15.7.1975; 1 female, Khoer-Dzan, 4-15.8.1987, V. Skrypnik *leg.*; 104 males and 26 females, Mongolia, East-Gobi Aimak, 18 km SSW Khuvsgel, 43°28'N, 109°35'E, 1300 m, 9-10.VIII.2002, M. Danilevsky *leg.*; 7 males and 6 females, Mongolia, East-Gobi Aimak, 2 km SE Khuvsgel, 43°36'N, 109°41'E, 940 m, 10.VIII.2002, O. Gorbunov *leg.* 

Diagnosis. - Body very big (up to 32 mm long – the biggest known Dorcadionini species). Elytra strongly convex both in males and in females; with very rough sculpture, strongly granulated anteriorly; only one dorsal elytral stripe present on each elytron; very rarely internal dorsal stripes also present; among about 150 specimens of *E. zichyi* known to me, 6 males and 5 females (all in my collection) have external dorsal stripes; antennae and legs totally black.

Body length in males: 16-24.7 mm, in females: 22.7-32 mm; body width in males: 5.8-8.9 mm, in females: 9-11.6 mm.

Distribution. - Sands in the south part of East-Gobi aimak : Gulon-Mankhany-Els and Elsen-Usny-Els.

Remarks. - The species is very close to E. heros. The following distinguishing characters must be regarded as preliminary because of insufficient number of E. heros specimens known to me: male elytra always convex, pronotum with much rougher sculpture; legs are always totally black.

I regard *E. zichyi* as a separate species because its area is delimited from China Alashan (where *E. heros* is known from) by the area of *E. gorbunovi* sp. n.

Specimens with internal dorsal elytral stripe can be very similar to E. gorbunovi (or to E. intermedium). But among all known to me E. gorbunovi sp. n. and all known to me (several hundreds) E. intermedium, specimens with total absence of internal dorsal line are absent.

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