

Ground-beetles (Coleoptera: Carabidae) collected by Dr Petar Beron from the Chinese Karakorum

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Introduction

In the months of August and September 1988 Dr Petar Beron collected various animals from the Karakorum Range, southwestern China. The ground - beetles material (43 specimens) consists of 5 genera and 8 species respectively. Two species of *Cymindis* differ from the ones that have been known from this genus so far. They are described below as new species.

Somewhat earlier several foreign specialists had studied some of the specimens included here. Their unpublished results are presented on the corresponding places in the faunal list.

Methods

The papers of EMETZ (1972a; 1972b; 1973) have been used in the determination of the diagnostic characters and descriptions of two new species. The abbreviations used further in the text are: HL - length of head (excluding mandible); HW - width of head (including eyes); PL - length of pronotum's midline; PW - maximum width of pronotum; EL - length of elytra; EW - maximum width of elytra; SP - setiferous puncture/s; NMNHS - National Museum of Natural History, Sofia.

Faunal list

Nebria (Eunebria) sublivida Semenow, 1889 - main crest of the Karakorum Range, the Shaksgan River, 3900-4400 m, 31.VIII, 1 ♀, coll. NMNHS; Karakorum Range, Peak K 2, Qogir Su Camp, 1.IX, 2 ♂♂, 1 ♀, coll. NMNHS; other 4 specimens in coll. G. Ledoux & P. Roux; det. G. Ledoux & P. Roux. Distribution: Chinese Turkestan, Karakorum.

Bembidion (Peryphus) obscurellum corporaali Netolitzky, 1934 - main crest of the Karakorum Range, Peak K 2, Qogir Su Camp, 1.IX, 12 ♂♂, 8 ♀♀, coll. NMNHS; det. B. Guéorguiev. Distribution: Karakorum.

Amara (Paracelia) frivola Bates, 1878 - the massif of Aghil (in the Karakorum Range), Mazar Road, 102-105 km, 26.VIII, 1 ♀, coll. NMNHS; 1 specimen in coll. F. Hieke; det. F. Hieke. Distribution: Tjan Shan, the mountains of Kirgizia and Tadzhikistan (incl. Pamir), Karakorum.

Amara (Amathilis) parvicollis Gebler, 1833 - the massif of Aghil (in the Karakorum Range), Mazar Road, 102-105 km, 26.VIII, 1 ♀, coll. NMNHS, 1 specimen in coll. F. Hieke; det. F. Hieke, sub *A. (A.) rufescens* Dej. Distribution: Bulgaria (Black Sea Coast), Ukraine, Ciscaucasia, southwest Siberia, Kazakhstan, Altai-Sayan Mt. Land, Middle Asia, Karakorum.

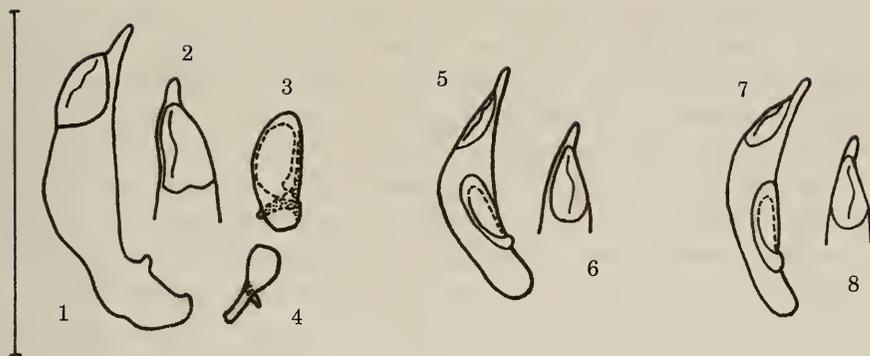
Harpalus (Harpalus) fuscipalpis (Sturm, 1818) - the massif of Aghil (in the Karakorum Range), Mazar Road, 102-105 km, 26.VIII, 2 ♂♂, coll. NMNHS; det. B. Guéorguiev. Notes: hind femora ventrally below anterior margin with 1 SP; apex of medial lobe dorsally identical with the one portrayed by KATAEV (1989: Fig. 48). Distribution: central and east Europe, Armenia, Transcaucasia, South Siberia, Kazakhstan, Altai-Sayan Mt. Land, Tjan Shan, Alaj, Mongolia, west China (incl. Karakorum), Pamir, Kashmir, Tibet, northern part of Nearctic.

Harpalus (Hypsinephus) salinus agonus Tschitscherine, 1894 - the massif of Aghil (in the Karakorum Range), Mazar Road, 102-105 km, 26.VIII, 1 ♂, coll. NMNHS; det. B. Guéorguiev. Notes: ratio PW/PL - 1,45; ratio EL/PL - 2,73; humeral denticle of elytra clear; left tibia with 3 spikes on the subapical tubercle while right tibia with 2 such spikes; lateral margins and basal foveae of pronotum totally unpunctated; hind trochanteres below posterior margin with 6-9 SP; apex of medial lobe dorsally as the one portrayed by KATAEV (1984: Fig. 12). Distribution: central and east Tjan Shan, Pamir, Karakorum, northwest Tibet, Kashmir.

Cymindis (Iscariotes) uyguricus sp. n.

Holotype ♂, labelled "CHINA, Karakorum Mazar Road, 102-105 km 26.VIII.1988, leg. P. Beron"; paratype ♂, same data as holotype; both preserved in coll. NMNHS.

Differential diagnosis. In general view of male genitalia, delicately punctated disc and shape of pronotum, and some external ratios this species is mostly related to *C. semenowi* Jacowlew, 1890 (Table 1). It differs from the latter by the median lobe thicker in middle, with its basal part more crooked (Fig. 1; Fig. 7), a straighter apex and an apical orifice slightly hemiopic (Fig. 2; Fig. 8), by the left paramere more oval (Fig. 3; Fig. 7), by the ratios HL/HW and EL/EW (Table 1), and, probably, by the vicarious distribution. The new species is also close to *C. jakowlewi* Semenow, 1889, mostly in the general view of male genitalia and the apical orifice slightly hemiopic. However the former is distinguished by a median



Figs. 1-4. Male genitalia of *Cymindis (Iscariotes) uyguricus* sp. n. (holotype). Scale line = 1 mm. Median lobe: lateral view (Fig. 1); dorsal view (Fig. 2); left paramere (Fig. 3); right paramere (Fig. 4).

Figs. 5-6. Male genitalia of *Cymindis (Iscariotes) jakovlevi* Sem. (after Emetz, 1973). Scale line unknown. Median lobe and left paramere in lateral view (Fig. 5); apex of the median lobe in dorsal view (Fig. 6).

Figs. 7-8. Male genitalia of *Cymindis (Iscariotes) semenowi* Jak. (after Emetz, 1973). Scale line unknown. Median lobe and left paramere in lateral view (Fig. 7); apex of the median lobe in dorsal view (Fig. 8).

lobe not so pyramidal in middle, with its basal part more crooked (Fig. 1; Fig. 5) and the apex straighter (Fig. 2; Fig. 6), by the shape of left paramere (Fig. 3; Fig. 5), the wrinkled disc of pronotum which is not transverse, by the ratios HL/HW, PW/PL, EL/EW (Table 1), and the different area of distribution.

Description. Body suboval, punctated and pubescent. Head, pronotum, prosternum and first third of metasternum dark red colored while the rest of body more or less yellow monochrome so body looks bicoloured (paratype with obscure line along suture). Total length of holotype 7,8 mm, of paratype 8,9 mm; maximum width of holotype 3 mm, of paratype 3,5 mm. Microsculpture isodiametric, visible on elytra, missing on head and pronotum. Head punctated, longer

Table 1

Variation data of some external ratios in the specimens of *Cymindis uyguricus* sp. n., *C. semenowi* Jak. and *C. jakovlevi* Sem.

Ratio	<i>Cymindis uyguricus</i>	<i>Cymindis semenowi</i> (after Emetz, 1973)	<i>Cymindis jakovlevi</i> (after Emetz, 1973)
Length (in mm)	7,8 - 8,9	7,5 - 10,2	8 - 9
Width (in mm)	3 - 3,5	2,8 - 3,8	2,8 - 3,5
HL/HW	1,12 - 1,15	1,2 - 1,3	1,2 - 1,3
PW/HW	1,13 - 1,15	1,07 - 1,24	1,1 - 1,2
PW/PL	1,17 - 1,23	1,2 - 1,35	1,3 - 1,35
EW/PW	1,6 - 1,68	1,6 - 1,9	1,5 - 1,7
EL/EW	1,45 - 1,47	1,5 - 1,7	1,5 - 1,6

than broad (Table 1); frontal furrows almost lacking; eyes prominent, longer than temporae; antennae reach end of first quarter of elytra or metathorax, third antennomere longer than first; mentum with large rounded monofide tooth. Pronotum subcordate, punctated (less in middle), wider than longer (Table 1), broadest in anterior third; disc subconvex; anterior margin nearly straight; front angles rounded, not prominent forward; lateral borders well explanate and sinuated towards moderately prominent hind angles; posterior margin convex; median furrow deep; basal foveae scarcely perceptible. Elytra flat, maximum dilated in posterior third, longer than broad and broader than pronotum (Table 1), in shoulders quite narrowed; intervals flat, with 1-2 rows of irregular punctures; striae punctated. Apterous. Metaepisterna twice longer than wide. Claws inside without denticles. Chaetotaxy: labrum anteriorly with 3 + 3 SP; clypeus with 1 + 1 SP; 2 + 2 supraorbital SP; pronotum laterally with two SP; 1 + 1 scutellar SP; unable to determine number and location of dorsal SP on third elytron interval; umbilicate series of each elytra of 12-14 SP; intersect of striae 2 and 7 beside apical margin with one SP; sternum 7 with 2 + 2 marginal SP; onychium with some setae underneath. Male genitalia on Fig. 1-4.

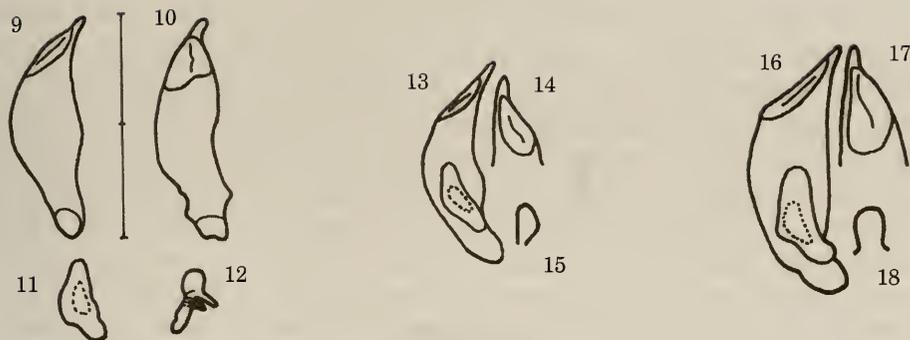
Etymology. The new species is named after the native population - Uyghurs inhabiting the region in which the type locality is situated.

Discussion. The great external similarity between *L. uyguricus* sp. n., *C. semenowi* and *C. jakovlevi* suggests a common origin of the three taxa. EMETZ (1973) cited *C. semenowi* (lectotype locality: South Mongolia) from Altai, Mongolia, the Gobi Desert, Ala Shan, Nan Shan, the depression of Tsaidam, the lake of Lop Nor. SEMENOW (1891) described *C. hyaloptera* from Polur, situated on the northern slope of the Kuen Lun Range; however, EMETZ (1973) considers this name as a synonym of *C. semenowi*. So, the find from Polur is the closest locality of *C. semenowi* to the type locality of *C. uyguricus* sp. n. *C. jakovlevi*, the other close species, occurs in East Pamir.

Cymindis (Paracymindis) beroni sp. n.

Holotype ♂ and four paratypes (2 ♂♂ and 2 ♀♀): "CHINA, Xinjing Uygur Aghil Daban, 4600 m 30.VIII.1988, leg. P. Beron"; 1 ♀ paratype: "CHINA, Karakorum Mazar Road, 102-105 km 26.VIII.1988, leg. P. Beron"; all specimens are preserved in coll. NMNHS.

Differential diagnosis. The new species is closest to *C. mannerheimi* Gebler, 1843 in general view of male genitalia, pronotum with lateral margins broader explanate, elytra without groove along sutura as well as adjacent area of distribution. Distinguishes from the latter by median lobe concave ventrally before apex, more bulging in middle, with basal part straighter (Fig. 9; Fig. 16) and apical orifice anopic and apex curver to right (Fig. 10; Fig. 17); by less elongated left paramere (Fig. 11; Fig. 16) and rotunder upper half of right paramere (Fig. 12; Fig. 18), the elytra intervals with 1-2 rows of punctures against 2-3 rows



Figs. 9-12. Male genitalia of *Cymindis (Paracymindis) beroni* sp. n. (holotype). Scale line = 1 mm. Median lobe: lateral view (Fig. 9); dorsal view (Fig. 10); left paramere (Fig. 11); right paramere (Fig. 12).

Figs. 13-15. Male genitalia of *Cymindis (Paracymindis) rufescens* Gebler (after EMETZ, 1972a). Scale line unknown. Medial lobe and left paramere in lateral view (Fig. 13); apex of the medial lobe in dorsal view (Fig. 14); upper half of the right paramere (Fig. 15).

Figs. 16-18. Male genitalia of *Cymindis (Paracymindis) mannerheimi* Gebler (after EMETZ, 1972a). Scale line unknown. Medial lobe and left paramere in lateral view (Fig. 16); apex of the medial lobe in dorsal view (Fig. 17); upper half of the right paramere (Fig. 18).

in *C. mannerheimi*. The new species looks also like *C. rufescens* Gebler, 1845 in general view of male genitalia, but differs from the latter by median lobe more bulging in middle and straighter basal part (Fig. 9; Fig. 13) and apical orifice anopic and apex curver to right (Fig. 10; Fig. 14). Further on, *C. beroni* sp. n. has less elongated left paramere (Fig. 11; Fig. 15) and rotunder upper half of right one (Fig. 12; Fig. 15), lateral margins of pronotum conspicuously broader, elytra without groove along the sutura, flat body, and different distribution.

Description. Body suboval, punctated and pubescent (less on thorax and middle of abdomen). Head, pronotum, elytra, prothorax and abdomen red-brown; appendages, lateral grooves of pronotum, elytra, epipleurae, meso- and metathorax, middle of first visible sternum lighter (sometimes head, pronotum and sutura lighter than elytra); mean length 9,32 mm (of holotype 9,8 mm); mean width 3,63 mm (of holotype 3,7 mm). Microsculpture isodiametric on elytra, missing on head and pronotum. Head with puntation (less developed in frons' middle area), 1,19-1,32 times longer than wide; frontal furrows shallow; eyes moderately prominent, shorter than or equal to temporae; antennae exceeding first quarter of elytra and beginning of metathorax, with 3rd article longer than first one; mentum with small bifide tooth. Pronotum cordate, punctated (less in middle), 1,29-1,42 times wider than longer and 1,21-1,31 times wider than head; broadest in anterior third; disc almost flat; anterior margin hardly concave; front angles rounded; lateral borders wide; hind angles weakly prominent; posterior margin convex; median furrow deep; basis with two broad and shallow foveae. Elytra flat, maximum dilated in last third, 1,37-1,45 times longer than broad and 1,53-1,74 times wider than pronotum; shoul-

ders rounded and hardly protruding forward; intervals flat, first and tenth with one row of irregular punctures, second to ninth with 1-2 (mostly 2) such rows; striae moderately deep, punctated. Apterous. Metaepisterna twice longer than wide; claws fine denticulated inside. Chaetotaxy: labrum anteriorly with 3 + 3 SP; clypeus with 1 + 1 SP; 2 + 2 supraorbital SP; pronotum laterally with two SP; 1 + 1 scutellar SP; unable to determine number and location of dorsal SP on third elytron interval; umbilicate series of each elytron of 11-15 SP; intersect of striae 2 and 7 beside apical margin with one SP; sternum 7 in both sexes with 2 + 2 marginal SP; onychium with 3-6 pairs of setae underneath. Male genitalia on Fig. 9-12.

Etymology. Named after Dr Petar Beron who been so kind to give me the material published here.

Discussion. The great external similarity between the new species and *C. mannerheimi* suggests a common ancestor. EMEY (1972a) recorded *C. mannerheimi* from Tarbagataj (type locality), Zaur, Dzhungarian Alatau, Tjan Shan, Pamir, and Hindukush (?). MANI et al. (1955) and MANI (1968) cited this species from the Northwest Himalayas at elevations of 3000-5000 m and from localities situated in the south and in the east of Karakorum. Probably the last finds can be related to *C. beroni* sp. n. or to another close form rather than to *C. mannerheimi*.

The part of the type series was earlier sent for determination to the Italian specialist A. Casale. The returned material is determined as follows: a female from the first locality is labelled "*Cymindis gruppo mannerheimi* Det. A. Casale 1989"; one male from first locality and the female from the second one are labelled "*Cymindis mannerheimi* Gbl. Det. A. Casale 1989".

Biogeographical notes

With the exception of *Bembidion obscurellum corporaali* (NETOLITZKY, 1943) and *Harpalus fuscipalpis* (КАТАЕВ, 1989), there are six new species for the ground-beetle fauna of Karakorum. Both new taxa and *Bembidion obscurellum corporaali* have been found only from Karakorum so far. *Amara parvicolis* has a Westpalaeartic, and *Harpalus fuscipalpis* - a Transholarctic range. The other three species have Central-Asian distribution.

Both the discovery of the two new taxa and the prevalence of carabid species with Endemic and Central-Asian ranges on Karakorum at the elevation of 2000 - 4600 m confirm the role of the Central-Asian Superprovince (sensu KRYZHANOVSKIY, 1965) for the faunal differentiation within the Palaeartic. This process includes allopatric speciation of young species (neoendemics) on the basis of ancient Mediterranean elements (*Iscariotes* Reiche, *Paracymindis* Jedlička). The most important factors in the evolution of the new species are the intensive Quaternary orogeny, the Pleistocene glaciations and the climatic changes after the end of the Pleistocene.

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References

- EMETZ V. M. 1972a. Materials to a revision of the genus *Cymindis* Latr. (Coleoptera, Carabidae) in the fauna of the USSR. I. The subgenera *Mastus* Motsch. and *Pseudomastus* Emetz subg. nova. - Ent. obozr., **51** (2): 321-327. (In Russian).
- EMETZ V. M. 1972b. The subgeneric system of the genus *Cymindis* Latr. (Coleoptera, Carabidae) in the fauna of the USSR. - Zool. Zhurn., **53** (2): 199-204. (In Russian).
- EMETZ V. M. 1973. Materials to a revision of the genus *Cymindis* Latr. (Coleoptera, Carabidae) in the fauna of the USSR. II. Subgenera *Iscariotes* Reiche and *Neopsammoxenus* Emetz subg. n. - Ent. obozr., **52** (1): 143-150. (In Russian).
- KATAEV B. M. 1984. A contribution to the knowledge of ground-beetles of the subgenus *Hipsinophus* Bates, genus *Harpalus* Latr. (Coleoptera, Carabidae). - Nasekomye Mongolii, **9**: 75-89. (In Russian).
- KATAEV B. M. 1989. New data on ground-beetles of the genera *Pangus* and *Harpalus* (Coleoptera, Carabidae) with a revision of some Palaearctic groups. - Nasekomye Mongolii, **10**: 188-278. (In Russian).
- KRYZHANOVSKIY O. L. 1965. Composition and Origin of the Terrestrial Fauna of Middle Asia. Leningrad. 420 p. (In Russian).
- MANI M. S. 1968. Ecology and biogeography of high altitude insects. Hague, Junk Publishers. XIII + 527 p.
- MANI M. S., S. SANDOKH, V. K. GUPTA, H. N. BAJAL. 1955. Entomological survey of the Himalayas. Part IX. - First Annotated Check-list of insects from the North-West (Punjab) Himalayas. - Agra University Journal of Research, **4** (2): 471-512.
- NETOLITZKY F. 1943. Bestimmungstabelle der *Bembidion*-Arten des paläarktischen Gebiets. - Koleopt. Rdsch., **29**: 1-70.
- SEMENOV A. 1891. Diagnoses Coleopterorum novorum ex Asia Centrali et Orientali. - Horae Soc. Entom. Ross., **25**: 262-382.

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Бегачи (Coleoptera: Carabidae), събрани от г-р Петър Берон в китайски Каракорум

Борислав ГЕОРГИЕВ

(Резюме)

Установени са 8 вида бръмбари - бегачи от китайската част на Каракорум, 2 от които се описват като нови за науката.

Cymindis (Iscariotes) uiguricus sp. n. е най-близък до *C. (I.) semenowi* Jac. и *C. (I.) jakowlewi* Sem. Сигурни морфологични белези, по които новият вид се отличава, са формата на пениса и на левия параметр (фиг. 1-3, 5-8), пропорциите HL/HW и EL/EW (таб. 1).

Cymindis (Paracymindis) beroni sp. n. е най-близък до *C. (P.) mannerheimi* Geb., от който се отличава ясно по формата на пениса, параметрите (фиг. 9-12, 16-17) и по-слабо пунктираните интервали на елитрите.

Въз основа на съвременните ареали на видовете е установено преобладаване на централноазиатските и ендемичните над останалите фаунистични елементи в района.