

New taxa of *Carabus* Linnaeus, 1758 (Coleoptera Carabidae) from Mongolia and North China (Inner Mongolia Province)

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ABSTRACT Three new *Carabus* Linnaeus, 1758 (Coleoptera Carabidae) are described and figured: *C. (Tomocarabus) filippovi* n. sp. from Mongolia, *C. (Morphocarabus) latreillei mengguicus* n. ssp. from North China (Inner Mongolia Province), and *C. (Cychrostomus) anchocephalus farinosus* from North China (Inner Mongolia Province). Comparative notes with the closest taxa are provided.

KEY WORDS *Tomocarabus*; *Morphocarabus*; *Cychrostomus*; new taxa; Mongolia; Inner Mongolia.

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INTRODUCTION

The morphological study of some populations of *Carabus* Linnaeus, 1758 (Coleoptera Carabidae) from remote areas of Mongolia and Chinese Inner Mongolia gave me the opportunity to identify three new taxa.

These interesting and unedited forms confirm the great naturalistic value of these areas and their relatively little-known biodiversity.

RESULTS

Systematics

Ordo COLEOPTERA Linnaeus, 1758
Subordo ADEPHAGA Schellenberg, 1806
Familia CARABIDAE Latreille, 1802
Subfamilia CARABINAE Latreille, 1802
Genus *Carabus* Linnaeus, 1758
Subgenus *Tomocarabus* Reitter, 1896

Carabus (Tomocarabus) filippovi n. sp. (Fig. 1)
<https://www.zoobank.org/25C582D0-0E54-4CFF-A34A-57D7BD3D8FDD>

MATERIAL EXAMINED. Holotype male: Mongolia, Hentei highlands, NE Ulan Bator, VI.2009, Evgenii Filippov legit. Paratypes: 1 male and 1 female, same data as the holotype. The holotype is temporarily housed at the author's collection (Prepotto, Udine, Italy) waiting to be definitively deposited in a public Institution.

DESCRIPTION OF HOLOTYPE. Oval and elongated shape. Small medium size *Carabus*, length including mandibles: 17 mm, maximum width of elytra: 5.9 mm. Dorsal surface slightly shiny, brown with slightly metallic luster, margins and primary foveae dark purplish. Legs, palpi and antennae black; tibiae black or dark brown. Head of small-medium size; eyes very convex; mandibles short and strong. Labial palpi bisetose. Pronotum subquadrate (1.37 times as broad as long), subparallel shape, not sinuated; sides

margined and very moderately bent upwards; hind angles very short and rounded, strongly bent downward, very slightly protruding behind the pronotum base. Pronotum densely and strongly punctured. Elytra very elongated, convex, shoulders prominent, maximum width of elytra at the apical quarter. Sculpture of elytra pentaploid, quite regular, primary foveae quite large and quite shallow, interrupted by two or three adjacent intervals. Aedeagus (Figs. 2, 3) elongated, sinuate on the ventral side, apex elongated and acuminate, depressed on the sides.

VARIABILITY. Very limited variability: as usual the shape is shorter in the female.

ETYMOLOGY. The new species is warmly dedicated to the honor of Evgenii Filippov (Saint Petersburg, Russia), lucky collector together with his brother Anatoly of the new species and who generously gave me the specimens.

REMARKS. *Carabus filippovi* n. sp. is attributed to the subgenus *Tomocarabus* according to the recent catalog by Deuve (2021) and belongs to the group of Siberian species grouped in the subgenus *Diocarabus* Reitter, 1896 by Imura (2002).

Between the “*Diocarabus*” species group the new species has closer affinities with *C. dorogostaiskii* Shilenkov, 1983 described from Vitim Plateau that is more than 1000 km away from the type locality of the new species. The numerous characters that permit to distinguish *C. filippovi* are larger size; body shape more elongated; darker color; antennae, palpi and tibiae black; stronger head; eyes strongly prominent; mandibles shorter and stronger, more uniformly arched; much stronger legs; pronotum of subquadrate shape, less convex, less cordate shape, margins less bent upwards; hind angles shorter and strongly bent downward; more regular sculpture of elytra, primary foveae smaller, less deep and more scattered, concolor; different shape of aedeagus with the apex stronger elongated and acuminate.

Subgenus *Morphocarabus* Géhin, 1885

Carabus (Morphocarabus) latreillei mengguicus
n. ssp. (Fig. 4)

<https://www.zoobank.org/3134C1DA-E522-4CD8-BC82-DBBF0F0FBD90>

MATERIAL EXAMINED. Holotype male: China,

Inner Mongolia Province, Tongliao, Ka'erqin, Jinbaotun, VIII.2022. Paratypes: 1 male and 1 female, same data as the holotype. The holotype is temporarily housed at the author's collection (Prepotto, Udine, Italy) waiting to be definitively deposited in a public Institution.

DESCRIPTION OF HOLOTYPE. Large size for the species length including mandibles: 26.5 mm, maximum width of elytra: 9.3 mm. Color uniformly black including antennae, legs and palpi; upper surface shiny; appendages black. Head of normal size, eyes prominent. Antennae with segments 5th to 8th forming tubercles very moderately prominent; before each tubercle with a glabrous longitudinal impression. Pronotum slightly cordate, subquadrate shape, about 1.45 times as wide as long; sides of pronotum widely margined and bent upwards; hind angles very prominent and diverging, forming an acute triangle strongly bent upwards. Elytra larger and shorter compared to all the other *C. latreillei* subspecies, as well as the shoulders that are strongly prominent. Sculpture of elytra triploid, nearly homodyname type, all the intervals moderately raised, only the primary ones are a little bit more convex; primary fovea small but distinct. Aedeagus (Figs 5, 6) quite short and stout, regularly curved; the apex is very wide, and spatula shaped.

VARIABILITY. Not any significant morphological variability for the paratypes.

ETYMOLOGY. The name attributed to the new subspecies indicates the region (Nei Menggu – Inner Mongolia) of its origin.

REMARKS. According to Deuve (2021), *C. latreillei* Fisher, 1822 is listed with three different subspecies: *C. latreillei latreillei*, *C. latreillei semicoriaceus* Kraatz, 1881 and *C. latreillei mandschurensis* Breuning, 1926. *Carabus latreillei mandschurensis* is considered as a synonym of *latreillei latreillei* by Kryzanovskij et al. (1995). The new subspecies is very well distinct from all the different subspecies of *C. latreillei* for several significant characters. Larger size and stout shape. Head larger and less wrinkled. The pronotum is larger, sub quadrate and not bell-shaped; the sides of pronotum are strongly margined and strongly bent upwards. The hind angles of pronotum are strongly acuminate, divergent and bent upwards.

Stouter and shorter elytra; strongly prominent shoulder. Male aedeagus wider, apex spatula shaped.

Subgenus *Cychrostomus* Reitter, 1896

Carabus (Cychrostomus) anchocephalus farinosus
n. ssp. (Fig. 7)

<https://www.zoobank.org/EB8D181F-F39C-4ED9-A3DC-3460F7E09546>

MATERIAL EXAMINED. Holotype male: China, Inner Mongolia Province, 30 Km NW Hohhot, 3/7. VI.2010, M. Janata legit. Paratype: 1 male: same

data as the holotype. The holotype is temporarily housed at the author's collection (Prepotto, Udine, Italy) waiting to be definitively deposited in a public Institution.

DESCRIPTION OF HOLOTYPE. Length including mandibles: 25.2 mm, maximum width of elytra: 8.5 mm. Color black with margins, frontal furrows, median sulcus of the pronotum and bottom of the elytral sculpture of a nice metallic bronze color; matte surface. Legs, antennae, and palps black. Head elongated, relatively narrow; frontal furrows wide and conspicuously long, deep, and strongly punctured, very slightly wrinkled; vertex moderately convex and slightly punctured. Eyes



Figures 1–3. *Carabus (Tomocarabus) filippovi* n. sp. Fig. 1: holotype; Fig. 2: aedeagus lateral view. Fig. 3: aedeagus frontal view. Figures 4–6. *Carabus (Morphocarabus) latreillei mengguicus* n. ssp. Fig. 4: holotype; Fig. 5: aedeagus lateral view; Fig. 6: aedeagus frontal view.

big and convex. Mandibles very elongated, falciform, slightly but regularly arched at the sides; basal tooth of the right mandible bifid; tooth of the left mandible more rudimentary, the basal tooth completely blunted. Labium bifid, very deeply indented. Chin tooth acuminate, shorter than the lateral lobes. Pronotum moderately transverse (1.2 times as wide as long), maximum width at the middle, strongly narrowing at the apex and less at the base; bell shaped; sides margined and bent upward; basal lobes strongly prominent; median sulcus clearly incised; surface of pronotum densely wrinkled transversely and very densely and very finely punctured towards the margins and along

the median line. Pronotum with two later setae, one basal and one medial. Elytra long oval, quite subparallel sides; very moderately convex; shoulders very strongly protruding forming and right angle; very wide side margins, strongly bent upward toward the shoulders. Sculpture of elytra forming row of small and elongated tubercles, all the intervals of the same size; just at the apex of elytra the 3 primary rows of tubercles fused forming a smooth rib. Aedeagus (Figs. 8, 9) typical of the species but slightly stouter in the median part and with the apex broader and more broadly rounded.

VARIABILITY. Not any significant morphological variability for the paratype.

ETYMOLOGY. The given name aims to highlight the particular and spectacular color of the new taxon which seems to be covered with metallic powder deposited on the margins, on the bottom of the elytral sculpture and on the furrows of the pronotum and elytra.

REMARKS. To date, the subgenus *Cychrostomus* consist of only two species typical of a large area of Northern China and in particular of the “Sichuan-Tibetan sub-zone”: *anchocephalus* Reitter, 1896 (polytypic species known from the mountains of Qinghai and the neighboring areas of Gansu, it is also reported from Shanxi) and *pseudoprosodes* Semenov et Znojko, 1932 (species with much more restricted distribution, apparently endemic to the vicinity of the city of Lanzhou in Gansu) (Deuve, 2013).

The *Cychrostomus* are rare *Carabus*, known on sporadic and spaced specimens probably due to specific ecological needs. The new described subspecies further expands the known range of *anchocephalus* and has numerous distinctive morphological characters that easy separate it from the other known subspecies: head less elongated and clearly less narrow; vertex smoother and less punctured. Bigger and more protruding eyes. Longer antennae. Mandibles less elongated, wider, and regularly arched at the sides. Basal tooth of the right mandible clearly bifid and not reduced to a single rudimentary tooth. Elytral sculpture different, all the intervals of the same size; the smooth ribs formed by the fusion of the 3 primary rows concern only the very apex of elytra.



Figures 7–9. *Carabus (Cychrostomus) anchocephalus farinosus* n. ssp. Fig. 7: holotype; Fig. 8: aedeagus lateral view. Fig. 9: aedeagus frontal view.

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