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A new *Nebria* species (Carabidae: Nebriini) and a new *Deltomerus* species (Carabidae: Patrobini) from high mountain areas of Azarbayjan-e Gharbi Province, Iran

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During a comprehensive study of the genus *Stenus* (Staphylinidae) along streams and river banks in Iran, some ground beetles (Carabidae) were also collected. In the high mountain areas along the Iranian-Turkish border in the province of Azarbayjan -e Gharbi, a *Nebria* and a *Deltomerus* species were found. These *Nebria* and *Deltomerus* species were clearly different from known Iranian species, but related to Turkish species.
Nebria (*Nebria*) *azarbayanei* sp. nov. is compared with the related *N.* (*N.*) *thonitida* Ledoux and Roux 1990. *Deltomerus* (*Deltomerus*) *veldkampi* sp. nov. is compared with the closely related *D. (D.) lodozi* Ledoux 1976. Differences between these new species and the related species are discussed. *Pterostichus cryobioides* Chaudoir 1868 and *Nebria* (*N.) mandibularis* Bates 1872 are recorded for the first time from Iran.

Key words: Coleoptera, Carabidae, *Nebria, Deltomerus, Pterostichus,* new species, new records, Iran.

INTRODUCTION

Within a sample of Iranian Carabid beetles collected by Johannes Frisch (Museum für Naturkunde, Berlin) and Sayeh Serri (Hayek Mirzayans Insect Museum, Tehran) given to me for identification, several interesting species were found, including a *Deltomerus*, two *Nebria* and a *Pterostichus* species different from known Iranian species(Löbl & Smetana, 2003). The *Deltomerus* species and one *Nebria* species were undescribed, and the description is given below.

MATERIAL AND METHODS

Morphological features of the beetles were examined using a stereomicroscope LEICA MZ12.5. Macro photos were taken using a Sony NEX 5N digital camera and Nikon macro 105 mm lens. Male genitalia were dissected, cleaned and mounted in Euparal® on transparent labels under the respective specimens. Drawings of aedeagi were made using photographs taken with a ZEISS Discovery V12 stereomicroscope. The morphological terminology is borrowed from Duff (2012).

Abbreviations used in the text are as follows:
Length: total body length (measured from the anterior margin of clypeus to the apex of elytra).

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HL: head length (measured from the anterior margin of clypeus to the base).
PL: pronotum length (measured along the middle line).
EL: elytral length (measured along suture from the elytral base to the apex).
HW: maximum width head.
PW: maximum width of pronotum.
EW: maximum width of elytra.

Acronyms of the collections:
MNB:Museum für Naturkunde, Berlin, Germany.
cMU: collection of Jan Muilwijk, Bilthoven, Nederland.
cVE: collection of Wim Veldkamp, Eibergen, Nederland.

RESULTS

Nebria (*Nebria*) *azarbayanei* sp. nov.

(Figs. 1 - 2).

Type material.
Holotype male with label: "Iran, Azarbayjan-e Gharbi/ Khoy – Siyah Chesmeh road/17 km W Zar Abad 2640m/N 38'45'39" E 044'28'35"/30.08.2008, lg. Frisch & Serri"/HOLOTYPUS (red label, printed)/*Nebria azarbayanei* sp. nov./Muilwijk det. 2014", Deposited in MNB. Paratype one male from the same place and date as holotype. Paratypewith label:"PARATYPUS(red label, printed)/*Nebria azarbayanei* sp. nov./Muilwijk det. 2014". Deposited in cMU.

Description.
Medium-sized*Nebria* with blackupperside and appendages.Length: 12.6mm. Habitus as in Fig. 1.

Head transverse (HL/HW 0.72), black, with a faint red spot, eyes small, slightly convex, temples almost parallel, about as long as the eyes. With superficial irregular reticulate microsculpture, and scattered shallow punctures. Margin of the labrum undulate, with six setiferous punctures. The antennae slender, reaching the anterior third of elytral length, antennomere I with two accessory setae and antennomere IV with five accessory setae.

Pronotum transverse (PL/PW 0.67), smooth, distinctly cordate, maximum width before the middle. Lateral bead rather broad, with shallow punctures, one setiferous puncture in the middle and another in the hind angle. Fore angles protruding as small lobes. Hind angles sharply angled, clearly pointing backwards and somewhat upwards. Fore and hind margins straight. Basal foveae large and deep, with shallow punctures. Microsculpture superficially reticulate. Middle line shallow, from fore margin to back margin.

Elytra oblong-elliptical (EL/EW 1.6), maximum width slightly after the middle. Humeri rounded. Striae clear, superficially punctated, interstriae flat, 3^{e} interval with three-four punctures. Scutellar pore present. Keel at apex clear. With superficial reticulate microsculpture, wingless.

Legs short and stout.

Ventral side: mentum with two teeth. Each sternite with two hairs, and two hairs on each side along the apical margin of the anal sternite. Meso- and metepisternum and first visible sternite with scattered shallow punctures. Mesoepisternaabout as long as broad.

Male genitalia: aedeagus short, base large as in Fig 2.

Intraspecific variation: length paratype: 12.6 mm.

Differential diagnosis: *N. (Nebria) azarbayanei* sp. nov. is compared with the related *N. thonitida* Ledoux and Roux 1990 from East Turkey. The lateral bead of the pronotum of *N. thonitida* clearly narrows to the fore angles, the red spot on the disc of the head more clear, eyes more protruding, elytral striae more flat, metatarsi more slender and appendages more rufous.

Distribution.
Known so far only from the type locality. Collected along a stream bank.

Etymology.
Named after the Iranian province where this species was found.

***Deltomerus* (*Deltomerus*) *veldkampi* sp. nov.**
(Figs. 3 - 5).

Type material.
Holotype male with label: "Iran Azarbayjan-e Gharbi/18 km S. Ziveh (Ulugh Dagh)/N 37'07'14" E 044'52'26"/01.09.2008, lg. Frisch & Serri".HOLOTYPUS(red label, printed)/*Deltomerus veldkampi* sp. nov./Muilwijk det. 2014", deposited in MNB. Paratypes, 13 males and 11 females from the same place and date as holotype. Paratypes with label: "PARATYPUS (red label, printed)/*Deltomerus veldkampi* sp. nov./ Muilwijk det. 2014".Paratypes are deposited in cMU, cVE and MNB.

Description.
A very large, dark *Deltomerus* with elongated metatrochanters visible from the upperside. Head black, pronotum and elytra very dark brown, only labrum, tarsi and palpi dark rufous. Length: 13.4 mm. Habitus as in Fig. 3.

Head as broad as long (HL/HW 0.99), eyes small, temples slightly longer than eye diameter. Neck constriction rather superficially, raised edge with coarse punctures. Frontal furrows distinct, rather deep. Disc a little bit shiny with scattered punctures, with three supraorbital and 3-5 occipital setiferous punctures on each side. Labrum slightly concave with five setiferous punctures. Antennae short, reaching backwards to the anterior sixth of the elytral length, antennomerae I and II with 4 accessory setae.

Pronotum subcordate and broad, transverse (PL/PW 0,83), lateral sides more or less parallel before the hind angles. Anterior margin straight, anterior angles small and not projecting before apex, lateral bead small with 4-9 setiferous punctures and 1 in the hind angles. Hind angles straight, not protruding laterally. Dull by irregular dense microsculpture, with scattered shallow punctures.
Inner basal foveae clear, half-moon shaped bent inwards, outer basal foveae reduced, short and straight. Middle line clear, evanescent to fore margin and hind margin.

FIGURE. 1. *Nebria (Nebria) azarbayanei* sp. nov., holotype male; habitus, dorsal aspect. Scale: 5 mm.

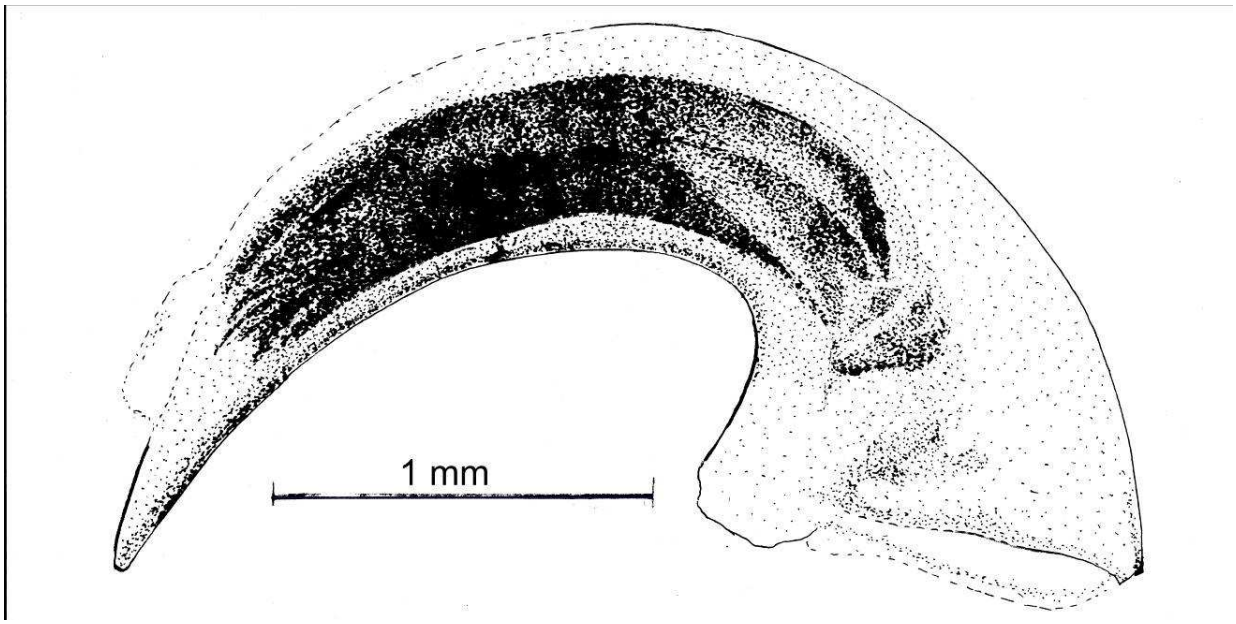

FIGURE 2. Median lobe of aedeagus, right lateral aspect. Scale: 1 mm.

Elytra oblong-elliptical (EL/EW 1.8) with maximum width in the middle, humeri indicated with a small tooth. Striae fine, interstriae flat, 3^{e} interstria with four setiferous punctures. Dull by regular dense microsculpture. Wingless.

Legs short, fore tibia with an elongated spine at the apex and at the base of the antennal cleaner. Tarsomeres with scattered setae. Apical lateral side of mesotibia with a dense bristle of setae. Metatrochanter slightly shorter than one half of metafemur length.

Ventral side: mentum bifid. Sternites with on each side one setiferous puncture in the middle, anal sternite at one side with three and at the other side with four setiferous punctures along the apical margin, meso- and metasternum and sternites at the lateral sides with scattered punctuation. Anal sternite of male with superficial basal circular impression.

Male genitalia: aedeagus strongly curved downwards with a large sclerite near the base (Fig. 4), distal part on left side narrowed before the rounded apex, with 3 spines as in Fig.5.

Intraspecific variation: length: 12.3-15.8. Paratypes with six setiferous punctures on the labrum. Immature specimens light brown.

Differential diagnosis: *D. (Deltomerus) veldkampi* sp. nov. is compared with *D. (Deltomerus) lodozi* Ledoux 1976, the only other known *Deltomerus* species with elongated metatrochanters. *D. lodozi* differs from the new species by more slender pronotum and body, setiferous punctures on interstriae V and VII, number of supraorbital and setiferous occipital punctures (resp. 4 and 8in*D. lodozi*; 3 and max. 5 in the new species), form and number of sclerites in the aedeagus and more redappendages.

Distribution.
Known so far only from the type locality. Collected along a stream bank.

Etymology.
Dedicated to Wim Veldkamp (Eibergen, Nederland), enthusiastic collector of Coleoptera and nature lover.

DISCUSSION

At present eight *Nebria* species with several subspecies have been known from Iran (Ledoux and Roux, 2005); four species of the subgenus *Eunebria* and four species of the subgenus *Nebria.* Identification tables and descriptions for these species and subspecies are found in Ledoux and Roux, 2005. *N.* (*N.*) *azarbayanei* sp. nov. differs from the known Iranian species from the subgenus *Nebria* by its slender stature and is related to the high mountain species of Turkey.Furthermore, four male specimens of *N. (N.) mandibularis* Bates 1872 were collected. The description of *N. mandibularis* Bates was based on a single male from a collection made in 'Northern Persia, Kurdistan and Mesopotamia'. Ledoux & Roux, 2005 described *N. mandibularis* based on specimens from Cilo Dag and Sat Dag near Oramar in Turkey. Comparison of a male specimen from Turkey with the Iranian material showed differences between them. Unfortunately, the holotype of this species could not be found for further taxonomic research.
Currently, the *Deltomerus* fauna of Iran consists of eight species (Zamojtaljov, 2001; Deuve, 2010). The *davatchii* group sensu Zamojtaljov, 2001 from Elburs Mts. is characterized by a row of setiforous punctures in the 8th interstria and the possession of a single dentiform apical sclerite in the aedeagus (Zamojtaljov, 2001). According to the description of *D. boroumandi* Deuve 2010, this species belongs

FIGURE 3.*Deltomerus (Deltomerus) veldkampi* sp. nov., holotype male; habitus, dorsal aspect. Scale: 5mm.

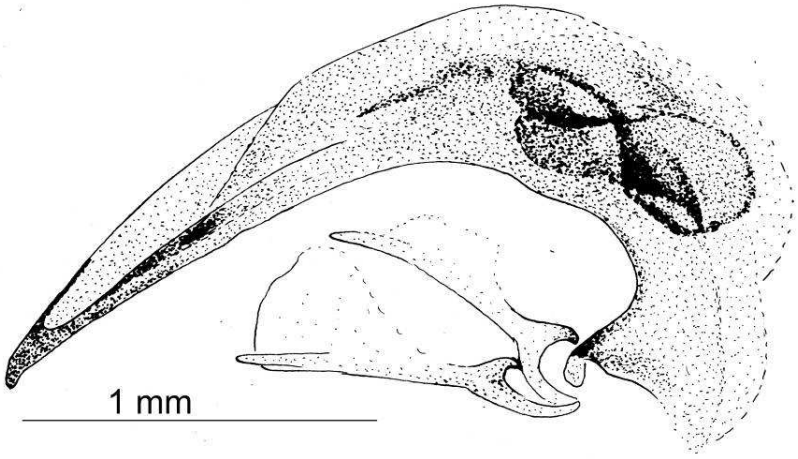

FIGURE 4. *Deltomerus (Deltomerus) veldkampi* sp. nov., median lobe of aedeagus, dorsal aspect. Scale: 1mm.

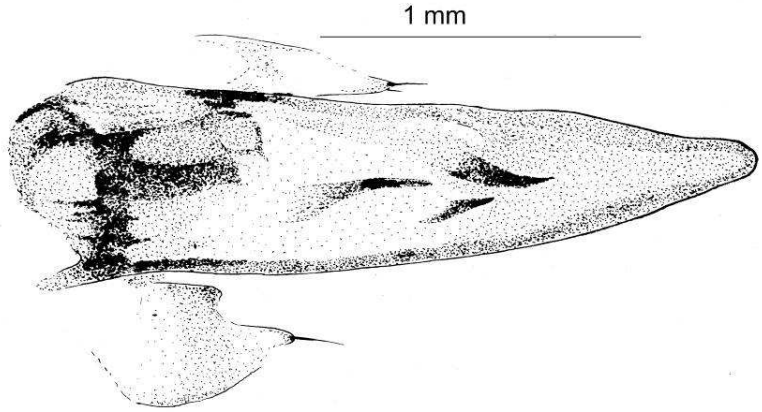

FIGURE 5.*Deltomerus (Deltomerus) veldkampi* sp. nov., median lobe of aedeagus, left lateral aspect. Scale: 1mm.

to the *davatchii* group. All species of the *davatchii* group are rather slender. Based on the strong stature and short antennae, *D. veldkampi* sp. nov. belongs to the *lodozi* group sensu Zamojtaljov, 2001. Until now, the *lodozi* group consists of two Turkish species, *D. lodozi* and *D. punctatus* Heinz & Ledoux, 1987.

Four specimens of *P. cryobioides* were also collected. These rare species was compared with one specimen from Museum Prague, collected by B. von Bodemeyer in Luristan, identified by A. Jedlička.

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LITERATURE CITED

Bates, H.W. 1872. Notes on Cicindelidae and Carabidae, and descriptions of new species. *The Entomologist's Monthly Magazine* 9, 51-52.

Deuve,Th. 2010. Nouveaux Nebriidae, Broscidae et Trechidae De Chine et D'Iran (Coleoptera, Caraboidea). *Revue française d'entomologie* (N.S.) 32, 1-24.

Ledoux, G. 1976. Contribution a l'étude des Coléoptères Carabidae de Turquie. Trois nouvelles espèces de Deltomerus. *Annales de la Société entomologique de France* (N.S.) 12, 179-186.

Ledoux, G. & Roux, P. 2005. *Nebria* (Coleoptera, Nebriidae): faune mondiale.Société Linnéenne de Lyon, Lyon, 976 pp.

Löbl, I. & Smetana A. (eds.) 2003. Catalogue of Palaearctic Coleoptera. Volume 1. Archostemata - Myxophaga - Adephaga. Apollo Books, Stenstrup, 819 pp.

Zamotajlov, A.S. 2001. Contribution to the knowledge of the carabid genus *Deltomerus* from the Middle East. *Russian Entomological Journal* 3, 327-342.