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Original Article 3



Contribution to the knowledge of the tribe Helopini Latreille, 1802 (Coleoptera: Tenebrionidae) of Iran

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Published online December 14, 2025 ABSTRACT. Two new species of darkling beetles of the genera Euboeus Boieldieu, 1865 and Eustenomacidius Nabozhenko, 2006 are described and illustrated: Eustenomacidius (Caucasohelops) rajabii Eshraghi Mofrad et Nabozhenko, sp. nov. (Alborz Mts: Ardabil Province) and Euboeus (Pelorinus) danae Eshraghi Mofrad et Nabozhenko, sp. nov. (Alborz Mts: Qazvin Province). The rank of one taxon is elevated from subspecies to species: Eustenomacidius (Caucasohelops) araxi Nabozhenko, 2006, stat. nov. (from E. svetlanae araxi). The following subgeneric synonymy is proposed: Caucasohelops Nabozhenko, 2006 = Zophondrus Nabozhenko, 2014, syn. nov. One new combination is established: Eustenomacidius (Caucasohelops) iranensis (Nabozhenko, 2014), comb. nov. (from the genus Zophohelops Reitter, 1902, the subgenus Zophondrus). Eustenomacidius (Caucasohelops) svetlanae Nabozhenko, 2006, and Adelphinus ordubadensis Reitter, 1890 are recorded from Iran for the first time. Following the present revision, the number of taxa of Helopini in Iran is increased to 61 species and three subspecies. The distribution of several previously described species in the tribe Helopini is discussed. Information on the range of Nalassus lineatus (Allard, 1876) is corrected. This species occurs only in the Hyrcanian forest in south-east Azerbaijan and Iran, while its occurrence in the Western Caucasus is excluded. The genus Turkmenohelops G.S. Medvedev, 1987 was erroneously reported from Iran and thus is excluded from its fauna.

KEYWORDS: Alborz, Euboeus, Eustenomacidius, Faunistic records, New taxa, Zagros

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INTRODUCTION

Darkling beetles of the tribe Helopini Latreille, 1802 (Coleoptera: Tenebrioninae) are among the most studied tenebrionids in Iran. In total, 58 species and 4 subspecies belonging to 12 genera are known from this country, of which 40 species are endemic (Nabozhenko 2020, 2022a; Eshraghi Mofrad 2023). To date, revisions and numerous taxonomic works have been published for all genera. The most diverse genera are *Euboeus* Boieldieu, 1865 (15 species) in Alborz and Zagros Mts., *Hedyphanes* Fischer von Waldheim, 1820 (14 species), widely distributed in the country, and *Nalassus* Mulsant, 1854 (14 species) (especially the subgenus *Horistelops* des Gozis, 1910) in Alborz and Zagros Mts. (Nabozhenko 2006a, 2010, 2018, 2022a; Nabozhenko & Grimm 2018, 2019; Eshraghi Mofrad 2023). The genera *Adelphinus* Fairmaire et Coquerel, 1866, *Helops* Fabricius, 1775, *Armenohelops* Nabozhenko, 2002, *Cylindrinotus* Faldermann, 1837, and *Reitterohelops* Skopin, 1960 are each represented by a single species, and the genera *Eustenomacidius* Nabozhenko, 2006, *Odocnemis* Allard, 1876, and *Catomus* Allard, 1876 are

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represented by 4, 4 and 5 species, respectively, distributed in peripheral regions of Iran (Bogatchev 1949; Grimm 2015; Medvedev 2008; Nabozhenko 2009, 2014, 2015a, 2015b, 2015c, 2019; Nabozhenko & Keskin 2013, 2016; Nabozhenko & Grimm 2018). The genus *Turkmenohelops* G.S. Medvedev, 1987 was erroneously listed for Iran in the Catalogue of Palaearctic Coleoptera (Nabozhenko 2020).

In this study, we examined additional material from museums and collections in Iran and Russia, as well as from our own private collections. As a result, we described two new species and provided new distribution data for species, many of which appear to have significantly wider distribution in Iran.

MATERIAL AND METHODS

Specimens were examined using an Olympus® SZX-TR30 binocular microscope. Photos were taken using a binocular equipped with a Canon® 750D digital camera. A series of 10 to 15 captured images was merged into a single fully focused image, using the image-stacking software Helicon Focus 8.1.0. After preparation, the genitalia were mounted on a glass slide in a drop of glycerin, covered with a cover glass. Then they studied and photographed (same as previous) with an Olympus® U-CA microscope, following the imaging procedure. The studied materials are deposited in the following museums, institutes, and collections:

HMIM Hayk Mirzayans Insect Museum (Tehran, Iran);

ZIN Zoological Institute, Russian Academy of Sciences (St Petersburg, Russia);

PCMN private collection of Maxim Nabozhenko (Rostov-on-Don, Russia).

Acronyms of measurement. Y—Ratio of the head width across eyes to the distance between eyes; PH_w —Ratio of the maximum width of the pronotum to the maximum head width; P_wP_l —Ratio of the width at the widest portion to the length of the pronotum at the middle; E_lE_w —Ratio of the elytral length (from the apices to the base of the scutellar shield) to the maximal width; EH_w —Ratio of the elytral maximal width to the head maximal width; EP_v —Ratio of the elytral maximal width; EP_l —Ratio of the elytral length (from the apices to the base of the scutellar shield) to the pronotal length at the middle. Figures are not scaled.

RESULTS

Taxonomic hierarchy
Class Insecta Linnaeus, 1785
Order Coleoptera Linnaeus, 1785
Family Tenebrionidae Latreille, 1802
Subfamily Tenebrioninae Latreille, 1802
Tribe Helopini Latreille, 1802
Subtribe Cylindrinotina Español, 1956
Genus Nalassus Mulsant, 1854
Subgenus Horistelops Gozis, 1910

Nalassus cambyses Seidlitz, 1895

Distribution. Northern Iran (Alborz) (Nabozhenko 2010; Grimm 2015; Nabozhenko et al. 2022; present material), Turkmenistan (Kopetdag) (Nabozhenko et al. 2022).

Note. Nalassus ahngeri (Medvedev, 1998), originally described from Turkmenistan (Kopetdag), was later (Nabozhenko et al. 2022) synonymized with *N. cambyses*. As a result, Turkmenistan is also included in the distribution range of this species. This species usually occurs in the alpine zone of the Alborz mountains, up to 4000 m (Nabozhenko 2010).

Nalassus heres (Reitter, 1922)

Material examined. 12♂♂, 1♀ (ZIN, PCMN), Mazandaran Prov., 20 km S of Chalus, 36°33'20.88"N, 51°22'33.49"E, 25–27.v.2015 (leg. D.G. Kasatkin); 1♂, 1♀ (PCMN), Mazandaran Prov., 17 km above of Chalus, 36°33'21.5"N, 48°48'39.7"E, 31.v–1.vi.2017 (leg. D.G. Kasatkin).

Distribution. Iran: Gilan, Mazandaran, and Golestan provinces (Nabozhenko 2010). The species was collected on trunks of forest trees at night (collector: Denis Kasatkin, pers. comm.).

Nalassus striatissimus Nabozhenko et Grimm, 2018

Material examined. 3♂♂, 1♀, (HMIM), Tehran Prov., Abali, Darreh-e Mosha, 21.viii.2004 (leg. Naserzadeh).

Distribution. Iran: Mazandaran (Nabozhenko & Grimm 2018) and Tehran provinces.

Nalassus kabakovi Nabozhenko, 2010

Material examined. 1♂, 1♀ (HMIM), Mazandaran Prov., Kojur, Pul, 36°24'22.2"N, 51°36'31.7"E, 19.v.2025 (leg. F. Eshraghi Mofrad).

Distribution. Iran (Mazandaran Prov.) (Nabozhenko, 2010; present data). This species was known from two localities, Hasankif and Marzanabad. The recent record from Kojur significantly extends its distribution eastward.

Nalassus lineatus Allard, 1877

Material examined. 1σ, 1♀ (HMIM), Mazandaran Prov., Kelardasht, 12.v.1965 (leg. Safavi), 1♀ (HMIM), Chalus rd., Shahrestanak, 15.v.1981 (leg. Rajabi); 1♀ (HMIM), Golestan Prov., P.M. Golestan (Golestan National Park), Tang-e Gol, 5.v.1999 (leg. Moghaddam, Barari, Man.); 1♀ (HMIM), Gilan Prov., Talesh, Assalem, 24.vi.1973 (leg. Rajabi); 1σ (PCMN), Gilan Prov., 15 km W Asalem, 13–14.2015 (leg. D.G. Kasatkin); 2σσ (PCMN), Gilan Prov., forest S of Barehsar, 8.v.2017 (leg. D.G. Kasatkin); 1σ (PCMN), North Khorasan Prov., Golestan National park, 37°22'46.33"N, 55°51'5.56"E, ~600 m, 24–25.v.2016 (leg. D.G. Kasatkin); 1σ, 2♀♀ (PCMN), Golestan Prov., near Gorgan, Ziarat, 36°40'22.67"N, 54°28'7.68"E, 27.v.2016 (leg. D.G. Kasatkin); 3σσ (HMIM), Mazandaran Prov., Kojur, Kodir, 19.v.2025, 36°26'22.2"N, 51°51'54.3"E (leg. F. Eshraghi Mofrad); 7σσ, 11♀♀ (ZIN, PCMN), Golestan Prov., Gorgan Distr., Tushan vill., 36°47'31.6"N, 54°26'14.9"E, 31.v.–1.vi.2025 (leg. D.G. Kasatkin).

Distribution. Azerbaijan (Talysh), Northern Iran (forests along the south of the Caspian Sea) (Nabozhenko 2010).

Notes. This species is widely distributed in the Hyrcanian forests of the South Caspian region. Until now, its range was considered fragmented, comprising the Western Caucasus and the southern Caspian region (numerous publications, but summarized in Nabozhenko et al. (2022)). Based on the extensive examined material from the Caucasus and Iran, we concluded that the forest form of *N.* (*Horistelops*) *sareptanus* (Allard, 1876), which inhabits the Western Caucasus, should be classified as a different species or subspecies of *N. sareptanus* (Nabozhenko 2022b). The Western Caucasian specimens were previously interpreted as *N. lineatus* (Nabozhenko et al. 2022). Consequently, the Western Caucasus should be excluded from the distribution range of *N. lineatus*, which occurs only in southeastern Azerbaijan and northern Iran.

Nalassus rejseki Nabozhenko, 2014

Material examined. 2 ♂♂ (HMIM), East Azerbaijan, Sahand, 2700–3700 m, 7–10.vi.1973 (leg. Rajabi).

Distribution. The species is only known from East and West Azerbaijan provinces of Iran (Nabozhenko 2014; present data).

Subgenus Nalassus Mulsant, 1854

Nalassus zaratustrai Nabozhenko, 2006

Material examined. 3♂♂, 3♀♀ (HMIM), Chaharmahal and Bakhtiari Prov., Kuhrang, Chelgerd, Ice cave rd., 4.vi.2024, 2700 m, 32°33'21.4"N, 49°58'32.6"E (leg. F. Eshraghi Mofrad).

Distribution. Iran, Zagros Mountains. This species is known from Fars and Kerman provinces (Nabozhenko 2006a; Nabozhenko & Grimm 2018). The range of *N. zaratustrai* is wider than was previously known and extends to the Central Zagros.

Nalassus faldermanni (Faldermann, 1837)

Material examined. 2σσ, 1♀ (HMIM), Ardabil Prov., Doudjagh, 28.v.1968 (leg. Abai); 1σ, 1♀ (HMIM), East Azerbaijan, Marand, 6.vii.1968 (leg. Rajabi); 2σσ, 5♀♀ (PCMN), Razavi Khorasan Prov., near Nishabur, Bujan vill., 19.v.2016 (leg. D.G. Kasatkin); 2σσ, 2♀♀ (ZIN, PCMN), Zanjan Prov., 40 km NE Bonab, 36°47′57″N, 48°43′53.7″E, 2400 m, 9.v.2017 (leg. D.G. Kasatkin); 2σσ, 2♀♀ (HMIM), Mazandaran Prov., Haraz rd., Ab Ask, 1800 m, 18.v.2025, 35°52′02.1″N, 52°08′40.8vE (leg. F. Eshraghi Mofrad); 5σσ, 5♀♀ (ZIN, PCMN), Golestan Prov., Gorgan Distr., Tushan vill., 36°47′31.6″N, 54°26′14.9″E, 31.v.–1.vi.2025 (leg. D.G. Kasatkin).

Distribution. South of the European Russia (north to Rostov and Volgograd regions), Eastern Anatolia, the Caucasus, north and northwest of Iran, Turkmenistan (Kopetdag) (Keskin et al. 2017). The record from Nishabur (Razavi Khorasan Prov.) represents the easternmost limit of the species range.

Genus Odocnemis Allard, 1876

Subgenus Odocnemis Allard, 1876

Odocnemis kakunini Nabozhenko et Keskin, 2016

Material examined. $3\sigma\sigma$, 4\$\$ (HMIM), Kurdistan Prov., Marivan, Nezhmar, 23.iv.2025, 1400 m, 35°25'50.9"N, 46°12'53.6"E (leg. F. Eshraghi Mofrad); 1\$\psi\$ (HMIM), Kurdistan Prov., Marivan-Saghez rd., Qamchian village, Kanikon pass, 24.iv.2025, 2200 m, 35°43'29.2"N, 46°23'44.3"E (leg. F. Eshraghi Mofrad); 1\$\sigma\$ (PCMN), Kurdistan Prov., Marivan, 35°32'6.17"N, 46°5'2.89"E, 18.v.2017 (leg. D.G. Kasatkin); 5\$\sigma\$\sigma\$ (ZIN, PCMN), Kurdistan Prov., near Gawilleh vill., 35°42'38.1"N, 46°22'29.7"E, 4–5.vi.2025 (leg. D.G. Kasatkin); 13\$\sigma\$\sigma\$, 6\$\pa\$\$\$ (HMIM), Hamedan Prov., Asadabad, Chenar-e Sofla vill., 24.iv.2024, 1600–1700 m, 34°46'53.3"N, 47°58'30.8"E (leg. F. Eshraghi Mofrad).

Distribution. Iran, Zagros Mountains. This species was originally described from western Iran (Kermanshah Province). The range is significantly wider and extends to Kurdistan and Hamedan provinces (Nabozhenko & Keskin 2016; present data).

Genus Reitterohelops Skopin, 1960

Reitterohelops ahngeri G.S. Medvedev, 1964

Material examined. 1♂, 1♀ (HMIM), Khorasan Razavi Prov., Mashad, Ghouchan, 30.iv.1965 (leg. Safavi), 2 ♂♂, 1♀ (HMIM), Gonabad, 26.iv.1965 (leg. Safavi); 1♀ (HMIM), North Khorasan, Bodjnourd, 30.iv.1965 (leg. Safavi).

Distribution. Turkmenistan (Kopetdag), Iran (Khorasan Razavi and North Khorasan) (Medvedev 2008; present data).

Genus Eustenomacidius Nabozhenko, 2006

Subgenus Eustenomacidius Nabozhenko, 2006

Eustenomacidius turkmenicus (Medvedev, 1964)

Note. Iran was omitted from the distribution of this species in the Catalogue of Palaearctic Coleoptera (Nabozhenko 2020), although it was previously recorded for Razavi Khorasan Province (Nabozhenko 2019).

Subgenus Caucasohelops Nabozhenko, 2006

Eustenomacidius glebi Nabozhenko, 2019

Material examined. 1♂ (ZIN), Fars Prov., Pooladkaf, 30°22'N, 51°55'E, 2900 m, 8–9.vi.2014 (leg. I.V. Shokhin); 2♂♂ (HMIM), Fars Prov., Mamsani, Nourabad, Bovan oak forest, 9.ii.2024 (leg. A. Dehghani).

Distribution. Iran, Zagros Mountains. This species was described from a single male specimen collected in Lorestan (Dorud, Cham Chit). The range of this species is considerably broader and extends into the southern Zagros region (Nabozhenko, 2019; present data).

Eustenomacidius iranensis (Nabozhenko, 2014), comb. nov.

Material examined. See Nabozhenko (2014).

Distribution. Iran: Ardabil Province.

Notes. This species was originally described within the monotypical subgenus Zophondrus Nabozhenko, 2014 of the genus Zophohelops Reitter, 1902 (Nabozhenko 2014). The habitus of this species and convex, shiny body were uncharacteristic of the two subspecies of the subgenus Caucasohelops (genus Eustenomacidius) known at that time, leading to its inclusion in the genus Zophohelops and the establishment of a separate subgenus due to the male genitalia, which are unusual for Zophohelops. However, further research (Nabozhenko 2019; present paper) revealed much greater diversity of the habitus of Caucasohelops, while the male genitalia remain uniform. The species has typical for Caucasohelops characters: temples without furrow at anterior portion from eyes, 8th elytral interval not convex and separated from elytral edge by furrow, male abdominal ventrites 1 without hair brush, male aedeagus with long curved dorso-ventrally flattened parameres. Thus, a new synonymy is proposed: Caucasohelops Nabozhenko, 2006 = Zophondrus Nabozhenko, 2014, syn. nov. As a result, a new combination is established: Eustenomacidius (Caucasohelops) iranensis (Nabozhenko, 2014), comb. nov.

This species differs from other members of the subgenus by the massive pronotum, wider at middle than elytra at humeral level and very deep groove-like impression between epistome and frons. *Eustenomacidius iranensis* is close to *E. rajabii* **sp. nov.** having smooth longitudinal midline in the middle of pronotal disc and not emarginated lateral edges at base of the male pronotum.

Eustenomacidius svetlanae Nabozhenko, 2006

Material examined. 4♂♂, 5♀♀ (ZIN, PCMN), Zanjan Prov., 40 km NE Bonab, 36°47'57"N, 48°43'53.7"E, 2400 m, 9.v.2017 (leg. D.G. Kasatkin); 3♂♂, 4♀♀ (HMIM), East Azerbaijan Prov., Sahand, 2700–3700 m., 7–10.vi.1973 (leg. G. Rajabi).

Distribution. Azerbaijan (Talysh), Iran (new record).

Notes. Originally and in subsequent works, Nabozhenko divided *E. svetlanae* into two subspecies: the nominotypical one and *E. svetlanae araxi* Nabozhenko, 2006 (Nabozhenko 2006b, 2009; Keskin et al. 2017). However, the distinguishing characters of these subspecies, especially the complete and incomplete elytral epipleura, are too substantial to justify subspecific status (Keskin et al. 2017). Therefore, we propose elevating the latter subspecies to species rank: *Eustenomacidius* (*Caucasohelops*) *araxi* Nabozhenko, 2006, **stat. nov.**

Eustenomacidius rajabii Eshraghi Mofrad et Nabozhenko, sp. nov.

https://zoobank.org/urn:lsid:zoobank.org:act:E6D09FEE-92D1-4F75-83F1-B6A4E7191524 (Fig. 1)

Type material. Holotype: \circlearrowleft , and paratypes: $1 \circlearrowleft$, 4 ? ? (HMIM): Iran, Azarbaijan Prov. [now Ardabil Prov.], Nour Lake, 2363–2450 m, 21.vi.1973 (leg. G. Rajabi).

Description. — **Male.** Body slender, dark brown, opaque, head pubescent (Fig. 1A). Measurements: Y = 1.5; $PH_w = 1.66$; $P_wP_1 = 1.19$; $E_1E_w = 1.56$; $EH_w = 2$; $EP_w = 1.2$; $EP_u = 2.23$. Body length 7.9 mm, width 3 mm.

Head (Figs 1B, 1D) widest at eye level. Eyes moderately large, slightly convex. Anterior margin of epistome slightly rounded; genae strongly rounded. Lateral margin of head widely emarginated between gena and epistome. Epistome depressed. Puncturation of frons dense and coarse, with interpuncture distance subequal to puncture diameter, denser on epistoma where puncture diameter exceeds interpuncture distance; each puncture with short setae, setation longer around frons, epistome with some very long setae at apex. Ventral surface of head with coarse transverse wrinkles and dense short suberected setae toward mouthpart. Temples without furrow at anterior portion from eyes. Antennae comparatively short, with two apical antennomeres extending beyond base of pronotum slightly thickened.

Prothorax (Figs 1B, 1D). Pronotum transverse, widest at middle (Fig. 1D). Lateral margins of pronotum moderately rounded, slightly undulate. Anterior margin moderately rounded; base slightly bisinuate, shortly emarginated at middle. Antero-lateral angles not projected, widely rounded at apex; postero-lateral angles obtuse, narrowly rounded at apex; lateral margin shortly slightly emarginated near anterior and posterior angles; all margins beaded. Disc of pronotum strongly convex, slightly narrowly flattened only near angles; disc with smooth midline, puncturation of disc moderately coarse and dense (interpuncture distance subequal to puncture diameter) (Fig. 1D). Prothoracic hypomera with fine distinct wrinkles, very sparsely punctured, lateral margins narrowly flattened along outer margin. Prosternum with moderately dense and coarse puncturation among transverse fine wrinkles, each puncture bears short subrecumbent seta directed to procoxae (Fig. 1B). Prosternal process shiny, beaded, weakly convex, coarsely and moderate densely punctured, punctures with short subrecumbent setae (Fig. 1B).

Pterothorax (Figs 1A, 1B). Elytra elongate-oval, widest at middle. Striae consisting of elongate punctures, laterally and anteriorly connected by furrows. Interstriae flat, with sparse and fine puncturation (Fig. 1A). Epipleura strongly depressed, with fine transverse wrinkles, sparsely punctured, gradually narrowed, not reaching elytral apex (ending in middle of first interstria). Lateral deflected margin of elytra wide, completely visible from above. Mesoventrite with coarse and dense puncturation in anterior portion and sparse and fine puncturation between mesocoxae. Mesepisterna, mesepimera, metepisterna and metaventrite with coarse and sparse puncturation; punctures covered with short subrecumbent setae directed toward front (Fig. 1B).

Legs (Figs 1A, 1B). Long and slender. Trochanters with one long seta. Protibiae with coarse rasp-shaped puncturation on outer sides, each elevated portion of puncture with very short and thickened seta. Proand metatibiae straight, mesotibiae slightly bent. Protarsi not thickened.

Abdomen (Figs 1B, 1E–H). Abdominal ventrites 1–4 coarsely and moderately densely punctured, ventrites 5 with denser and finer puncturation at apex, each puncture with very short seta, ventrites completely beaded, ventrite 1 without brush of setae in middle; ventrites 1–3 with smooth longitudinal wrinkles on lateral sides (Fig. 1B). Aedeagus elongate, curved, parameres flattened dorso-ventrally, slightly shorter than basal piece (Figs 1E, 1F). Spiculum gastrale with thin S-shaped rods, forming long stem and elongate blades (Fig. 1G); rods sharply curved and with short processes near connection with blades. Inner sternite VIII with rounded lateral angulations and deep notch in middle, densely covered with very long setae (Fig. 1H).

Female (Fig. 1C). Body larger and more robust. Pronotum widest at middle, Lateral margins shortly emarginated near postero-lateral angles. Abdominal ventrites 1–3 with moderately dense longitudinal wrinkles on all surfaces. Antennae shorter, reaching base of pronotum. Measurements: Y = 1.53-1.63; PHW = 1.68-1.85; PWPl = 1.28-1.37; EIEW = 1.60-1.69; EHW = 2.25-2.37; EPW = 1.21-1.39; EPl = 2.66-2.95. Body length 9.2-11.4 mm, width 3.8-4.5 mm.

Etymology. The new species is named in honour of the late Dr Gholamreza Rajabi (1936–2011), collector of the type specimens and famous Iranian entomologist who made significant contributions to entomological research in Iran.

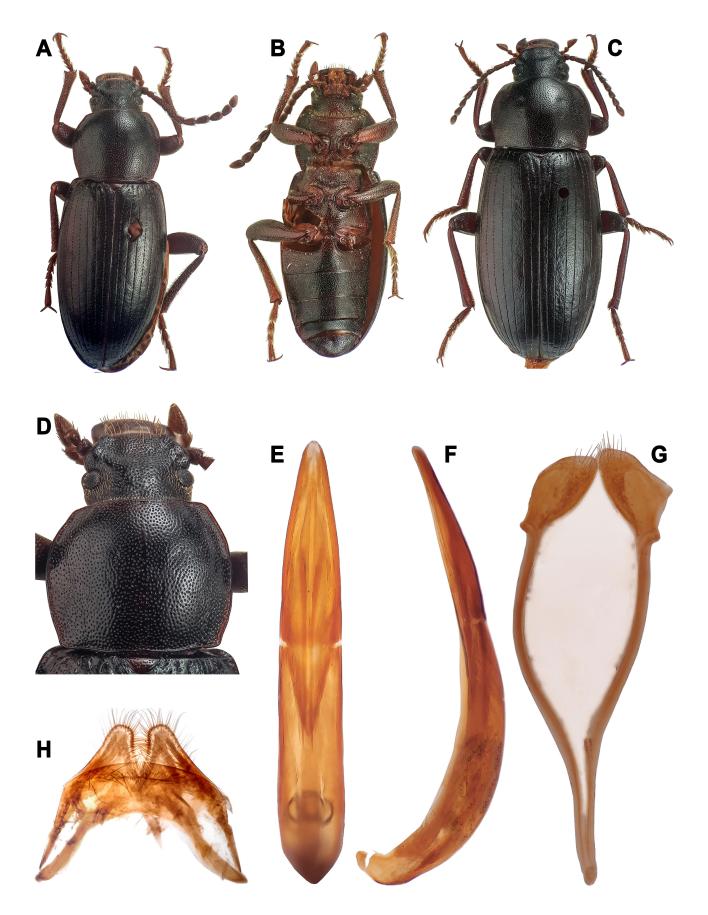


Figure 1. *Eustenomacidius rajabii* Eshraghi Mofrad et Nabozhenko, **sp. nov.**, habitus, details of structure. **A.** Male, dorsally; **B.** Male, ventrally; **C.** Female, dorsally; **D.** Male, head and pronotum, dorsally; **E.** Aedeagus ventrally; **F.** ditto, laterally; **G.** Spiculum gastrale; **H.** Male inner sternite VIII.

Differential diagnosis. This new species close to *E. iranensis* by the smooth longitudinal midline in the middle of pronotal disc and not emarginated lateral edges at base of the male pronotum and differs from it in the opaque body, the less massive and narrower pronotum (narrower at middle than elytra at humeral level) and the absence of very deep groove-like impression separating epistome and frons. Female of *E. rajabii* **sp. nov.** differs from the female of *E. iranensis* by the subcordate pronotum. Both species differ from other subcongeners in the shape of the male pronotum, which is widest at middle (cordate and widest before middle in other species), more robust body and shorter antennae (in other species, 3–4 antennomeres extending beyond pronotum).

Subtribe Helopina Latreille, 1802

Genus Adelphinus Fairmaire & Coquerel, 1866

Subgenus Adelphinops Reitter, 1922

Adelphinus ordubadensis Reitter, 1890

Material examined. 1♂ (HMIM), East Azarbaijan Prov., Tabriz, 27.vi.1974 (leg. Mashayekhi).

Distribution. Transcaucasia (Nabozhenko 2015a), Iran (new record).

Genus Helops Fabricius, 1775

Helops caeruleus talyshensis Bogatchev, 1949

Material examined. 1º (HMIM), Golestan Prov., Gorgan, 25.v.1970 (leg. Zair.); 1º (HMIM), Golestan Prov., P.M. Golestan (Golestan National Park), Tang-e Rah, 930 m, 7.v.2000 (leg. Baddi, Ebrahimi, Moghaddam, Mofidi); 1σ, 1º (PCMN), Golestan Prov., 20 km S Gorgan city, 36°43'N, 54°35'E, 700 m, 9.vi.2009 (leg. A. Klimenko); 2σσ, 1º (PCMN), Mazandaran Prov. 20 km S of Chalus, 36°33'20.88"N, 51°22'33.49"E, 25–27.v.2015 (leg. D.G. Kasatkin).

Distribution. Widely distributed in the Hyrcanian forests of the southern Caspian region (SE Azerbaijan, North Iran) (Abdurakhmanov & Nabozhenko 2011; Nabozhenko & Grimm 2018). Erroneously listed as the nominotypical subspecies *H. caeruleus caeruleus* (Linnaeus, 1758) by Grimm (2015).

Genus Catomus Allard, 1876

Subgenus Catomus Allard, 1876

Catomus karakalensis G.S. Medvedev, 1964

Material examined. 1♂ (HMIM), Khorasan Razavi Prov., Sarakhs, Bazangan Lake, 29.iii.2025, 36°19'00"N, 60°29'00"E (leg. K. Seyedabadi); 1♀ (HMIM), Golestan Prov., Gonbad, 30.iv.1965 (leg. Safavi and Aghah).

Distribution. Turkmenistan (Kopetdag), northeastern Iran (Khorasan, Golestan, eastern part of Mazanderan Province) (Nabozhenko 2015b; present material).

Genus Euboeus Boieldieu, 1865

Subgenus Pelorinus Vauloger de Beaupré, 1900

Euboeus gorganicus (G.S. Medvedev, 1976)

Material examined. 1♀ (HMIM), Gilan Prov., Asalem, 20.v.1965 (leg. Safavi); 1♀ (HMIM), Gilan Prov., Sangedeh, 18.vii.1980 (leg. Abai); 3♂♂ (HMIM), Mazandaran Prov., Hasankif, Mazuchal, 1800 m, 4.vii.2000 (leg. Mofidi, Barari, Ebrahimi, Deuve); 3♂♂ (HMIM), Mazandaran Prov., Damghan-Sari rd., Kiasar, 1600 m, 22–30.vi.2000 (leg. Mofidi, Barari, Deuve); 2♀♀ (HMIM), Mazandaran Prov., Chalous, 15.viii.1966, det. Kaszab 1966 as *Probaticus prometheus*; 2♀♀ (HMIM), Mazandaran Prov., Kojur, Kodir, 19.v.2025, 36°26′22.2″N, 51°51′54.3″E (leg. F. Eshraghi Mofrad); 2♂♂, 1♀ (HMIM), Golestan Prov., Gorgan, Naharkhoran, 650–700 m, 25–29.vi.1999 (leg. Mofidi, Barari, Deuve).

Distribution. Iran: Gilan, Mazandaran, Golestan, and the western part of North Khorasan Province, in forests (Nabozhenko 2022a; present data).

Euboeus arzanovi Nabozhenko, 2022

Material examined. 1 de (HMIM), Mazandaran Prov., Kandovan, 29.vi.2002 (leg. Deuve, Montreuil, Serri, Mofidi, Hajesmailian).

Distribution. The species is only known from Central Alborz: Mazandaran Province of Iran (Nabozhenko 2022a; present data).

Euboeus zubovi Nabozhenko, 2022

Material examined. 1 of (HMIM), Kurdistan Prov., Sarvabad County, Daraki village, Zhalaneh pass, 35°17'06.4"N, 46°12'04.2"E, 2300 m, 23.iv.2025 (leg. F. Eshraghi Mofrad).

Distribution. The species was described based on a single male collected in North Zagros: Kurdistan Province of Iran (Nabozhenko 2022a).

Note. The parameres in our specimens show slight differences.

Euboeus huedepohli (Kulzer, 1964)

Material examined. 3♀♀ (HMIM), Tehran Prov., Abali, Darreh-e Mosha, 21.viii.2004 (leg. Naserzadeh).

Distribution. The species is only known from central Alborz: Mazandaran and Tehran Provinces of Iran (Nabozhenko 2022a; present data).

Euboeus danae Eshraghi Mofrad et Nabozhenko, sp. nov.

https://zoobank.org/urn:lsid:zoobank.org:act:C254A3B9-F496-4B46-933F-FCD6EC39FE11 (Figs 2, 3)

Type material. **Holotype**, ♂ (HMIM): Iran, Qazvin Prov., Abyek, Barial, 36°17'57.9"N, 50°23'48.3"E, 2300–2600 m, 23.v.2025 (leg. F. Eshraghi Mofrad). **Paratypes**: 1♀ (HMIM), 1♀ (ZIN): same data as holotype.

Description. — **Male**. Body slender, black, head and pronotum dorsally shiny, elytra less shiny (Fig. 2A). Measurements: Y = 1.47; $PH_w = 1.64$; $P_wP_1 = 1.35$; $E_1E_w = 1.62$; $EH_w = 1.92$; $EP_w = 1.17$; $EP_1 = 2.58$. Body length 14.3 mm, width 5.4 mm.

Head (Figs 2B, 2D–E) glabrous. Anterior margin of epistome slightly rounded. Head widest at eye level. Eyes strongly convex and prominent, circumocular impression slightly wide. Lateral margins of genae angularly rounded. Puncturation of head moderately fine and sparse on frons (interpuncture distance about 3 times as long as puncture diameter) and denser on genae and basal portion of epistome (interpuncture distance subequal to 2 times as long as puncture diameter). Ventral side of epicranium with very coarse and dense puncturation along mouthparts and moderately coarse wrinkles in basal portion. Antennae comparatively short, with only two apical antennomeres, extending beyond base of pronotum.

Prothorax (Figs 2B, 2D–F). Pronotum transverse, widest at middle (Fig. 2D). Lateral margins of pronotum moderately rounded; anterior margin straight at middle and widely emarginated near angles; base straight. Antero-lateral corners slightly projected, obtuse, widely rounded at apex; postero-lateral corners also obtuse and widely rounded at apex. Lateral margins widely beaded, sulcus interrupted at middle, bead slightly narrower at apical third; bead of anterior margin interrupted in middle. Disc of pronotum evenly slightly convex, not flattened along lateral margins, with impression on each lateral side and two small oblique impressions near base. Puncturation of disc fine and sparse, puncture diameter 2–4 times as short as interpuncture distance; punctures round and denser near base (Figs 2D, 2E). Prosternum punctured with large and dense punctures, punctures smaller and sparser at middle (Fig. 2B). Prothoracic hypomera narrowly flattened along margin, with coarse transverse wrinkles, without punctures (Fig. 2F). Prosternal process shiny, sparsely and finely punctured, slightly convex at apex, beaded, bead interrupted at middle (Fig. 2B).

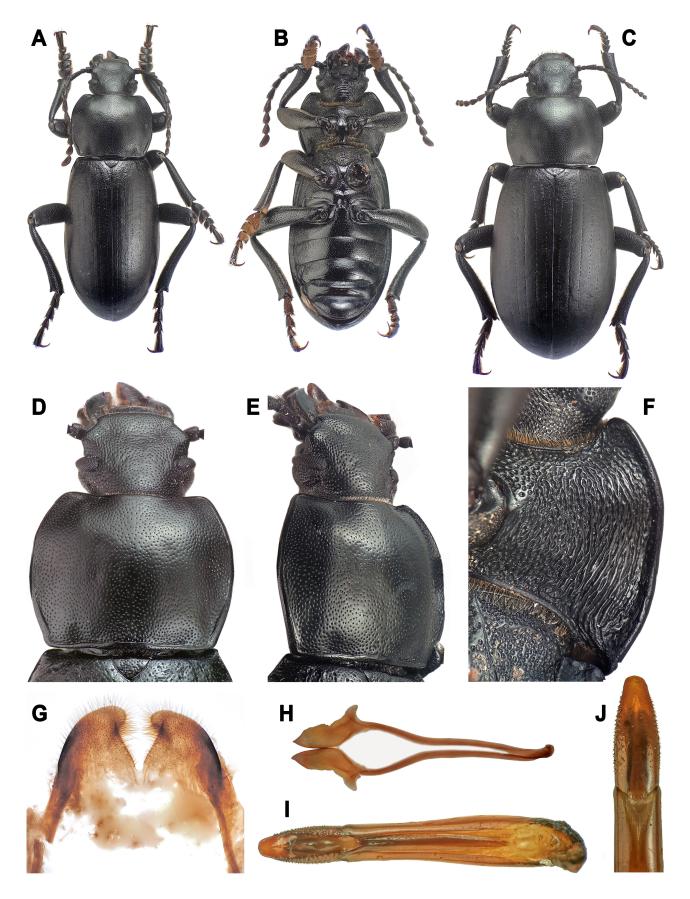


Figure 2. *Euboeus danae* Eshraghi Mofrad et Nabozhenko, **sp. nov.**, habitus, details of structure. **A.** Male, dorsally; **B.** Male, ventrally; **C.** Female, dorsally; **D.** Male, head and pronotum, dorsally; **E.** ditto, dorso-laterally; **F.** Prothoracic hypomeron; **G.** Male inner sternite VIII; **H.** Spiculum gastrale; **I.** Aedeagus ventrally; **J.** Apical piece and part of the basal piece of the aedeagus, dorsally.

Pterothorax (Figs 2A, 2B). Scutellar shield with slightly rounded margins, densely and coarsely punctured. Elytra strongly elongate, widest at middle; punctures in striae slightly larger and elongate, widely spaced; punctures of interstriae fine and sparse (punctures half smaller than strial punctures) (Fig. 2A). Mesoventrite pubescent, with coarse transverse wrinkles (Fig. 2B). Mesepisterna with coarse and dense foveolate punctures; puncturation of mesepimera and metepisterna sparser; metaventrite finely and sparsely punctured and covered with short setae, punctures larger on lateral sides.

Legs. Trochanters with brush of short goldish setae and single long seta (Fig. 2B). Inner side of femora with same brush (Fig. 2B); remaining femoral surface with coarse puncturation and sparser short setae. Pro- and mesotibiae straight, metatibiae moderately curved. Pro- and mesotarsomeres 1–4 strongly widened, trasverse, pro- and mesotarsomere 1 wider than apex of protibia.

Abdomen (Figs 2B, 2G–J). Abdominal ventrites with sparse and fine puncturation and simple short setae (not pubescent); ventrite 5 with coarser punctures and long strong setae at apex.

Genitalia (Figs 2G–J). Apical part of basal piece of aedeagus with longitudinal rugosity dorsally. Parameres widely rounded at apex and slightly rounded lateral margins, and gradually narrowed to apex, apical piece with wide superficial dorsal longitudinal depression in middle (Fig. 2J).

Female (Fig. 2C). Body much more robust, elytra dull. Eyes strongly convex and prominent, but slightly smaller than in male. Antennae shorter than in male, not reaching base of pronotum. Metatibiae slightly curved. Measurements: Y = 1.43; PHW = 1.75; PWPl = 1.4; EIEW = 1.4; EHW = 2.21; EPW = 1.25; EPl = 2.5. Body length 17–17.3 mm, width 7.1–7.3 mm.

Etymology. The species is named in honour of Dana Eshraghi Mofard, niece of the first author. Her father has provided valuable assistance to the first author during field sampling.



Figure 3. Habitat of *Euboeus danae* **sp. nov.,** the slope of the mountain area in the northeastern highlands of Qazvin Province, Iran. Photographs by F. Eshraghi Mofrad.

Differential diagnosis. Euboeus danae sp. nov. is most similar to E. huedepohli (Kulzer, 1964) in the shape of prothoracic hypomera (flattened laterally and with coarse longitudinal wrinkles), the longitudinal rugosity of the apical part of the basal piece of the aedeagus, and the shape of parameres, but differs in several characters. The new species has a less shiny body (almost with a varnish-like sheen), wider pronotum (much wider and with very broad interrupted bead of lateral margins compared to the narrower pronotum and narrow entire bead in E. huedepohli). Only two Iranian species have strongly convex and prominent eyes: E. danae sp. nov. and E. krivokhatskyi Nabozhenko, 2022. The new species differs from the latter by the beaded lateral margins of the male pronotum, longitudinally wrinkled prothoracic hypomera with flattened lateral margins (coarsely punctured and not flattened in E. krivokhatskyi), and the shape of the aedeagus (compare with fig. 14I, K in Nabozhenko (2022a)): parameres in E. krivokhatskyi are without median depression and with narrowly rounded apex.

Bionomics. Adults of this species were found under bushes and herbaceous plants during the day (Fig. 3).

DISCUSSION

The largest number of taxa of the tribe Helopini are concentrated in the Alborz mountain system, where the most favorable conditions for lichenophagous beetles are developed (Nabozhenko 2010, 2014, 2022a; Grimm 2015; Nabozhenko & Grimm 2018; Eshraghi Mofrad 2023). Subtropical Hyrcanian forests and woodlands, subalpine and alpine meadows with a cool climate and frequent fog, and mountainous relief facilitated the diversification of the genera *Euboeus* (subgenus *Pelorinus* Vauloger de Beaupré, 1900) and *Nalassus* (subgenus *Horistelops*) (13 and 7 species respectively), *Helops*, some forest *Odocnemis*, and *Armenohelops*. In the mountainous xerophytic landscapes, arid valleys, and foothills of the Turkmen-Khorasan Mountains and Alborz, xerophilous species from the genera *Catomus*, *Reitterohelops*, *Eustenomacidius* (s. str.), and *Hedyphanes* are more characteristic. In the Zagros Mountains, only a few species from the genera *Nalassus*, *Euboeus*, and *Odocnemis* are recorded, but the genus *Hedyphanes* is represented by five xerophilous phytophagous species (Nabozhenko 2018). *Adelphinus*, another xerophilous genus, comprises two phytophagous species in the Zagros and north-west Iran. In the highland alpine landscapes of northwestern Iran, one of the most characteristic groups is the subgenus *Caucasohelops* of the genus *Eustenomacidius*, with four species feeding on lichens on rocks.

AUTHOR'S CONTRIBUTION

The authors confirm their contribution to the paper as follows: F. Eshraghi Mofrad: fieldwork, collecting and preparation of the specimens, identification of species, writing the manuscript (including descriptions and part of faunistic data), illustrations and conducting observations on bionomics; M.V. Nabozhenko: identification of species, writing the manuscript (corrected descriptions, diagnoses, part of faunistic data); S. Serri: work and assisting with the collection of HMIM and correction of the text. The authors read and approved the final version of the manuscript.

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AVAILABILITY OF DATA AND MATERIAL

The specimens listed in this study are deposited in Hayk Mirzayans Insect Museum (Tehran, Iran), Zoological Institute of the Russian Academy of Sciences (St Petersburg, Russia), and are available from the curator, upon request.

ETHICS APPROVAL AND CONSENT TO PARTICIPATE

This study only included arthropod material, and all required ethical guidelines for the treatment and use of animals were strictly adhered to in accordance with international, national, and institutional regulations. No human participants were involved in any studies conducted by the authors for this article.

CONSENT FOR PUBLICATION

Not applicable.

CONFLICT OF INTERESTS

The authors declare that there is no conflict of interest regarding the publication of this paper.

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مطالعه قبيلة (Coleoptera: Tenebrionidae) Helopini Latreille, 1802 مطالعه قبيلة

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توکیده البرز: و گونهٔ جدید از سوسکهای سیاه جنس Boieldieu, 1865 و Eustenomacidius (Caucasohelops) rajabii Eshraghi Mofrad et Nabozhenko, sp. nov. شامل البرز: استان البرز: البيه فروین) و Eustenomacidius (Caucasohelops) araxi Nabozhenkko, 2006 stat. و تصویربرداری شدند. آرایهٔ تعدید البرز البیهٔ البرز: استان البرز: استان البرز: استان البرز: استان البرز: استان البرز: استان البرز: البرخ البرز البرخ البرز البرخ البرز البرز البرخ البرز البرخ البرز البرخ البرز البرخ البرز البرز

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