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RESEARCH PAPER

Two new species and new records of darkling beetles of the tribe Helopini from Turkey and Cyprus (Coleoptera: Tenebrionidae)

Maxim NABOZHENKO[1,2], Bekir KESKIN[3] & Anna PAPADOPOULOU[4]

[1] Precaspian Institute of Biological Resources of the Daghestan Federal Research Centre of the Russian Academy of Sciences, M. Gadzhiev str. 45, Makhachkala, Republic of Dagestan 367000 Russia; e-mail: nalassus@mail.ru
[2] Dagestan State University, M. Gadzhiev str., 43a, Makhachkala, Republic of Dagestan 367000 Russia
[3] Ege University, Bornova-Izmir 35100 Turkey; e-mail: bekir.keskin.phd@gmail.com
[4] University of Cyprus, 1678 Nicosia P.O. Box 20537 Cyprus; e-mail: papadopoulou.g.anna@ucy.ac.cy

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Abstract. Two new species of the tribe Helopini (Coleoptera: Tenebrionidae) are described from Turkey: *Nalassus* (*Nalassus*) *becvari* sp. nov. (Elazığ Province) and *Hedyphanes* (*Hedyphanes*) *kmenti* sp. nov. (Artvin Province). The first species is characterized by strongly thickened antennomeres 2–8 and differs from all Turkish *Nalassus* s. str. Mulsant, 1854 in the ventral aspect of eye, which bears a weak posterior ventral impression (rather than a distinct groove of other species). The second species belongs to the species group with asperate punctation of the prothoracic hypomera and differs from all *Hedyphanes* Fischer von Waldheim, 1820 in the presence of suberect pubescence on both sides of elytral base. Distribution of some Helopini (the *Helops* genus-group, subtribe Helopina) from Anatolia and Cyprus is updated with new data. *Hedyphanes mannerheimi* Faldermann, 1837 is recorded for Turkey (Iğdır Province) for the first time. *Helops caeruleus caeruleus* Linnaeus, 1758 from Pervolia is a new record for Cyprus and the occurrence is probably a result of anthropogenic introduction.

Key words. Coleoptera, Tenebrionidae, Helopini, new species, new records, taxonomy, anthropogenic introduction, distribution, Cyprus, Turkey, Palaearctic Region

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Introduction

Darkling beetles of the tribe Helopini are widespread in the northern hemisphere and have the greatest diversity in the Mediterranean region. Turkey is one of the centres of generic and species diversity of this group. More than 100 species from 19 genera are known from Turkey after a series of taxonomic revisions by the first two authors and their co-authors: Nabozhenko (2001, 2002, 2007, 2008, 2011a,b,c, 2013, 2015), Keskin & Nabozhenko (2010, 2011, 2012, 2015), Nabozhenko & Keskin (2009, 2010, 2014, 2016, 2017), Nabozhenko et al. (2012, 2016, 2017, 2018), Keskin et al. (2017a,b), Nabozhenko & Tichý (2006, 2011), Nabozhenko & Grimm (2019). However, the genera *Catomus* Allard, 1876, *Entomogonus* Solier, 1848, *Euboeus* Boieldieu, 1865, *Raiboscelis* Allard, 1876, and *Ectromopsis* Antoine, 1949 have not yet been revised from Turkey, so further new records are expected.

The Helopini of Cyprus have been very poorly studied. Except for sporadic data in old studies from the 19th and early 20th centuries, only three studies contain data on Helopini. Freude (1952) mentioned two species, but one of them, '*Cylindronotus crenatostriatus*', was erroneously identified and recorded for Cyprus. Georghiou (1977) also listed two species from Cyprus with erroneous names. Grimm (1991) added an important contribution to the knowledge of tenebrionid fauna of Cyprus, where he listed eight species and one subspecies of Helopini from the island, including three new taxa. Now 11 taxa (with six of them being endemic) of the tribe are known from Cyprus and one species, *Odocnemis crenatostriata* (Allard,

1877) must be excluded from the checklist (Nabozhenko & Háva 2020).

Here we describe one new species of *Nalassus* Mulsant, 1854 and one new *Hedyphanes* Fischer von Waldheim 1820 from Turkey and add new localities and records of Helopini (the *Helops* genus-group) from Anatolia and Cyprus. *Nalassus* species of Turkey were recently revised (Keskin et al. 2017b), but most Anatolian species of *Nalassus* are very rare, have very small isolated ranges and therefore new taxa are still expected. Turkish species of *Hedyphanes* were briefly reviewed by the first author (Nabozhenko 2013). The majority of the species of this genus in Turkey are distributed in poorly studied arid areas of Eastern Anatolia, mainly in halophytic habitats.

Material and methods

We boiled dissected male and female genitalia for several seconds in a 40% alkaline solution (KOH) and placed them in glycerin for several days, until the chitin became translucent. Genitalia and genital tubes were drawn on squared paper according to the grid inserted inside the eyepiece of an MBS-10 binocular stereoscopic microscope. The photographs of beetles were taken (by D. G. Kasatkin) with a Canon MP-E 65mm/2.8 on bellows attached to a Canon EOS 5D Mark III camera and a Canon 650D mounted on an AxioLab microscope. Partially focused images were stacked using the Helicon Focus Pro v5.3.14 software.

Label data for new taxa are cited verbatim; a slash (/) separates the data in different rows and a double slash (//) separates the data on different labels. All specimens of the newly described species bear one printed red label: 'Holotype, *Hedyphanes kmenti* [*Nalassus becvari*] sp. nov., det. Nabozhenko, Keskin, 2020'.

Material from the following collections was used in the current study:

LPCB	Luboš Purchart private collection (Brno, Czech Republic);
NMPC	National Museum, Prague, Czech Republic (Lukáš Sekerka);
SBCP	Stanislav Bečvář private collection (Prague, Czech Republic);
VTCB	Vladimír Tichý private collection (Brno, Czech Republic).
ZDEU	Zoological Department of Ege University, Bornova – Izmir, Turkey (Bekir Keskin).

Taxonomy

Subtribe Helopina

Hedyphanes (*Hedyphanes*) *kmenti* Nabozhenko & Keskin, sp. nov.

(Figs 1–7)

Type material. Holotype, ♂ (NMPC), labelled: 'Asian TURKEY, ARTVIN prov. / Çeltlikdüzü env. valley of / Çoruh Nehri above Çiftlikdüzü / 620 m; 40º45′39.8″N 41º29′25.6″E / 14.v.2005, lgt. P. KMENT'.

Description. Body large (length 18.0 mm, width 5.5 mm), slender, black, dull.

Head widest at eye and genal levels, 1.57 times as wide as interocular space of frons. Eyes strongly transverse, weakly convex. Anterior margin of epistoma slightly rounded. Genae strongly regularly rounded. Lateral margin of head with short obtuse emargination between genae and epistoma. Epistomal surface very weakly depressed. Punctation of head coarse and dense (puncture diameter twice as wide as interpunctural distance). Head dorsally with round coarse punctures around mouthparts and transverse wrinkles on sides of gula; covered with short recumbent setae. Gula with acute apex. Mentum transverse, rectangular. Antennae relatively short, with only two apical antennomeres extending beyond base of pronotum; antennomere 11 short, oval, strongly asymmetric.

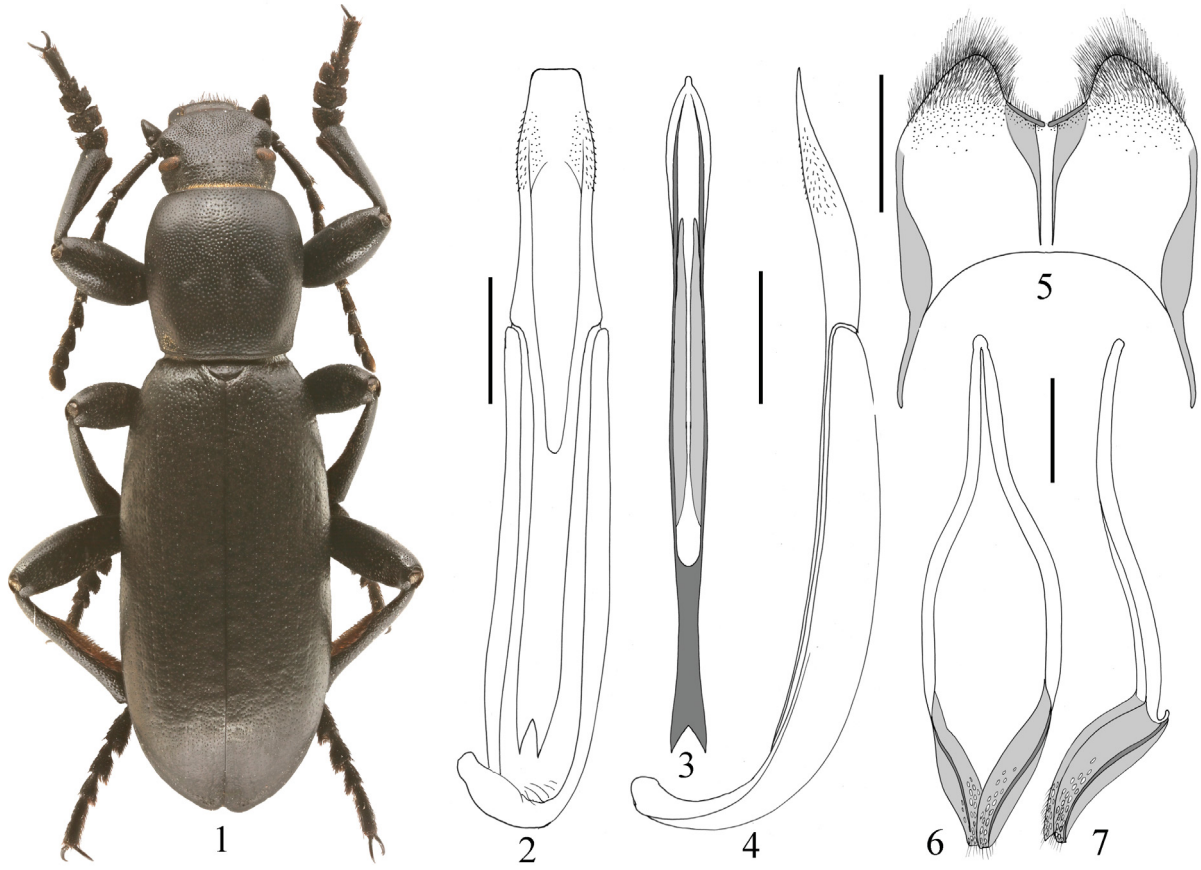
Prothorax. Pronotum slightly longitudinal (1.07 times as long as wide), widest in anterior third, 1.40 times as wide as head. Lateral margins weakly rounded, slightly widely sinuate near posterior angles; anterior margin widely emarginate; base weakly rounded. Anterior angles rectangular, posterior ones obtuse; all angles narrowly rounded at apex. All margins narrowly beaded, basal third of lateral margins with interrupted bead. Disc of pronotum weakly convex, with posterior angles obliquely depressed. Punctation of disc moderately coarse and dense (puncture diameter subequal to distance between punctures), sparser and finer than on head. Prosternum coarsely punctured. Prothoracic hypomera with coarse asperate punctation of round punctures, granulate near procoxae. Prosternal process with slightly longitudinally impressed surface between procoxae, completely bordered, with conical elevation near apex.

Pterothorax. Elytra strongly elongate (2.09 times as long as wide), subcylindrical, widest in apical half, 1.80 times as wide as head, 1.31 times as wide and 2.50 times as long as pronotum. Base of elytra on sides with sub-erect setae. Humeral angles absent. Punctures in striae slightly elongate, distinctly separated. Interstriae flat, with fine and sparse punctation (punctures much smaller than in striae). Narrow deflected margin of elytra only partly visible dorsally. Epipleura without epipleural micro-mucro at apex. Mesoventrite with subcontiguous coarse transversely elongate punctures. Mesepimera, mes- and metepisterna with coarse and dense punctation. Metaventrite with coarse and dense punctation on sides and finer dense punctation in middle.

Abdomen. Abdominal ventrites with recumbent brown setae and same punctation as metaventrite; abdominal ventrite 5 not beaded even in basal parts. Inner sternite VIII with terminal sclerotization and two sclerotized longitudinal areas in middle (Fig. 5). Spiculum gastrale with weakly C-shaped rods and very long narrow lobes (Figs 6–7). Tegmen with sharply rectangular apex of apical piece (Fig. 2) and spines in apical third (Figs 2–4). Median lobe with acute separated apex (Fig. 3).

Legs slender. Tibiae straight, with very dense line of brown hairs on inner side (longer on metatibiae). Protarsi transversely widened; mesotarsi also widened, but with subequal length and width.

Differential diagnosis. *Hedyphanes kmenti* sp. nov. belongs to the species-group with asperate prothoracic hypomera and it is different from other species of the genus in pubescent sides of elytral base. This species is externally similar to *H. seidlitzi seidlitzi* Reitter, 1914 from Turkmenistan and Iran (Nabozhenko 2018) in large body, visible elytral striae and elytra widest in apical



Figs 1–7. *Hedyphanes kmenti* sp. nov., holotype. 1 – male habitus; 2 – tegmen, ventral view; 3 – median lobe, ventral view; 4 – tegmen, lateral view; 5 – male inner sternite VIII; 6 – spiculum gastrale, ventral view; 7 – the same, lateral view. Scale bars = 1 mm (Figs 2–4, 6, 7), 0.5 mm (Fig. 5).

half, but clearly differs from this species in the absence of epipleural micro-mucro at apex and rectangular apex of apical piece of the aedeagus. Another Turkish species with asperate prothoracic hypomera, *H. mannerheimi* Faldermann, 1837, differs from *H. kmenti* additionally in more robust body, strongly convex pronotum and weakly bluish tint of integument. The new species differs from *H. cordicollis* Seidlitz, 1896 from south-eastern Anatolia (Nabozhenko 2013) in weakly rounded margins of elytra and absence of humeral angles. Turkish *Hedyphanes* Fischer von Waldheim, 1820 can be distinguished using the key below.

Collecting circumstances. The holotype was collected at dry ruderal site with plenty of bare soil patches (P. Kment, pers. comm).

Etymology. This species is named in honour of the collector of this species, Petr Kment, a renowned entomologist of the National Museum Prague. The name is a noun in singular genitive case.

Key to species of the genus *Hedyphanes* from Turkey

The key is modified from Nabozhenko (2013). *Hedyphanes roznerorum* (Nabozhenko, 2008) represents a junior synonym of *H. lutosus* Allard, 1877 (Nabozhenko 2020); therefore, we use only the senior name in the key.

1 Elytral intervals covered with small granules and short strong setae. ..... ***H. lutosus*** Allard, 1877
– Elytral intervals punctured. 2
2 Prothoracic hypomera, metaventrite and abdominal ventrites 1–3 covered with dense granules, epipleura with sparse small granules. Elytra with very small humeral angles. ..... ***H. cordicollis*** Seidlitz, 1896
– Prothoracic hypomera, metaventrite and abdominal ventrites 1–3 punctated with simple or asperate punctures. Humeral angles absent. 3
3 Prothoracic hypomera with simple round punctures. Body length 8 mm. ..... ***H. khachikovi*** Nabozhenko, 2013
– Prothoracic hypomera with aspirate punctures. Body length more than 10 mm. 4
4 Elytra oval, sides of elytral base bare. Lateral margins of pronotum shortly sinuate near base. Body with bluish tint. ..... ***H. mannerheimi*** Faldermann, 1837
– Elytra subparallel, sides of elytral base weakly pubescent. Lateral margins of pronotum evenly rounded. Body black, without bluish tint. ..... ***H. kmenti* sp. nov.**

New records

Catomus (*Catomus*) *consentaneus* (Küster, 1851)

Material examined. 2 specimens (ZDEU): Cyprus, Akdeniz köyü, 3.iv.2007, 35°17′47.43″N, 32°56′34.39″E, B. Keskin leg.

Hedyphanes mannerheimi Faldermann, 1837

Material examined. 1 ♀ (NMPC): 'Russ. Armen. / Kulp / 1901 / Korb' (now Turkey, Iğdır Province, Tuzluca).

Distribution. Armenia, Azerbaijan (Nakhichevan), northwestern Iran (Abdurakhmanov & Nabozhenko 2011), Turkey (new country record).

Helops glabriventris Reitter, 1885

Material examined. 1 ♀ (LPCB): 'Cyprus, 5 km NE Limassol / Germasogeia Dam env., 26.III–2.IV.2006 / lgt. P. Jelinek'.

Comments. This species is known from Greece, southwestern Turkey and Cyprus; feeds on lichens on *Juniperus excelsa*, *Cedrus libani*, *Abies cilicica* in Turkey (Nabozhenko & Keskin 2017) and on *Cedrus brevifolia* in Cyprus (Grimm 1991). Environs of the Germasogeia Dam is a highly destructed anthropogenic landscape with forest patches of *Pinus brutia* nearby. The species was probably collected in pine habitats. The subspecies *H. glabriventris jelineki* Picka, 1984 was described from Crete (Picka 1984).

Helops caeruleus caeruleus (Linnaeus, 1758)

Material examined. 1 ♂ (VTCB): 'Cyprus, Perivolie [Pervolia] / 15.07.2000, leg. Josef Dvořák'.

Comments. Central and southern Europe from Great Britain to Bulgaria. This specimen was found in an entirely anthropogenic landscape (Pervolia village) and very far from the easternmost known populations in Bulgaria. We suppose that this is a case of anthropogenic introduction and the specimen (egg or larva) was probably introduced together with soil mixed with wood rot or with plants for landscaping. New record for Cyprus.

Raiboscelis cyprius (Seidlitz, 1896)

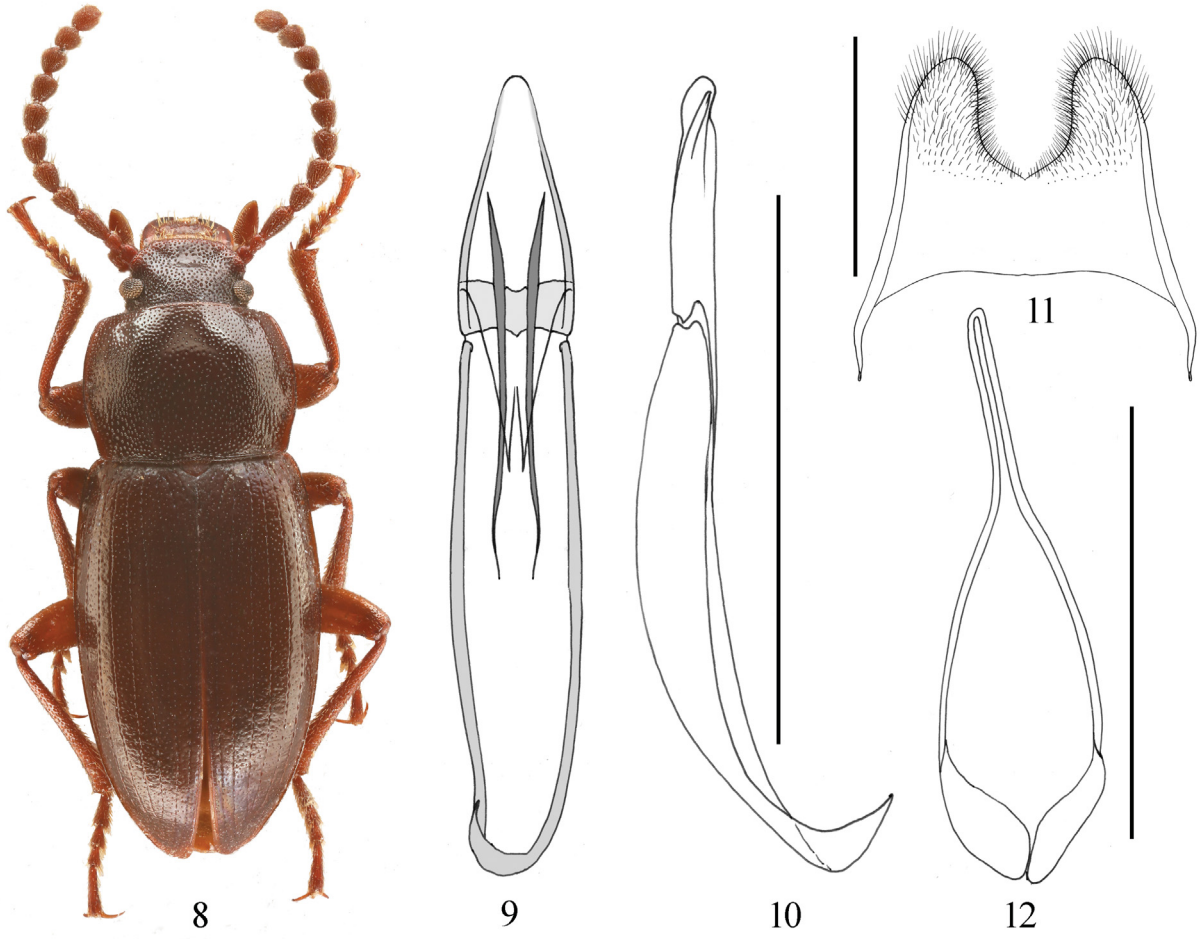
Material examined. CYPRUS: 8 ♂♂ 4 ♀♀ (LPCB): '10 km SW Limassol / Akrotiri env., 26.III. – 6.IV.2005 / Pavel Jelinek lgt.'; 1 ♀ (ZDEU): 'Çayırova / 04.07.2007 / leg. B. Göçmen'; 2 ♀♀ (ZDEU): 'Yeşilırmak / 35°08′10″N, 32°49′40″E, 100 m / 03.04.2007 / leg. B. Keskin'; 1 ♂ (ZDEU): 'Selvilitepe / 35°19′11″N, 33°09′45″E, 960 m / 12.03.2011 / leg. B. Keskin'; 1 ♂ (ZDEU): 'Yılmazköy / 35°14′39″N, 33°08′28″E, 280 m / 13.03.2011 / leg. B. Keskin'; 2 ♀♀ (ZDEU): 'Troodos / 9-10.07.2011 / leg. R. Kundrata & Borucka'.

Comments. This species is endemic to Cyprus.

Entomogonus obtusus (Seidlitz, 1896)

Material examined. 1 ♂ 1 ♀ (VTCB): 'Cyprus SC, E of Lemesos / Mary env. 6.03.2013 / Snižek'.

Comments. Endemic to Cyprus. This probably herpetobiont species is known from several localities of the central part of the island and occurs in dry habitats.



Figs 8–12. *Nalassus becvari* sp. nov., holotype. 8 – male habitus; 9 – aedeagus, ventral view; 10 – aedeagus, lateral view; 11 – male inner sternite VIII; 12 – spiculum gastrale, ventral view. Scale bars = 1 mm.

Subtribe Cylindrinotina
Nalassus* (*Nalassus*) *becvari
Nabozhenko & Keskin, sp. nov.
(Figs 8–12)

Type material. Holotype: ♂ (NMPC), labelled: 'Anatol. or. / ELAZIG // Coll. Kadlec'. The holotype was previously deposited in SBCP, but Stanislav Bečvář kindly agreed to transfer it to NMPC.

Description. Body small (length 6.4 mm, width 2.5 mm), slender, brown, shiny, moderately convex.

Head widest at eye level, 1.52 times as wide as interocular space of frons, covered with recumbent setae on vertex, genae and near eyes. Eyes convex, transversely elongate, bean-shaped. Epistomal anterior margin straight. Outer margin of genae angulate, strongly rounded in basal third and straight in apical two thirds. Lateral margin of head without emargination between genae and epistoma. Punctation of head coarse and dense, puncture diameter 1.5–2.0 times as long as interpunctural distance; punctures deep, round. Ventral aspect of eye with a weak posterior ventral impression (not groove). Head ventrally with very coarse punctation and subrecumbent pubescence. Apical maxillary palpomeres strongly widened and flattened, securiform, transverse, with rounded anterior margin. Antennae with strongly thickened oval antennomeres 3–8. Ratio of length/width of antennomeres 2–11: 0.7/0.6, 1.6/0.8, 1.2/0.9. 1.2/0.9, 1.3/1, 1.2/1, 1.3/1, 1/1, 1/1, 1.2/0.9.

Prothorax. Pronotum transverse (1.32 times as wide as long), widest slightly before middle, 1.54 times as wide as head. Lateral margins weakly rounded, slightly sinuate near posterior angles; anterior margin weakly widely emarginate; base weakly rounded, with short emargination along scutellum. Angles narrowly rounded at apex, anterior ones rectangular, posterior ones weakly obtuse. Lateral margins and base narrowly beaded, anterior margin beaded only near angles. Disc weakly evenly convex, sides narrowly flattened, punctation slightly finer and sparser than on head, sparser in middle and near margins (puncture diameter 2–4 times as short as interpunctural distance) and denser on sides (puncture diameter subequal or little wider than interpunctural distance). Prosternum with coarse irregular wrinkles (but punctured near procoxae) and erected setae. Prosternal process very weakly convex. Prothoracic hypomera strongly flattened along outer margin, longitudinally wrinkled and vested with long recumbent setae in anterior and basal parts.

Pterothorax. Elytra elongate, oval, widest in middle (1.58 times as long as wide), 1.81 times as wide as head, 1.17 times as wide and 2.46 times as long as pronotum. Strial punctures elongate, merged in interrupted grooves. Interstriae flat, with coarse and sparse punctation (punctures slightly smaller than in striae). Eighth interval not more convex than others and apically connected with second interval. Lateral deflected margin of elytra visible dorsally. Epipleura strongly depressed along whole length, not reaching sutural angle (ended slightly before apex). Mesoventrite with coarse and dense punctation of round punctures and recumbent pubescence. Wings reduced, small. Metaventrite and metepisterna with coarse, not dense punctation (puncture diameter subequal to interpunctural distance) and short recumbent setae. Legs slender; protrochanters with 3 long setae, other trochanters with 1 long seta; femora with erected setae at base of inner side; tibiae straight, margins around apex with long setae (not spines); tarsomeres elongate, not widened, densely pubescent on plantar side.

Abdomen. Abdominal ventrites with coarse, moderately dense punctation (puncture diameter subequal to interpunctural distance) of round punctures and very short recumbent setae, ventrite 1 without brush of long setae; ventrite 5 more finely punctured, with beaded margin. Aedeagus 'nalassoid', weakly sclerotized, with laterally flattened keel at apex (Figs 9–10). Male inner sternite VIII and spiculum gastrale typical for *Nalassus* (Figs 11–12).

Differential diagnosis. With strongly depressed, epipleura almost reaching apex, the species is externally similar to *Nalassus kaszabi* Nabozhenko, 2001 from Van Province, which was transferred to the subgenus *Helopondrus* Reitter, 1922 on the basis of preliminary analysis of COI markers (Keskin et al. 2017b). On the other hand, males of *N. kaszabi* are unknown, and we cannot support our molecular data by the structure of male genitalia. *Nalassus becvari* sp. nov. differs from *N. kaszabi* in narrowly flattened sides along lateral margins of pronotum and epipleura not reaching elytral sutural angles. The new species differs from all other Turkish species of *Nalassus* s. str. in the ventral aspect of eye, which bears a weak posterior ventral impression (rather than a distinct groove of other species). This new species can be distinguished from other Turkish *Nalassus* s. str. using the key below.

Etymology. The species is named in honour of our colleague, Stanislav Bečvář, who transferred to us many interesting darkling beetles for study. The name is a noun in singular genitive case.

Key to species of the nominotypical subgenus of the genus *Nalassus* from Turkey

The key is modified from Keskin et al. (2017b).

1 Ventral aspect of eye with weak posterior ventral impression. ..... ***N. becvari* sp. nov.**
– Ventral aspect of eye with distinct deep groove. 2
2 Wings fully developed, with apical and medial flecks, longer than elytra, folded under elytra. Recurrent cell presented. Male abdominal ventrite 1 without brush of long setae in middle. Elytra parallel. ..... ***N. plebejus*** (Küster, 1850)
– Wings not developed, absent or reduced (with only some small veins R, Cu, A), without recurrent cell and flecks. Male abdominal ventrite 1 with brush of long setae in middle. Elytra not parallel. 3
3 Wings absent. Body wide, robust, strongly shining, pronotum with projected anterior angles. Male middle antennomeres not thickened. ..... ***N. graecus*** (Seidlitz, 1896)
– Wings present, reduced, much shorter than elytra. Body elongate, moderately shining, anterior angles of pronotum not projected, widely rounded. Male middle antennomeres distinctly thickened. 4

Table 1. Preliminary check-list of darkling beetles of the tribe Helopini of Cyprus. Distribution on Cyprus is given on the basis of works of Freude (1952), Grimm (1991) and data in this paper. Species marked with asterisk are endemic to Cyprus. General distribution of non-endemic species is given in Nabozhenko & Löbl (2008).

Species	Distribution
Subtribe Cylindrinotina	
**Odocnemis* (*Odocnemis*) *intrusicollis* (Seidlitz, 1896)	'Cyprus'
**Xanthomus cyprius* Grimm, 1991	Lady's Mile Beach, Akrotyri Bay
Xanthomus pallidus (Curtis, 1830)	Ayia Marina, Kato Pyrgos
**Xanthomus interstitialis* Grimm, 1991	Ayia Napa
Subtribe Helopina	
Catomus (*Catomus*) *hesperides* (Reiche, 1861)	Polis
Catomus (*Catomus*) *consentaneus* (Küster, 1851)	Ayia Marina, Ayia Napa, Fig Tree Bay, Kato Pyrgos, Lady's Mile Beach, Larnaca, Paphos
**Entomogonus* (*Delonurops*) *obtusus* (Seidlitz, 1896)	Lemesós, Nikosia, Skouriotissa, Kirenia (Girne), Larnaca, Chala Sultan Tekke
**Euboeus* (*Pelorinus*) *globicollis* (Seidlitz, 1896)	'Cyprus'
Helops caeruleus caeruleus (Linnaeus, 1758)	Pervolia (introduced)
Helops glabriventris glabriventris Reitter, 1885	Cedar valley, Germasogeia Dam
**Helops thoracicus* Grimm, 1991	Cedar valley, north of Pano Panayia
**Raiboscelis cyprius* (Sedilitz, 1896)	Akrotiri, Kissousa, Kithasi, Larnaca, Lemesós, Linou, Peyia, Polis, Troodos, Chala Sultan Tekke, Çayırova, Selvilitepe, Yeşilırmak, Yılmazköy

4 Body brown, without bronze shine. Pronotum not cordiform, with weakly rounded margins. .... ***N. faldermanni*** (Faldermann, 1837)
– Body black, with bronze shine. Pronotum weakly cordiform, with basally emarginated margins. .... ***N. dilaticornis*** (Reitter, 1922)

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