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**Notes on taxonomy and distribution  
of the subgenus *Heloponotus* Reitter, 1922,  
genus *Odocnemis* Allard, 1876 (Coleoptera: Tenebrionidae),  
with a key to species and subspecies**

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**Abstract.** A brief review of the subgenus *Heloponotus* Reitter, 1922 (genus *Odocnemis* Allard, 1876) (Coleoptera: Tenebrionidae: Helopini) is presented. This group was probably formed on the Crimean Peninsula, since the high diversity and endemism are observed here, including the most archaic representative of the subgenus. In total, two species are known: forest *O. arborea* (Fischer von Waldheim, 1823) (endemic of Crimea) and steppe *O. gracilis* (Fischer von Waldheim, 1823). The latter species is divided into two subspecies: *O. gracilis gracilis*, widespread from southwestern Ukraine through northern Cis-Azov region and steppe foothills of Crimea to north of the Caspian depression in Western Kazakhstan and Southern Ural and *O. gracilis montanostepensis* Nabozhenko et Arefyev, **subsp. n.** having the very narrow range on treeless peaks (so called yayla) of Crimean Mountains. The new subspecies differs from the nomyntypical one by the sexual dimorphism in the structure of ultimate maxillar palpomere, flattened lateral side of male prothoracic hypomera, the shape of the female pronotum, the larger black body. A key to *Heloponotus* spp. and maps of distribution for *O. gracilis* are given.

**Key words:** darkling beetles, Tenebrionidae, Helopini, Eastern Europe, Crimea, new subspecies.

**Замечания по таксономии и распространению подрода *Heloponotus* Reitter, 1922  
рода *Odocnemis* Allard, 1876 (Coleoptera: Tenebrionidae)  
с определительной таблицей видов и подвидов**

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**Резюме.** Представлен краткий обзор жуков-чернотелок подрода *Heloponotus* Reitter, 1922 (род *Odocnemis* Allard, 1876) (Coleoptera: Tenebrionidae: Helopini). Эта группа, вероятно, сформировалась на Крымском полуострове, так как здесь наблюдается высокое разнообразие и эндемизм, обитает наиболее архаичный вид подрода. Всего известно два вида: лесной *O. arborea* (Fischer von Waldheim, 1823) (эндемик Крыма) и степной *O. gracilis* (Fischer von Waldheim, 1823). В составе последнего нами выделяется два подвида. *Odocnemis gracilis gracilis* широко распространен от юго-запада Украины через Северное Приазовье и степные предгорья Крыма до севера Каспийской низменности в Западном Казахстане и Южного Урала. *Odocnemis gracilis montanostepensis* Nabozhenko et Arefyev, **subsp. n.** обладает очень узким ареалом, встречаясь на безлесных вершинах (яйлах) Крымских гор. Новый подвид отличается от номинативного половым диморфизмом в строении вершинного максиллярного пальпомера, уплощенной боковой стороной прогипомер самца, формой переднеспинки самки, более крупным черным телом. Даны определительная таблица для *Heloponotus* spp. и карты распространения *O. gracilis*.

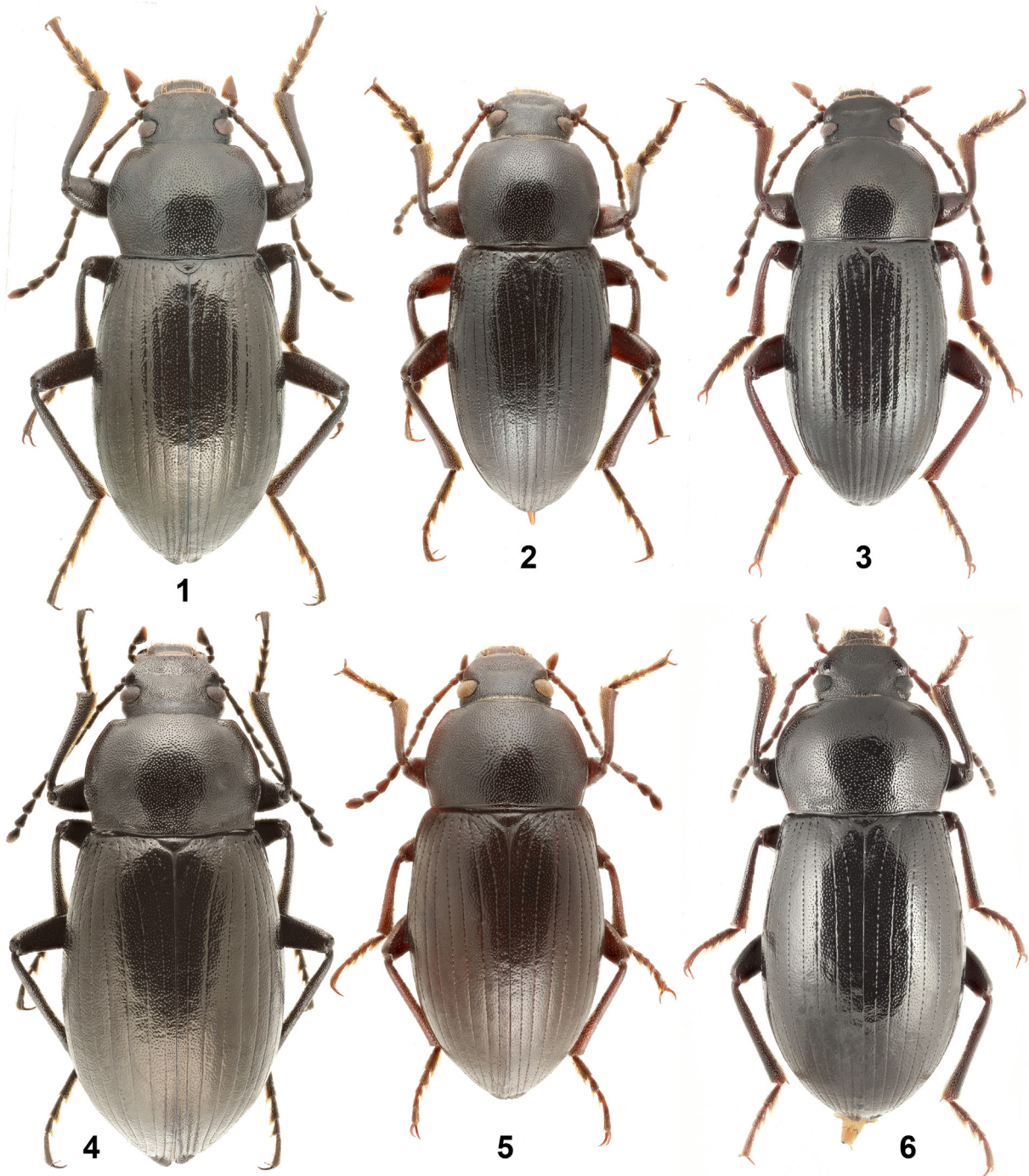
**Ключевые слова:** жуки-чернотелки, Tenebrionidae, Helopini, Восточная Европа, Крым, новый подвид.

The subgenus *Heloponotus* was erected by Reitter [1922] within the genus *Cylindrinotus* Faldermann, 1837 (correct name *Cylindrinotus*: see Bouchard et al. [2021]) for some species from Eastern Europe. He allied this subgenus with *Odocnemis* s. str. by the presence of teeth on the inner side of pro- and mesotibiae, and distinguished it from the

latter in the absence of tubercles on elytra and strongly widened male pro- and mesotarsi. Originally E. Reitter included in *Heloponotus* four species from Crimea and steppe plains of Southern Russia: *Cylindrinotus grandicollis* (Küster, 1951), *C. perplexus* (Ménétriés, 1848), *C. douei* (Allard, 1876) and *C. exavatus* (Seidlitz, 1895). Medvedev

[1965] placed *C. exavatus* to the junior synonym of *C. douei*. Nabozhenko [2001] transferred the subgenus *Heloponotus* to the genus *Odocnemis* Allard, 1876. Later, Nabozhenko [2004] added a new junior synonym (*Cylindronotus saturninus*) to the name *O. perplexus*. Nabozhenko and Löbl [2008] proposed the name *Helops grandicollis* Küster, 1851 as a junior synonym of *Odocnemis*

*perplexus*. Nabozhenko [2011] synonymized *Odocnemis arborea* (Fischer von Waldheim, 1823) and *O. douei* (junior synonym). Later, Nabozhenko et al. [2012] established the following synonymy: *Odocnemis gracilis* (Fischer von Waldheim, 1823) = *O. perplexus*. Thus, only two species remain in the subgenus *Heloponotus*: *Odocnemis arborea* and *O. gracilis*. Full synonymy of the first taxon can be



Figs 1–6. Species and subspecies of the subgenus *Heloponotus*, genus *Odocnemis*, habitus.

1–3 – males; 4–6 – females. 1, 3 – *O. arborea*; 2, 5 – *O. gracilis gracilis*; 3, 6 – *O. gracilis montanostepensis* subsp. n.

Рис. 1–6. Виды и подвиды подрода *Heloponotus* рода *Odocnemis*, рабитуc.

1–3 – самцы; 4–6 – самки. 1, 3 – *O. arborea*; 2, 5 – *O. gracilis gracilis*; 3, 6 – *O. gracilis montanostepensis* subsp. n.

found in the paper of Nabozhenko [2011], and for the second species in Nabozhenko et al. [2012].

We collected and examined an additional material from Crimea and established that micropopulations on the treeless peaks (so called yayla in Turkey and Crimea – flat treeless areas used as summer mountain pastures) in the Crimean Mountains are different from those in plane steppes and foothills. These mountain specimens described here as a new subspecies. The larva of this subspecies was described from Yalta yayla by Cherney [2005] under the name *Odocnemis perplexus*. The new subspecies was previously confused with *O. gracilis*; at least three males and one female specimen from Roman-Kosh Mt. (Babugan yayla, Crimea) were listed as *O. perplexus* (junior synonym of *O. gracilis*) [Nabozhenko, 2001].

The subgenus probably originates from Crimean Peninsula, because the high diversity and endemism are observed here, including the most archaic representative *Odocnemis arborea*.

## Material and methods

The examined in museums and collected material is deposited in the Zoological Institute of the Russian Academy of Sciences (ZIN, St Petersburg, Russia), Zoological Museum of Southern Federal University (ZMSFU, Rostov-on-Don, Russia) and private collection of Maxim Nabozhenko (PCMN, Rostov-on-Don, Russia).

Specimens were studied using binocular microscopes Micromed MC-4 Zoom LED. Beetle images were taken with a Canon EOS 5D Mark IV Body, Canon MP-E65MM F2.8 Macro lens and Canon Macro Twin Lite MT-26X-RT flash bulb, and stacking was done using Stack-shot 3X with enlarged macro rails s/n 3734; the photosystem is installed on a Kaiser Copy Stand RS 1 reproduction machine. Images were stacked in Helicon Focus 7.7.4 Pro.

*Odocnemis arborea* (Fischer von Waldheim, 1823)  
(Figs 1, 3, 15)

*Helops arboreus* Fischer von Waldheim, 1823: plate XXII, fig. 4.

*Helops arboreus* Fischer von Waldheim, 1824: 200 (type locality: "Crimm").

= *Stenomax douei* Allard, 1876. Type localities (for syntypes): "Caucase, Crimée" (synonymized by Nabozhenko [2011]).

= *Helops (Stenomax) excavatus* Seidlitz, 1895. Type locality: "Krimm" (synonymized by Medvedev [1965]).

**Note.** The year of the original description of this species was wrote as 1823 with page 200 [Nabozhenko, Löbl, 2008; Nabozhenko, 2011, 2020]. However, according to Bousquet [2016] with citation of Sherborn, illustrations were published in 1823, and the text in 1824. Thus, the original description should be dated 1823, but not on page 200 [Fischer von Waldheim, 1824], and on plate 22 and fig. 4 [Fischer von Waldheim, 1823].

**Distribution and bionomics.** This species is endemic of Mountain Crimea [Nabozhenko, 2001], widely distributed in forest habitats. Imagoes feed on corticolous foliose lichens from the family Physciaceae, occurring at night on three trunks (observations in nature by the first author).

*Odocnemis gracilis gracilis* (Fischer von Waldheim, 1823)  
(Figs 2, 5, 7, 8, 11, 13, 16, 19, 20)

*Helops gracilis* Fischer von Waldheim, 1823: plate XXII, fig. 5.

*Helops gracilis* Fischer von Waldheim, 1824: 200 (type locality: "Rossia meridionalis").

Detailed information on the synonymy, type localities and authors of synonyms was published by Nabozhenko et al. [2012].

**Note.** See note for *Odocnemis arborea* (the same case). Formally, all junior synonyms of *Odocnemis gracilis* were established by Nabozhenko et al. [2012], but "syn. n." was written only for *Helops perplexus*, because other junior synonyms were established before by different authors for *H. perplexus*.

**Bionomics.** This species feeds on terricolous fruticose lichens, but due to the plowing of the steppes, it switches to feeding on corticolous foliose lichens in forest belts [Nabozhenko et al., 2016].

**Distribution.** The species is widely distributed in steppes from southwestern Ukraine (Odessa Region) to Western Kazakhstan. In Mountain Crimea it is distributed in foothills before the border of the mountain-forest belt. The northern border of the range runs through the Kursk, Lipetsk, Saratov regions, Bashkortostan Republic in Russia; the southern border runs through the northern Black Sea (including Crimea) and northern Cis-Azov region, south of Rostov Region and Kalmykia in Russia to Shabdarzhap (= Kharkin) in Kazakhstan [Nabozhenko, 2001; Nabozhenko et al., 2016] (Figs 19, 20).

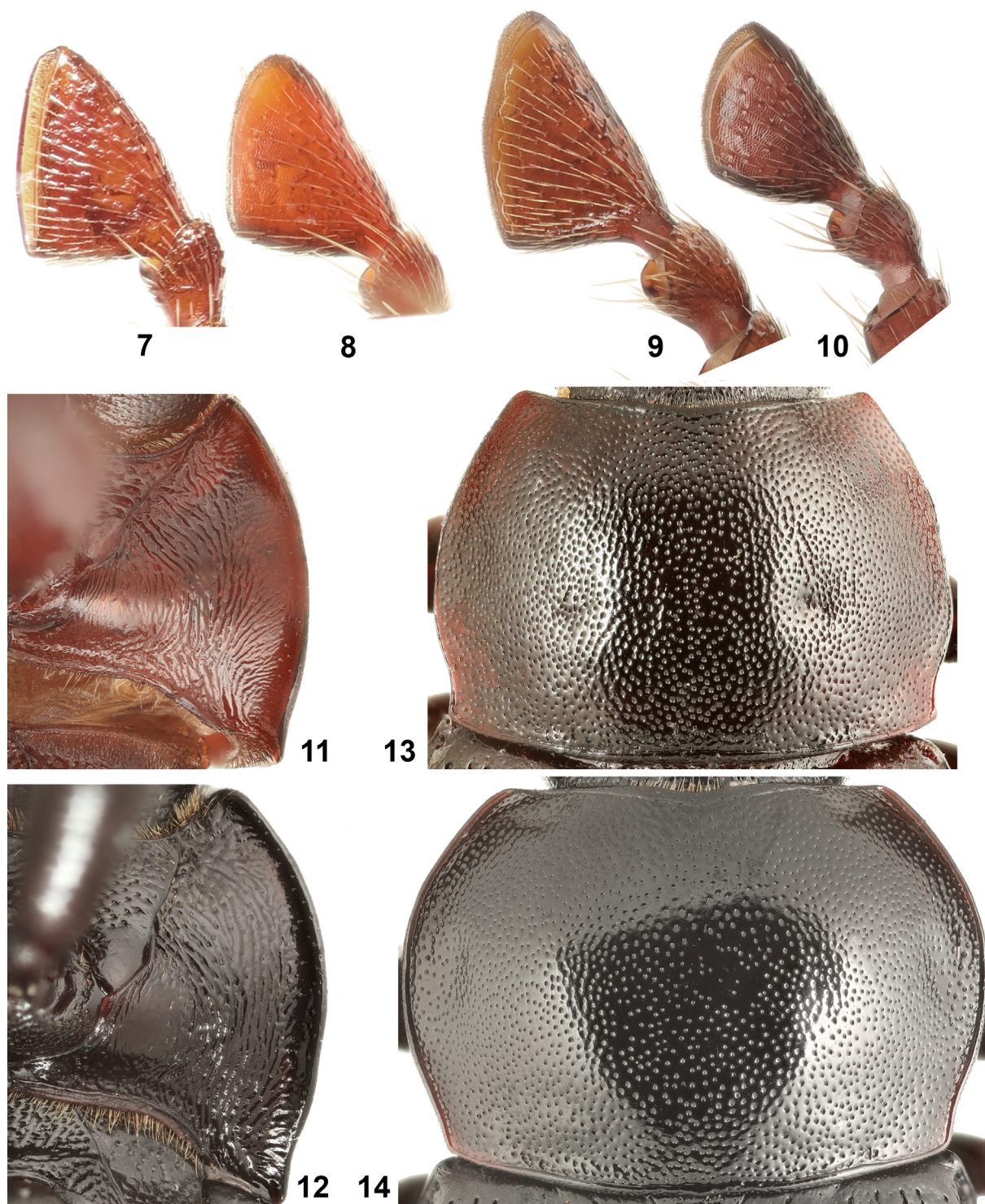
*Odocnemis gracilis montanosteppensis*  
Nabozhenko et Arefyev, **subsp. n.**  
(Figs 3, 6, 9, 10, 12, 14, 17–19)

**Material.** Holotype, ♂ (ZIN): Russia, Crimea, western part of Ay-Petri yayla, environs of Brakon'erskiy grot (Poacher's grotto), 44.4558N / 33.9497E, 1080 m, 10.06.2025 (S.V. Arefyev). Paratypes: 9♂, 28♀ (ZIN, PCMN, ZMSFU), same label as in the holotype; 3♂, 1♀ (ZIN), Crimea, Roman-Kosh Mt., 20.06.1947 (K.V. Arnoldi); 1♂ (ZMSFU), Crimea, Chuchel' Pass, 5.04.1954 (S.I. Medvedev); 1♂ (ZIN), Crimea, Ay-Petri yayla, 700–1100 m, 20–25.07.1995 (A.G. Koval); 1♂ (ZIN), Crimea, Ay-Petri yayla, At-Bash-Bogaz Pass, 44.4380N / 33.9763E, 31.05.2025 (S.V. Arefyev).

**Description.** Male. Body slender, black, moderately shiny; antennae, legs and mouthparts chestnut or femora almost black. Head widest at eye level, eyes moderate in size, ratio of maximum width of head to interocular space – 1.6. Puncturation of head moderately dense and coarse (puncture diameter subequal to interpuncture distance), epistoma slightly depressed. Ultimate maxillar palpomeres enlarged, securiform, transverse. Antennae long, with three apical antennomeres extending beyond base of pronotum.

Prothorax. Pronotum transverse (1.35–1.37 as wide as long) widest at middle, 1.7 times as wide as head. Lateral margins of pronotum evenly strongly rounded, only shortly situated near base. Anterior and posterior angles obtuse, distinct. Disc of pronotum regularly slightly convex, all margins of disc distinctly margined, except for interrupted rim in middle of anterior margin. Puncturation of disc as on head, punctures round. Prothoracic hypomera narrowly flattened along lateral margin, with coarse wrinkles, longitudinal at base and disorder at anterior portion. Prosternal process slightly convex.

Pterothorax. Elytra elongate-oval, widest at middle, lateral margin at basal portion not sinuated. Striae consist of slightly elongate punctures, connection in rows apically and laterally.



Figs 7–14. Two subspecies of *Odocnemis gracilis*, details.  
 7–10 – maxillar palpomeres; 11–12 – prohypomera; 13–14 – pronotum; 7, 9, 11–12 – male; 8, 10, 13–14 – female. 7–8, 11, 13 – *O. gracilis gracilis*; 9–10, 12, 14 – *O. gracilis montanosteppensis* **subsp. n.**  
 Рис. 7–14. Два подвида *Odocnemis gracilis*, детали строения.  
 7–10 – максиллярные пальпомеры; 11–12 – прогипомеры; 13–14 – переднеспинка; 7, 9, 11–12 – самец; 8, 10, 13–14 – самка. 7–8, 11, 13 – *O. gracilis gracilis*; 9–10, 12, 14 – *O. gracilis montanosteppensis* **subsp. n.**



Figs 15–18. Subgenus *Heloponotus*, genus *Odocnemis*, parameres dorsally.

Рис. 15–18. Подрод *Heloponotus*, род *Odocnemis*, парамеры дорсально.

15 – *O. arborea*; 16 – *O. gracilis gracilis*; 17–18 – *O. gracilis montanostepensis subsp. n.*

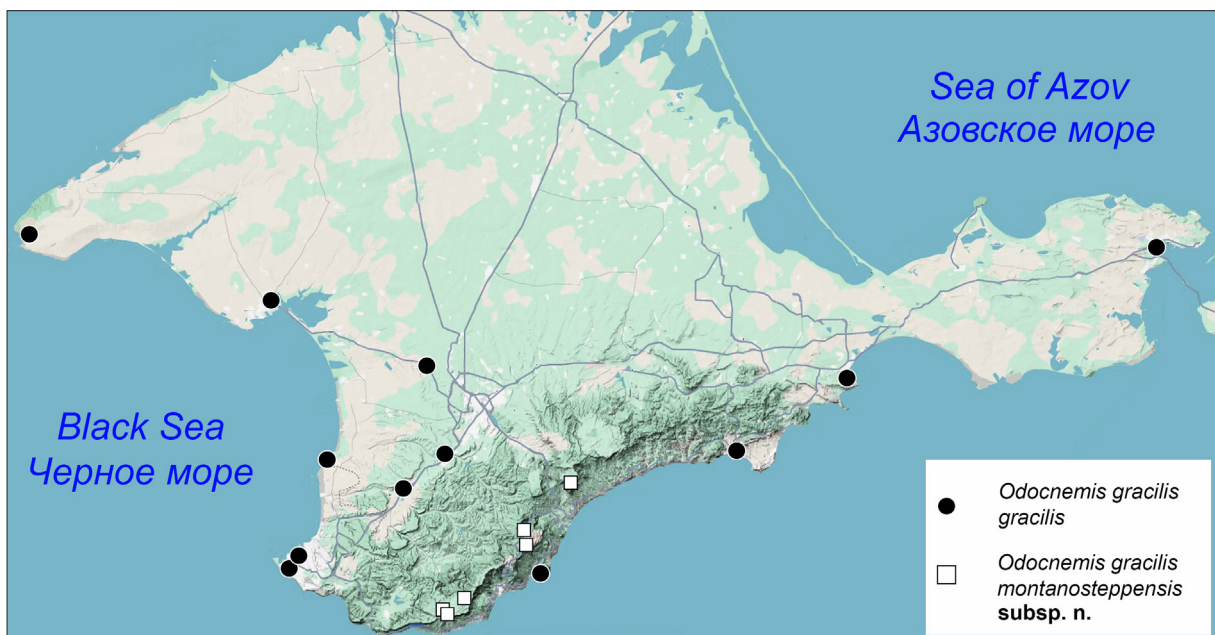


Fig. 19. Distribution of *Odocnemis gracilis gracilis* and *O. gracilis montanostepensis subsp. n.* in Crimea (one specimen from Demerdzhi yayla is added from the site "Beetles and coleopterologists": <https://www.zin.ru/animalia/coleoptera/rus/odoperbl.htm>).

Рис. 19. Распространение подвидов *Odocnemis gracilis gracilis* и *O. gracilis montanostepensis subsp. n.* в Крыму (один экземпляр с Демерджи-яйлы добавлен с сайта «Жуки и колеоптерологи»: <https://www.zin.ru/animalia/coleoptera/rus/odoperbl.htm>).

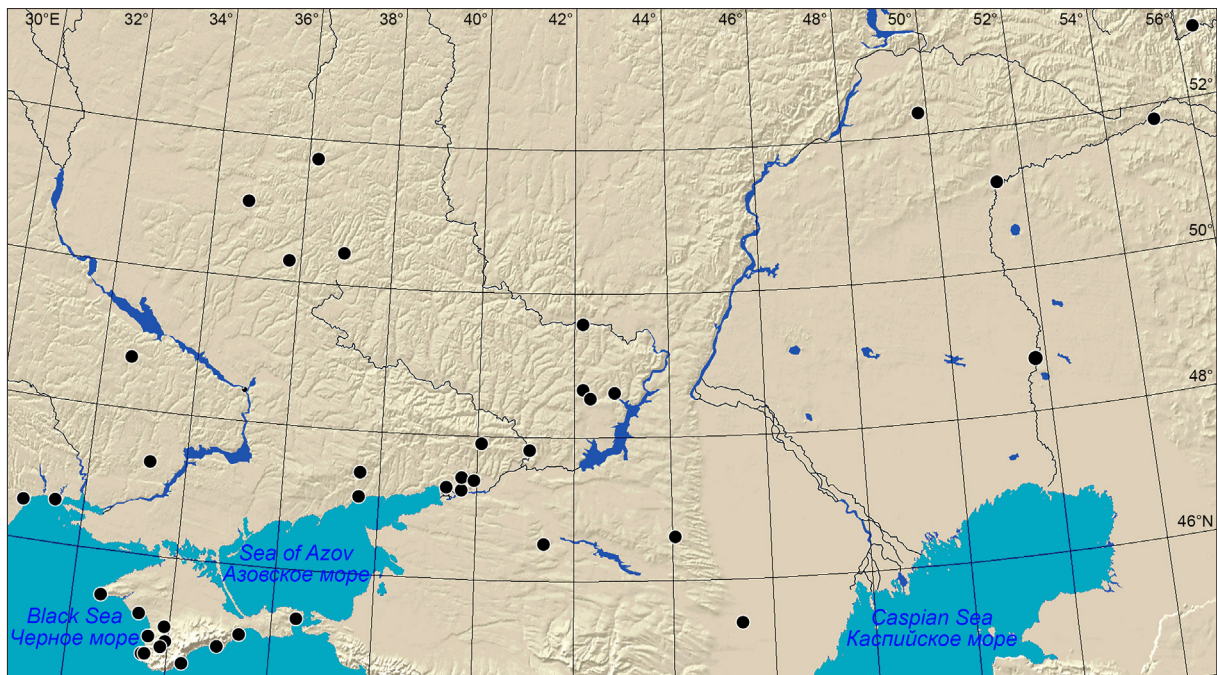


Fig. 20. Map of distribution of *Odocnemis gracilis gracilis* (based on localities from Nabozhenko [2001], Cherney [2005], Nabozhenko et al. [2016] and additional collected beetles).

Рис. 20. Карта распространения *Odocnemis gracilis gracilis* (основана на местонахождениях из статей [Nabozhenko, 2001; Cherney, 2005; Nabozhenko et al., 2016] и дополнительно собранных жуков).

Interstriae slightly convex, with comparatively coarse and moderately sparse puncturation (interpuncture distance 2–3 times as long as puncture diameter). Mesoventrite coarsely and densely punctured with merged punctures, mesepisterna and mesepimera with sparser coarse puncturation. Metaventrite with sparse and fine puncturation in middle and coarser punctures laterally, short, midline depression reaching middle of metaventrite; metepisterna coarsely and densely punctured.

Legs. Trochanters with one long setae, femora strong. Pro- and mesitibiae strongly dilated from proximal to distal portion. Protibiae with 5–6 small teeth on inner side, mesotibiae without teeth or rarely with 2–3 small poorly visible tubercles. Protarsi 1–4 widened, second tarsomere slightly transverse, third one with subequal width and length. Mesotarsi slightly less widened, tarsomeres 1–4 slightly longitudinal. Metatarsomeres simple, cylindrical, with tarsomere 1 longest.

Abdomen. Abdominal ventrites finely and densely punctured at middle and sparser and coarser punctured laterally, with longitudinal wrinkles on sides. First ventrite with large triangle brush of erected dense setae at middle. Abdominal ventrite 5 not rimmed or with indistinct rim apically. Male parameres can be slightly variable in different micropopulations (compare Figs 17, 18).

Body length 8.5–10 mm, width 3–3.5 mm.

Female. Body much more robust. Ultimate maxillar palpomeres narrower, longitudinal. Pronotum more transverse, 1.4–1.46 times as wide as long. Elytra with flattened interstriae. Tarsi not widened. Abdominal ventrite 1 without setal brush.

**Comparative diagnosis.** The new subspecies clearly differs from the nominotypical one by the distinct sexual dimorphism in the structure of ultimate maxillar palpomeres: transverse and much wider in male and slightly longitudinal and distinctly narrower in female, while in the nominotypical subspecies ultimate maxillar palpomeres almost indistinguishable in shape and size in

both sexes. In addition, in plain-steppe micropopulations lateral side of male prothoracic hypomera is not flattened or slightly flattened only near posterior angles, while in the new mountain subspecies male prohypomera is distinctly flattened along lateral margin. Male pronotum in the new subspecies is wider: 1.35–1.37 times as wide as long vs 1.22–1.28 times as wide as long in the nominotypical subspecies. Body in *O. g. montanosteppensis* **subsp. n.** larger, males black with dark-brown legs, females black with black legs. Males in *O. g. gracilis* from light- to dark-brown, legs reddish or reddish-brown, females brown or dark-brown, with light-brown legs, but Crimean foothills specimens can be black, with reddish legs. Females are better different than males: the pronotum in *O. g. montanosteppensis* **subsp. n.** is wider, widest at middle, with stronger rounded lateral margins, while in the nominotypical subspecies the pronotum is narrower, widest at basal third, with lesser rounded lateral margins.

**Bionomics.** The species was collected in mountain stony steppes with the community of the following terricolous fruticose lichens: *Cladonia* spp., *Cetraria steppae* (Savicz) Kärnefelt, *Cetraria islandica* (L.) Ach., *Aspicilia fruticulosa* (Eversm.) Flagey (Figs 21–24).

**Etymology.** The name is translated from Latin as “from mountain steppe”.

#### Key to species of the subgenus *Heloponotus* on males

1. Body with metallic shade. Protarsi slightly widened, protarsomeres longitudinal ..... *O. arborea*  
– Body from light-brown to black, but without metallic shade. Protarsi strongly widened, second protarsomere

- slightly transverse, third protarsomere with subequal length and width ..... 2  
 2. Lateral margin of prohypomera entirely flattened ..... *O. gracilis montanosteppensis* **subsp. n.**  
 – Lateral margin of prohypomera slightly flattened only near base ..... *O. gracilis gracilis*

#### Key to species of the subgenus *Heloponotus* on females

1. Body with metallic shade. Lateral sides of pronotal disc slightly flattened ..... *O. arborea*  
 – Body from light-brown to black, but without metallic shade. Pronotal disc evenly entirely convex ..... 2  
 2. Body black with black legs. Ultimate maxillary palpomere distinctly smaller and narrower than in male. Pronotum widest at middle .....  
 ..... *O. gracilis montanosteppensis* **subsp. n.**  
 – Body from light-brown to dark-brown, legs from reddish to dark-brown. Ultimate palpomere almost the same as in male. Pronotum widest slightly after middle .....  
 ..... *O. gracilis gracilis*

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Figs 21–24. Landscape, habitat and lichen taxocene from the type locality of *Odocnemis gracilis montanosteppensis* **subsp. n.** (photographs by S.A. Svirin).

21 – landscape of Ay-Petri yayla, environs of Brakon'erskiy grot; 22 – habitat of the subspecies; 23 – *Cetraria steppae*; 24 – *Aspicilia fruticulosa*.

Рис. 21–24. Ландшафт, биотоп и таксоцено лишайников в типовом местонахождении *Odocnemis gracilis montanosteppensis* **subsp. n.** (фотографии С.А. Свирина).

21 – ландшафт Ай-Петринской яйлы, окрестности Браконьерского грота; 22 – местообитание подвида; 23 – *Cetraria steppae*; 24 – *Aspicilia fruticulosa*.

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