

РОССИЙСКАЯ АКАДЕМИЯ НАУК  
Институт аридных зон ЮНЦ

RUSSIAN ACADEMY OF SCIENCES  
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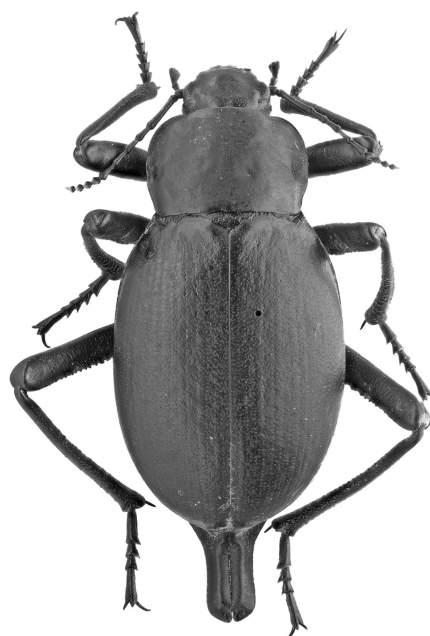


# Кавказский Энтомологический Бюллетень

CAUCASIAN ENTOMOLOGICAL BULLETIN

Том 12. Вып. 2

Vol. 12. No. 2



Ростов-на-Дону  
2016

## Taxonomic review of the genus *Armenohelops* Nabozhenko, 2002 (Coleoptera: Tenebrionidae) with additional support of the mitochondrial COI gene sequences

## Таксономический обзор рода *Armenohelops* Nabozhenko, 2002 (Coleoptera: Tenebrionidae) с дополнительной поддержкой последовательностей митохондриального гена COI

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**Key words:** Coleoptera, Tenebrionidae, Helopini, *Armenohelops*, morphology, new species, synonymy, new combinations, mt COI.

**Ключевые слова:** Coleoptera, Tenebrionidae, Helopini, *Armenohelops*, морфология, новые виды, синонимия, новые комбинации, ген COI, мДНК.

**Abstract.** The genus *Armenohelops* Nabozhenko, 2002 (Tenebrionidae: Helopini: Cyldrinotina) with 9 species from Anatolia, Armenia and North Western Iran is revised. Two new species are described (both from Turkey): *A. parvocularis* sp. n., *A. fouquei* sp. n. New synonyms are established: *Armenohelops bosphoranus* (Allard, 1876) = *Stenomax fundator* Reitter, 1908, **syn. n.**; *Armenohelops amasiae* (Seidlitz, 1896) = *Cylindronotus (Odocnemis) strangulatus* Reitter, 1922, **syn. n.** New combinations are established: *Armenohelops scutellatus* (Reitter, 1902), **comb. n.** (from *Odocnemis* Allard, 1876), *Armenohelops bosphoranus* (Allard, 1876), **comb. n.** (from *Odocnemis*), *Armenohelops amasiae* (Seidlitz, 1896), **comb. n.** (from *Odocnemis*). Lectotypes of *Stenomax scutellatus* Reitter, 1902, *Stenomax fundator* Reitter, 1908 and *Cylindronotus strangulatus* Reitter, 1922 are designated. Molecular phylogenetic analyses were also conducted using mitochondrial COI sequences, in order to confirm the monophyly of the newly collected material of *A. amasiae* from different populations. Taxonomic history, distribution, morphology, position of the genus in the tribe Helopini and key to species are given.

**Резюме.** В работе ревизован род *Armenohelops* Nabozhenko, 2002 (Tenebrionidae: Helopini: Cyldrinotina), 9 видов которого распространены в Анатолии, Армении и Северо-Западном Иране. Описано два новых вида из Турции: *A. parvocularis* sp. n., *A. fouquei* sp. n. Установлены новые синонимы: *Armenohelops bosphoranus* (Allard, 1876) = *Stenomax fundator* Reitter, 1908, **syn. n.**; *Armenohelops*

*amasiae* (Seidlitz, 1896) = *Cylindronotus (Odocnemis) strangulatus* Reitter, 1922, **syn. n.** Три вида переведены из рода *Odocnemis* Allard, 1876 в род *Armenohelops*: *Armenohelops scutellatus* (Reitter, 1902), **comb. n.**, *Armenohelops bosphoranus* (Allard, 1876), **comb. n.**, *Armenohelops amasiae* (Seidlitz, 1896), **comb. n.** Обозначены лектотипы *Stenomax scutellatus* Reitter, 1902, *Stenomax fundator* Reitter, 1908 и *Cylindronotus strangulatus* Reitter, 1922. В работе обсуждаются история изучения, распространение, морфология, положение рода в системе трибы Helopini, дана определительная таблица для видов.

The genus *Armenohelops* Nabozhenko, 2002 was erected for two species from Armenia and Eastern Turkey [Nabozhenko, 2002]. Later one additional species from Iran [Nabozhenko, 2009] and two species from Anatolia were described [Nabozhenko, 2011]. Some species from Turkey including early to the genus *Odocnemis* Allard, 1876 [Nabozhenko, 2008] also belong to the genus *Armenohelops* after the study of the type material [Nabozhenko, Keskin, 2016]. One species *A. terminasiana* Nabozhenko, 2011 was transferred to the genus *Odocnemis* after the study of males from the type locality [Nabozhenko, Keskin, 2016]. Eight species of the genus are distributed in Northern Iran, Armenia and Turkey (Anatolia and East Thrace). The group reaches the most diversity in Anatolia from which 7 species are known, one species is known from Iran. *Armenohelops* was not found in South-Western Anatolia. The most of the species (3) are distributed in North Anatolian Mountains

from Rize and Artvin provinces to Istanbul, three species inhabit mountains of Eastern Anatolia (Kars, Erzurum, Van provinces) and Armenia, one species is described from northern slopes of Central Taurus.

Position of the genus in the tribe Helopini. *Armenohelops* belongs to the 'cylindrinotoid' generic group of the subtribe Cylindrinotina and is closest to the genera *Idahelops* Keskin et Nabozhenko, 2012 and *Odocnemis*. Species of the genera *Idahelops* and *Armenohelops* have unusual for the most Helopini structure of aedeagus: the apical piece is very short (4.5–5 times shorter than the basal piece) and curved, concave dorsally, with dorso-ventrally flattened apex; the basal piece is long. *Idahelops* is more specialized monotypic genus which differs from *Armenohelops* by the presence of large elytral tubercles with coeloconic sensilla, completely pubescence body and wide epipleura with dorsal carina flattened apically. Both genera differ from *Odocnemis* and other 'cylindrinotoid' genera (*Cylindrinotus* Faldermann, 1837, *Reitterohelops* Skopin, 1960, *Microdocnemis* Nabozhenko et Keskin, 2010, *Taurohelops* Keskin et Nabozhenko, 2015) also by female genital tubes with 'nalassoid' structure (the spermatheca is short and not branched, without short processes, the accessory gland is short, basal duct of spermatheca is absent or very short). Males of *Armenohelops* have not teeth or granules on the inner side of tibiae unlike *Cylindrinotus*, *Odocnemis* and *Microdocnemis*. The main differences of *Armenohelops* and *Taurohelops* in outer morphology are in the structure of the abdominal ventrite 5 and male genitalia, absence of large dense elytral tubercles and not keel-shaped 8<sup>th</sup> elytral interval.

Bionomics. Imago of all *Armenohelops* are lichenophagous and feed on foliose lichens on tree trunks or rarely stones. Although their larvae are still unknown, they are probably soil dwelling as the most of other Helopini larvae. The most species are associated with flora of relict type and inhabit forests of *Quercus cerris* (*A. amasiae* (Seidlitz, 1896), *A. kasatkini* Nabozhenko, 2013, *A. fouquei* sp. n.), *Quercus castaneifolia* (*A. medvedevi* Nabozhenko, 2009), *Pinus nigra* (*A. amasiae*, *A. kagyzmanicus* Nabozhenko, 2002, *A. armeniacus* Nabozhenko, 2002) and *Cedrus libani* (*A. amasiae*). Imago of *A. amasiae* and *A. fouquei* sp. n. are also collected on *Populus* and *Crataegus* near forests of *Quercus cerris*. Species of *Armenohelops* were not found

on other species of *Quercus* (except listed). Some species inhabit open landscapes where feeding on epilithic foliose lichens (sometimes *A. armeniacus*, *Armenohelops* sp. from Ovit Pass, Rize Province). Imago are nocturnal and active from 20:00 to 1:00 in spring and early summer (April – June, until July in high mountains).

## Material and methods

The study is based on the examination of adult beetles from the following institutes, museums and private collections:

HNHM – Hungarian Natural History Museum (Ottó Merkl, Budapest, Hungary);

MNHP – Muséum National d'Histoire Naturelle (Antoine Mantilleri, Paris, France);

NMB – Naturhistorisches Museum Basel (Eva Sprecher, Basel, Switzerland);

SMNS – Staatliches Museum für Naturkunde (Wolfgang Schawaller, Stuttgart, Germany);

ZIN – Zoological Institute, Russian Academy of Sciences (Gleb Medvedev, Mark Volkovitsh, St. Petersburg, Russia);

CK – private collection of Mark Kalashian, Scientific Centre of Zoology and Hydroecology of the National Academy of Sciences of Armenia (Yerevan);

CN – private collection of Maxim Nabozhenko.

We used Zeiss Supra 55VP Field Emission Scanning Electron Microscope in MEİTAM (Mersin University) and SEM Quanta 250 (Izmir Institute of Technology) for SEM images.

Molecular analyses. Although the specimens of *A. amasiae* from different populations have identical structure of male genitalia, they show great variations in the length of tarsi, punctuation, elytral interval and form of the pronotum. In order to confirm the monophyly of the newly collected material on *A. amasiae* from different populations, molecular phylogenetic analyses were conducted using mitochondrial COI sequences.

A total of 18 specimens were selected for DNA sequencing, representing different populations of *A. amasiae*, *A. armeniacus*, *A. parvularis* sp. n., and *A. fouquei* sp. n. *Turkonalassus petrophilus* (in litt.) was used as outgroup taxon. Genomic DNA was extracted

Table 1. Locality of specimens and populations of the genus *Armenohelops* using in phylogenetic analyses.

Таблица 1. Местонахождения видов и популяций таксонов *Armenohelops*, используемых в филогенетическом анализе.

Taxon Таксон	Locality Местонахождение	Number of specimens Количество экземпляров
<i>A. amasiae</i>	Turkey, Amasya Province, Ormanözü, 40°46'244"N / 35°53'421"E	2
<i>A. amasiae</i>	Turkey, Yozgat, Çamlık Milli Park, 39°48'21.2"N / 34°48'47.4"E	2
<i>A. amasiae</i>	Turkey, Çorum Province, Boğazkale, Hattuşa, 40°01'47.2"N / 34°37'26.7"E	2
<i>A. parvularis</i> sp. n.	Turkey, Tokat and Sivas provinces border, Çamlıbel Geçidi, 39°57'33.6"N, 36°31'33.9"E	1
<i>A. armeniacus</i>	Turkey, Erzurum Province, Oltu District, Obayaylası Köyü, 40°30'02"N / 42°04'18"E	3
<i>A. fouquei</i> sp. n.	Turkey, Bitlis Province, SE of Tatvan, 38°28'50.0.85"N / 42°19'15.23"E	7

**Note.** Variability and diagnostic characters are given in descriptions and the key to species.

**Примечание.** Изменчивость и диагностические признаки даны в описаниях и определительной таблице.

from thorax, using the Promega 96-well plate kit according to the manufacturer's instructions. An 829 bp fragment of the 3' end of the cytochrome oxidase I (COI) gene was amplified using the primers JerryTen and PatTen [Papadopoulou et al., 2009]. Amplification products were purified and then sequenced in both directions, using the amplification primers. Sequence chromatograms were assembled and edited using Sequencher 5.0 (Gene Codes, Ann Arbor, MI). Sequence evolution models were selected in JModelTest 2.1.6 [Darriba et al., 2012] using the Bayesian Information Criterion (BIC). Tree searches were performed with Bayesian analysis by applying GTR+G model in MrBayes 3.2 [Ronquist et al., 2011] with two parallel runs of  $10 \times 10^6$  generations, sampling a tree every 1000 steps. Standard convergence diagnostics were checked to ensure that the Markov chain had reached stationary phase using Tracer v1.4.1 [Rambaut, Drummond, 2007]. The first 25% of sampled trees were discarded as burn-in and the remaining trees were used to generate a 50% majority rule consensus tree. A list of specimens that were used in phylogenetic analyses is given in Table 1. The COI sequences were submitted to GenBank for accession numbers.

## Results and discussion

### Subfamily Tenebrioninae

#### Tribe Helopini

#### Subtribe Cylindrinotina

#### Genus *Armenohelops* Nabozhenko, 2002

Type species *Armenohelops armeniacus* Nabozhenko, 2002.

Nabozhenko, 2002: 42; Nabozhenko, 2009: 186; Keskin, Nabozhenko, 2012: 64 (differences from *Idahelops*).

**General morphology of adults.** Species of the genus are moderate in size (6–10 mm), usually slender, wingless beetles with shiny or rarely dull body; lower aspect of eye has a posterior ventral groove; temples weakly rounded, not constricted; antennae long, extending beyond base of pronotum often reaching 1/3 of elytral length; pronotum cordate or at least widest before middle. Prothoracic hypomera with longitudinal wrinkles, with not flattened or very narrow flattened outer margin; elytra with basal vertical margin, humeral angles rounded, not projected; elytral interstriae with coeloconic and trichoid sensilla (Figs 2–4), elytra without tubercles or grains with coeloconic sensilla or with very small tubercles; epipleura reaching elytral apex, but very narrow apically (Fig. 1); 8<sup>th</sup> interstria not convex or keel-shaped, not connected with elytral margin (Fig. 1); dorsal epipleural carina well expressed, reaching elytra sutural angle but not flattened apically (Fig. 1); hind wings absent; metaventrite strongly transverse, sometimes more short than mesoventrite; male abdominal ventrite 1 without hair brush in middle; legs slender, tibiae always straight, without granules of teeth on inner side; inner side of femora and trochanter almost always strongly pubescent; tarsi long (especially in males), with dense hair brush on sole; tarsal claw strong, bent; aedeagus moderately sclerotized; apical piece short, visibly bent on dorsal side (only *A. fouquei* **sp. n.** has straight parameres), usually with transverse longitudinal

depression dorsally; medial lobe (penis) almost completely located inside basal lobe in fixed condition, median lobe baculi reaching base of apical piece; female genital tubes 'nalassoid', with short (length of spermatheca 5–9 times as short as body length) unbranched spermatheca and short accessory gland. Sexual dimorphism: males always more slender, with longer legs and antennae.

#### *Armenohelops armeniacus* Nabozhenko, 2002 (Figs 5, 6, 57)

Nabozhenko, 2002: 42; Nabozhenko, 2009: 187; Kalashyan, 2010: 102.

Type material and description see in Nabozhenko [2002]. Distribution in Armenia is given by Kalashyan [2010].

**Material.** 1♂ (CK), 1♀ (CN), Armenia, Ararat Prov., env. Lusashogh, 1850 m, 39°52'N / 44°58'E, 21.05.2005 (leg. M.Yu. Kalashian); 3♂, 4♀ (CN), 5♂, 5♀ (in ethanol) and 9♂, 2♀ (dry material) (ZDEU), Turkey, Erzurum Prov., Şenkaya District, Gaziler, 40°25'04.6"N / 42°20'11"E, 1920 m, 23.05.2010 (leg. M.V. and S.V. Nabozhenko, B. Keskin); 1♂, 1♀ (CN), 6♂ (in ethanol) and 3♂, 3♀ (dry material) (ZDEU), Turkey, Erzurum Prov., Oltu District, Obayaylası Köyü, 40°30'02"N / 42°04'18"E, 1990 m, 12.07.2011 (leg. M.V. and S.V. Nabozhenko, B. Keskin).

**Distribution.** Armenia, Eastern Anatolia (Erzurum Province).

#### *Armenohelops kagyzmanicus* Nabozhenko, 2002

Nabozhenko, 2002: 44; Nabozhenko, 2009: 187.

Type material, figures and description see in Nabozhenko [2002].

**Disctribution.** This species is known only from Kagizman (Turkey: Kars Province).

#### *Armenohelops medvedevi* Nabozhenko, 2009

Nabozhenko, 2009: 186–187, figs 1–5.

Type material, figures and description see in Nabozhenko [2009].

**Distribution.** Iran: Ardabil Province.

#### *Armenohelops kasatkini* Nabozhenko, 2011 (Figs 46–47)

Nabozhenko, 2011: 135.

Type material and description see in Nabozhenko [2011].

**Distribution.** Turkey: Erzincan Province (Gemencik).

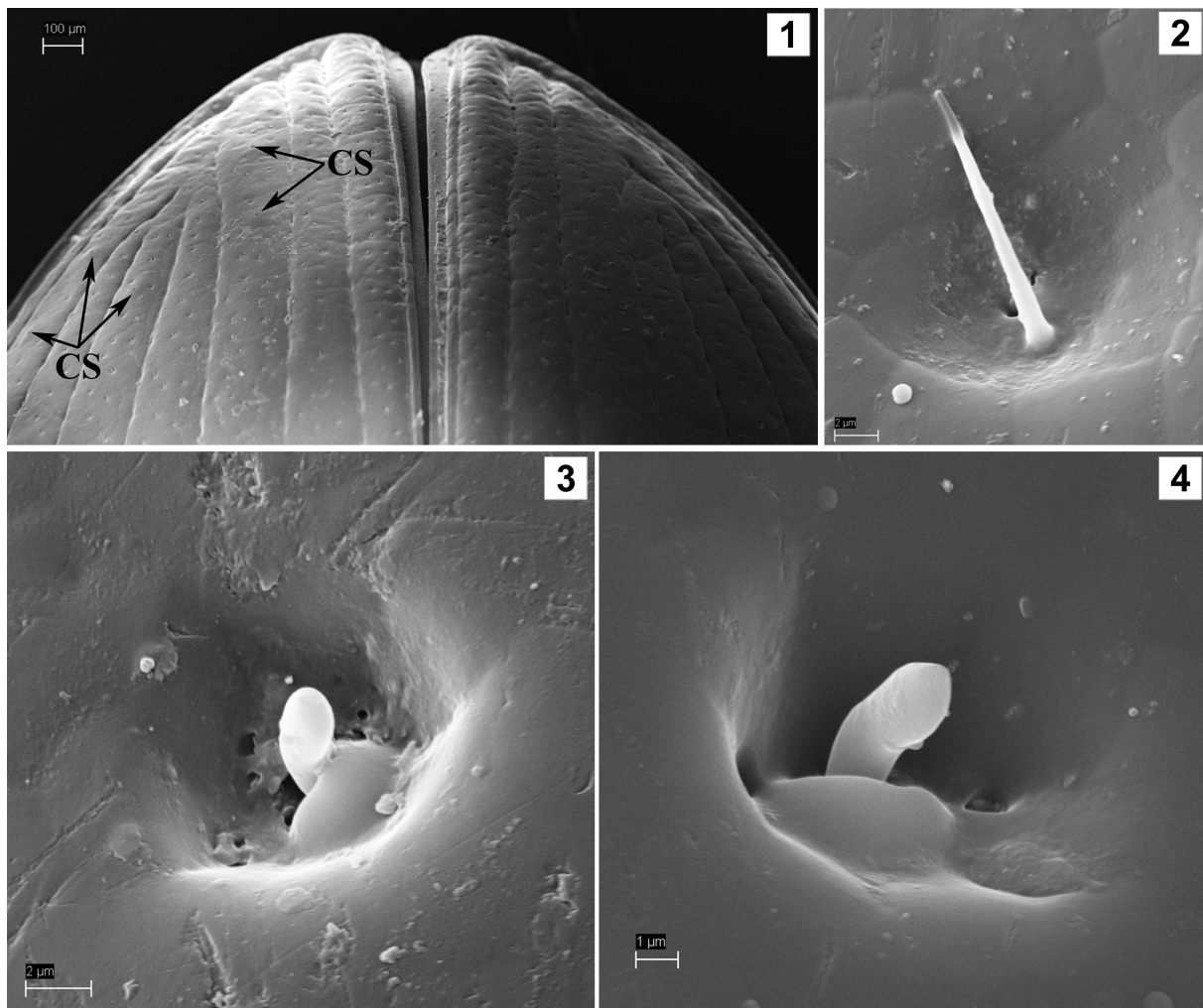
#### *Armenohelops scutellatus* (Reitter, 1902), **comb. n.** (Figs 7, 8, 11–15, 26)

Reitter, 1902: 221 (*Stenomax*); Reitter, 1922: 139, nota (*Cylindronotus (Omaleis)*); Nabozhenko, 2008: 37 (*Odocnemis*).

**Type material.** Lectotype, ♂, designated here: "Asia minor, Bulgar Maaden, v. Bodemeyer", "Coll. Reitter", "Holotypus 1902 *Stenomax scutellatus* Reitter" (curator's label), "*H. scutellatus* m. 1900". Paralectotype, ♀: "Asia Minor, Karakucy v. Bodemeyer", "Coll. Reitter", "Paratypus 1902 *Stenomax scutellatus* Reitter" (curator's label). The lectotype and the paralectotype are deposited in HHNM.

**Material.** 2♀, Turkey, Karaman Prov., Ayranci, 1000 m, 3.04.1978 (leg. Heinz) (SMNS).

**Redescription.** Male. Body robust, brown or reddish-brown, moderately shining, strongly convex. Head widest at eye



Figs 1–4. *Armenohelops* spp., details of the structure.

1 – apical part of elytra; 2 – trichoid sensillum; 3–4 – coeloconic sensillum. 1–3 – *A. fouquei* sp. n.; 4 – *A. amasiae*. CS – coeloconic sensilla.

Рис. 1–4. *Armenohelops* spp., детали строения.

1 – апикальная часть надкрылий; 2 – трихотидная сенсилла; 3–4 – целококоническая сенсилла. 1–3 – *A. fouquei* sp. n.; 4 – *A. amasiae*. CS – целококоническая сенсилла.

level. Eyes large, convex. Ratio of head width at eyes to distance between eyes 1.44. Genae weakly rounded in base and straight in anterior 2/3. Punctuation of head sparse, not dense (puncture diameter 2–3 times as short as interpuncture distance). Punctuation visibly denser near eyes. Antennae moderately long (reaching basal third of elytral length), with 3 apical antennomeres extending beyond base of pronotum.

Pronotum transverse (1.2 times as wide as long), widest a little before middle, 1.5 times wider than head. Lateral margins weakly rounded in middle, straight in anterior and basal half, very weakly sinuate near base. Anterior margin widely weakly emarginate in middle. Base straight. Anterior angles obtuse, widely rounded at apex, posterior angles right, distinct at apex. All margins with thickened bead. Disc of pronotum regularly strongly convex, only near posterior angles flattened. Punctuation of disc fine and sparse in middle and near margins (puncture diameter approximately 1.5–2 times as short as interpuncture distance) but denser on sides (puncture diameter subequal to interpuncture distance). Prothoracic hypomera with fine longitudinal wrinkles, widely flattened near posterior angles and very narrowly flattened along other part of margin. Prosternal process weakly convex.

Elytra oval (1.65 times as long as wide), visibly convex, widest at middle, 1.3 times as wide and 2.55 times as long as pronotum, 1.95 times as wide as head. Lateral margins of elytra visibly

rounded. Strial punctures deep, elongate, striae as dotted lines. Interstriae flat, with coarse and moderately dense punctuation. Epipleural carina very narrow and visible dorsally only in anterior half.

Abdominal ventrites glabrous, coarsely and densely punctated on sides and finely and densely punctated in middle. Abdominal ventrite 5 completely beaded at apex.

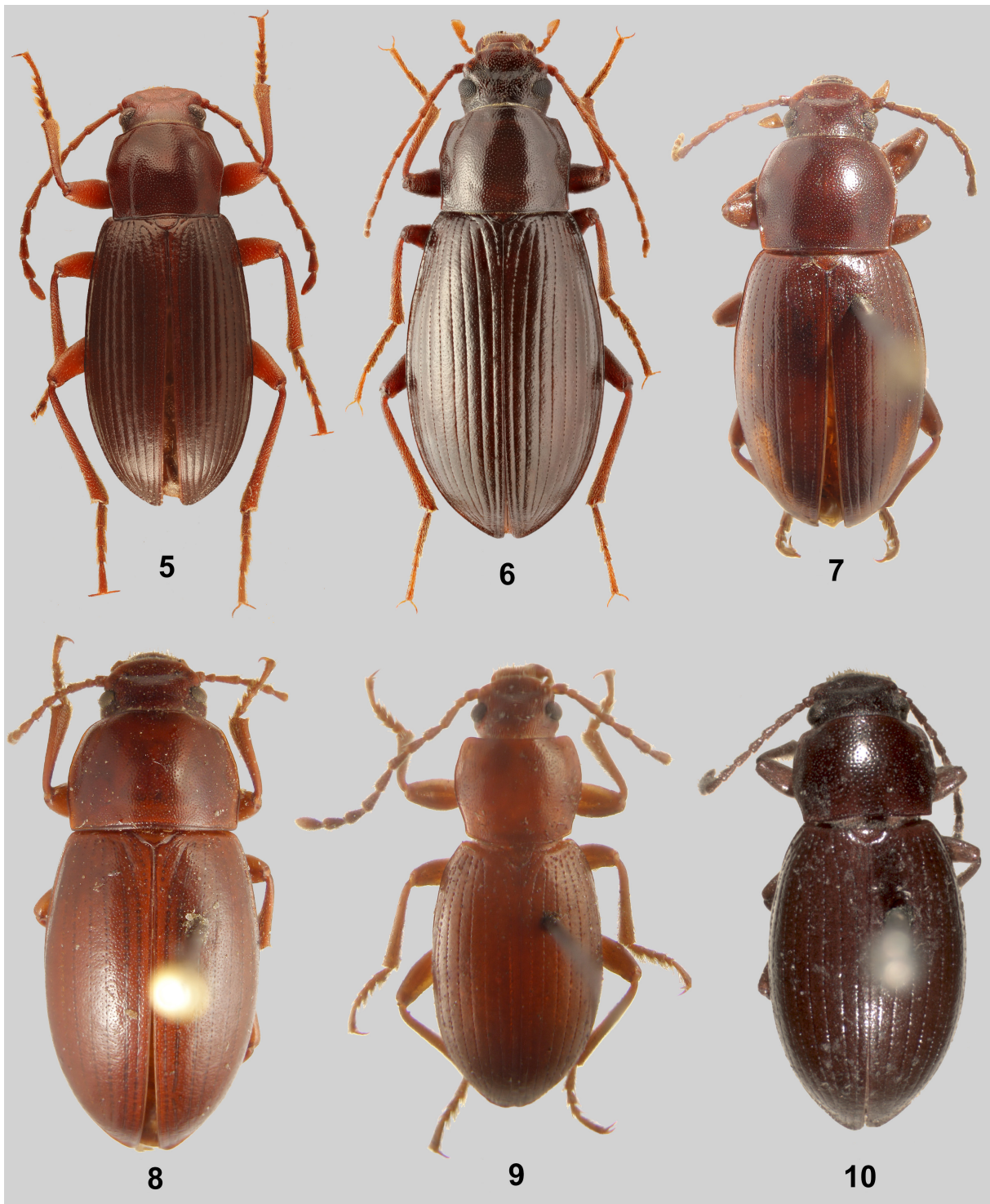
Trochanters with dense hairs. Tibiae straight, short, thickened. Pro- and mesotarsomeres 2–3 widened, with subequal length and width. Meso- and metatarsi short, with subequal length.

Body length 8 mm, width 3.7 mm.

Female. Body more robust. Antennae shorter, only 2 apical antennomeres extending beyond base of pronotum. Pronotum strongly transverse (1.37–1.4 times as wide as long), widest at middle or after middle, with regularly rounded lateral margins. Abdominal ventrite 5 with round or oval depression at anterior middle. Punctuation of this depression coarser and denser than on other surface. Strial punctures finer. Pro- and mesotarsi not widened.

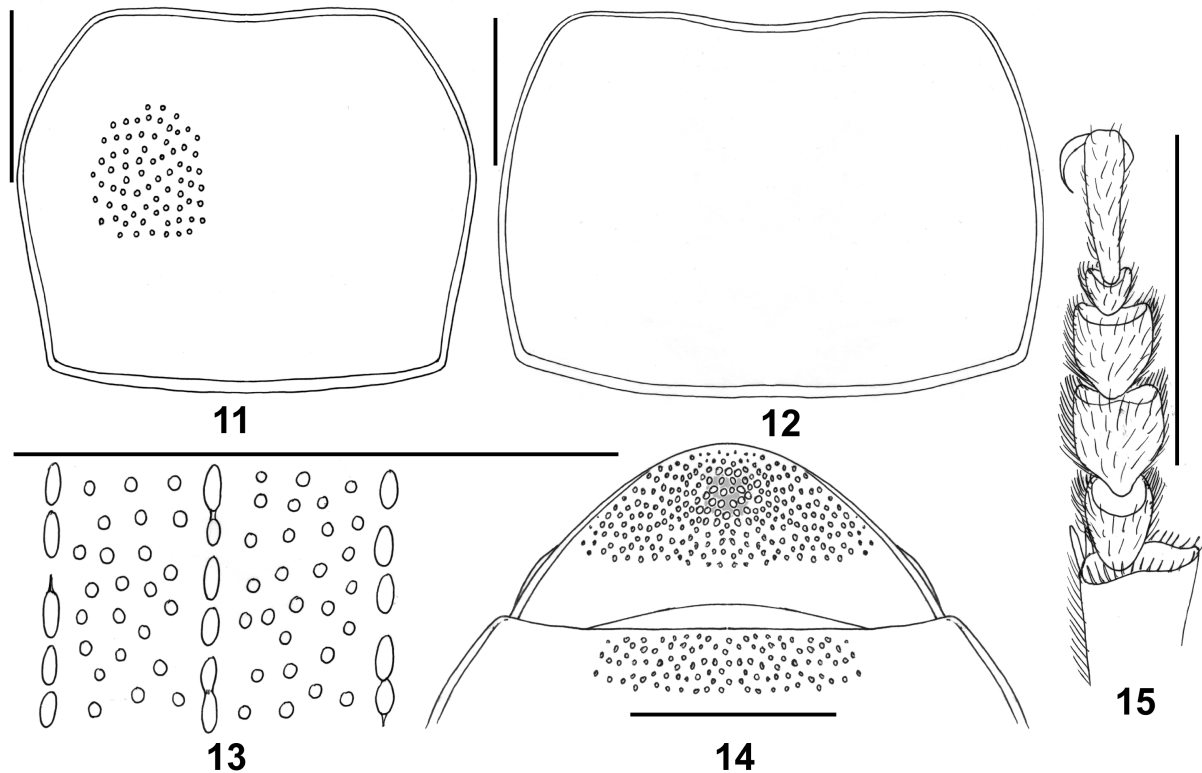
Body length 8.4–10 mm, width 4–4.3 mm.

**Distribution.** Northern slopes of the Central Taurus mountains (Turkey).



Figs 5–10. *Armenohelops* spp., habitus.  
 5 – *A. armeniacus*, male; 6 – *A. armeniacus*, female; 7 – *A. scutellatus*, male (lectotype); 8 – *A. scutellatus*, female (paralectotype); 9 – *A. bosporanus*, male (lectotype of *Stenomax fundator*); 10 – *A. bosporanus*, female (holotype). Photo 6 by Maxim Smirnov is taken from the site “Beetles and coleopterologists” (<https://www.zin.ru/animalia/coleoptera/rus/armarmms.htm>).

Рис. 5–10. *Armenohelops* spp., габитус.  
 5 – *A. armeniacus*, самец; 6 – *A. armeniacus*, самка; 7 – *A. scutellatus*, самец (лектотип); 8 – *A. scutellatus*, самка (паралектотип); 9 – *A. bosporanus*, самец (лектотип *Stenomax fundator*); 10 – *A. bosporanus*, самка (голотип). Фото 6 сделано М.Э. Смирновым и заимствовано с сайта «Жуки и колеоптерологи» (<https://www.zin.ru/animalia/coleoptera/rus/armarmms.htm>).



Figs 11–15. *Armenohelops scutellatus*, details of the structure.

11 – male pronotum; 12 – female pronotum; 13 – elytral striae and interstriae; 14 – female abdominal ventrites 4 and 5; 15 – male protarsus. Scale bars 1 mm.

Рис. 11–15. *Armenohelops scutellatus*, детали строения.

11 – переднеспинка самца; 12 – переднеспинка самки; 13 – ряды точек и междурядья на надкрыльях; 14 – абдоминальные вентриты 4 и 5 самки; 15 – передняя лапка самца. Масштабные линейки – 1 мм.

*Armenohelops bosporanus* (Allard, 1876), **comb. n.**  
(Figs 9, 10, 16–18, 27, 28)

Allard, 1876: 56 (*Stenomax*); Seidlitz, 1896: 734 (*Helops* (*Stenomax*)); Reitter, 1922: 140 (*Cylindronotus* (*Omaleis*)); Nabozhenko, 2008: 37 (*Odocnemis*).

= *fundator* Reitter, 1908: 215 (*Stenomax*); Reitter, 1922: 139, nota (*Cylindronotus* (*Omaleis*)); Nabozhenko, 2008: 37 (*Odocnemis*), **syn. n.**

**Type material.** Holotype of *Armenohelops bosporanus*, ♀ (MNHP): “*bosporanus* Constantinople”, “Ex. Musaeo E. Allard, 1899”, “Holotype”.

Lectotype of *Stenomax fundator*, ♂, designated here: “Asia minor, Alem-Dagh v. Bodemeyer”, “Holotypus 1908 *Stenomax fundator* Reitter” (curator’s label), “Coll. Reitter”, “*Stenomax fundator* m.”. Paralectotype, ♀: the same labels but curator’s label is: “Paratypus 1908 *Stenomax fundator* Reitter”. The lectotype and the paralectotype are deposited in HNHM.

**Redescription.** Male. Body robust, convex, brown, shiny. Head widest at eye level. Eyes large, convex. Ratio of head width at eyes to distance between eyes 1.6. Genae strongly rounded. Punctuation of head coarse, moderately dense in middle (puncture diameter subequal to interpuncture distance) and denser on frontoclypeus and near eyes (puncture diameter visibly longer than interpuncture distance). Antennae long, 4 apical antennomeres extending beyond base of pronotum, reaching almost half of elytral length.

Pronotum cordate, transverse (1.2 times as wide as long), widest a little before middle, 1.4 times as wide as head. Lateral margins of pronotum moderately rounded, sinuate in base. Anterior margin widely emarginate, base visibly rounded and protruded but emarginated in middle. Anterior angles right, widely rounded at apex, posterior angles obtuse, narrowly rounded at apex. All margins of pronotum narrowly beaded. Disc of pronotum

regularly strongly convex. Punctuation of disc coarse and sparse (puncture diameter subequal or less than interpuncture distance). Prothoracic hypomera with fine and long irregular wrinkles, outer margins not flattened.

Elytra convex, oval (1.65 times as long as wide), widest at middle, 1.3 times as wide and 2.6 times as long as pronotum, 1.84 times as wide as head. Strial punctures deep, round, not connected. Interstriae flat, with very fine and sparse punctuation. Epipleural carina narrow, dorsally visible only near humeral angles.

Abdominal ventrites 1–4 with coarse irregular wrinkles on sides and moderately coarse not dense punctuation in middle. Abdominal ventrite 5 not beaded apically.

Trochanters with dense hair brush. Tibiae straight, tarsi not widened. Metatarsi longer than mesotarsi.

Body length 6.5 mm, width 2.3 mm.

Female. Body more robust. Antennae shorter, with only 3 apical antennomeres extending beyond base of pronotum. Ratio of head width at eyes to distance between eyes 1.55. Abdominal ventrite 5 without depression, with regular dense punctuation.

Body length 8–8.3 mm, width 3 mm.

**Distribution.** Seidlitz [1896] and Reitter [1922] erroneously interpreted this species and listed it for the Caucasus. The species is distributed in Asian and European parts of the Bosphorus.

*Armenohelops amasiae* (Seidlitz, 1896), **comb. n.**  
(Figs 4, 19–25, 29, 30–37)

Seidlitz, 1896: 732 (*Helops* (*Stenomax*)); Reitter, 1922: 139, nota (*Cylindronotus* (*Omaleis*)); Nabozhenko, 2008: 37 (*Odocnemis*).

= *strangulatus* Reitter, 1922: 130 (*Cylindronotus* (*Odocnemis*)); Nabozhenko, 2008: 37 (*Odocnemis*), **syn. n.**

**Type material.** Syntypes of *Helops amasiae* were not found and probably are lost. Type locality: "Amasya". Description clearly belongs to *Armenohelops strangulatus*.

*Odocnemis strangulatus*. Holotype, ♀, with labels: "Asia minor Amasia" (print), "Staud" (hand written), "Strangulat." (hand written), "Reitt. det." (hand written), "TYPUS" (print).

**Material.** 3♀ (ZIN), Turkey, Trabzon Prov., "Sadach", 6-7.07.1917 (leg. W. Eichler); 1♂, 2♀ (ZIN), Turkey, Trabzon Prov., "Dzewizlik" (now Maçka), 27.05.1917 (leg. W. Eichler); 2♀ (ZIN), Turkey, Trabzon Prov., "Dattaban", 30.06.1917 (W. Eichler); 2♂ (SMNS), Turkey, Gümüşhane Prov., Kankanlı - Zigana pass, 40°40'N / 39°15'E, 1250-1800 m, 18-23.05.1975 (leg. H. and U. Aspöck, H. and R. Rausch, P. Ressel); 2♂ (SMNS), Turkey, Artvin Prov., Şavşat, 41°15'N / 42°20'E, 900 m, 25.05.1975 (leg. H. and U. Aspöck, H. and R. Rausch, P. Ressel); 1♀ (SMNS), Turkey, Gümüşhane Prov., 7 km NW Köse, Quercus - Populus, 1700-2000 m, 20.07.1976 (leg. Heinz); 1♂ (SMNS), Turkey, Yozgat Prov., 45 km E Sorgun, 11.04.1979 (leg. Heinz); 1♂, 2♀ (HNHM), Turkey, Aladağ, Kızılcahamam, 1400 m, 19-21.06.1983 (leg. K. Gaskó); 7♂, 8♀ (CN), Tokat Prov., Devici Dağı, 8 km E Kızılıniş pass, on Quercus cerris, 25-26.04.2008 (leg. M.V. Nabozhenko); 8♂, 9♀ (CN), 4♂, 8♀ (ZDEU), Turkey, Kastamonu Prov., Ilgaz District, 41°13'328"N / 33°26'175"E, 795 m, 31.05.2009 (leg. M.V. and S.V. Nabozhenko, B. Keskin); 67♂, 69♀ (ZIN, CN), 27♂, 19♀ (in ethanol) and 9♂, 6♀ (dry material) (ZDEU), Turkey, Amasya Prov., Ormanözü, 40°46'244"N / 35°53'421"E, 1671 m, 2.06.2009 (leg. M.V. and S.V. Nabozhenko, B. Keskin); 19♂, 10♀ (ZDEU), the same place, 19.04.2015 (leg. M.V. and S.V. Nabozhenko, B. Keskin, I.A. Chigray); 2♂, 2♀ (CN), Turkey, Çorum Prov., Büğet, 40°37'654"N / E 35°01'653"E, 1400 m, 4.06.2009 (leg. M.V. and S.V. Nabozhenko, B. Keskin); 16♂, 11♀ (ZIN, CN), 17♂, 5♀ (in ethanol) and 2♂, 2♀ (dry material) (ZDEU), Turkey, Çorum Prov., Boğazkale, Hattuşa, 40°01'47.2"N / 34°37'26.7"E, 1090 m, 12-13.04.2014 (leg. M.V. and S.V. Nabozhenko, B. Keskin); 14♂, 10♀ (CN, ZIN), Turkey, Yozgat / Çorum provinces border, above Boğazkale, Çampınar, 39°57'47"N / 34°37'04"E, 1490 m, 12.04.2014 (leg. M.V. and S.V. Nabozhenko, B. Keskin); 15♂, 16♀ (ZIN, CN), 19♂, 13♀ (in ethanol) and 10♂, 19♀ (dry material) (ZDEU), Turkey, Yozgat, Çamlık Millî Park, 39°48'21.2"N / 34°48'47.4"E, 1600 m, 13.04.2014 (leg. M.V. and S.V. Nabozhenko, B. Keskin); 1♂ (ZDEU), Turkey, Yozgat Prov., Akdağmadeni, 39°33'49.3"N / 35°47'38.2"E, 1660 m, 16.04.2014 (leg. M.V. and S.V. Nabozhenko, B. Keskin); 7♂, 3♀ (CN), 7♂, 3♀ (in ethanol) and 3♂, 8♀ (dry material) (ZDEU), Turkey, Tokat Prov., above Türkfindıcak, 40°47'31.2"N / 36°34'17.6"E, 1240 m, on Cedrus libanii and Quercus cerris, 18.04.2014 (leg. M.V. and S.V. Nabozhenko, B. Keskin); 8♂, 7♀ (CN, ZIN), 4♂, 9♀ (ZDEU), Turkey, Yozgat Prov., pass between Sorgun and Aydıncık, 40°03'47.8"N / 35°14'49.0"E, 1540 m, 19-20.04.2015 (leg. M.V. and S.V. Nabozhenko, B. Keskin, I.A. Chigray).

**Redescription** (population from the type locality). Male. Body brown, shiny, moderately robust, convex. Head widest at eye level. Eyes large, convex. Ratio of head width at eyes to distance between eyes 1.57-1.6. Ratio of head width at eye level

to head width at genal level 1.2. Lateral margins of genae strongly rounded, straight in anterior third. Punctuation of head coarse and dense (puncture diameter 2 times as long as distance between punctures), punctures often connected. Antennae long (reaching almost middle of elytral length), with 4 apical antennomeres extending beyond base of pronotum.

Pronotum transverse (1.24-1.26 times as wide as long), cordate, widest before middle or rarely in middle, 1.4 times wider than head. Lateral margins moderately rounded, widely emarginated in base. Anterior margin straight or weakly rounded. Base almost straight. Anterior angles obtuse, posterior angles right or weakly obtuse. All margins narrowly beaded. Disc of pronotum regularly convex. Punctuation of disc not dense (puncture diameter 1.5 times as short as distance between punctures). Prothoracic hypomera with fine irregular wrinkles in basal half and longitudinal wrinkles in anterior half. Prothoracic sternite before procoxae with punctuation and irregular wrinkles laterally, without sparse long hairs.

Elytra oval (1.53-1.58 times as long as wide), a little wider in base than base of pronotum, convex, 1.9-2 times as wide as head, 2.7 times as long and 1.32-1.36 times as wide as pronotum. Punctures in striae deep, oval, round, connected by deep grooves; grooves often interrupted in elytral middle. Intervals weakly convex, rarely flat, with fine and sparse distinct punctuation. Some specimens with weak tubercles in elytral apex. Epipleural dorsal carina clearly visible along entire length.

Mesoventrite without oval depression at middle of anterior margin. Metaventrite with the same punctuation as on pronotum. Abdominal ventrites with fine, moderately dense punctuation (puncture diameter subequal to distance between punctures or slightly smaller); ventrite 5 beaded apically. Trochanters, base of femora on inner side, meso- and metacoxae with dense erect hairs.

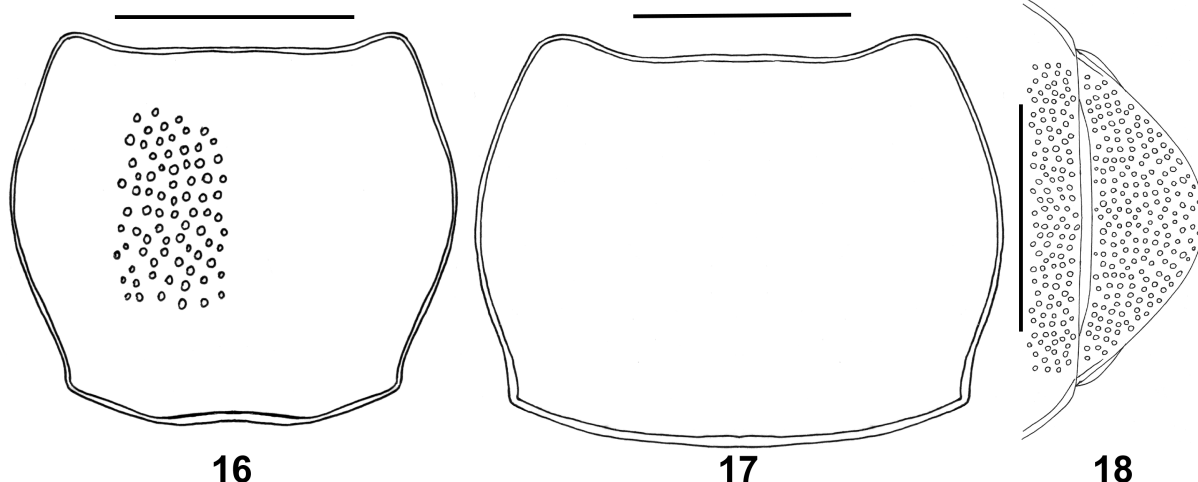
Legs slender, tibiae straight, protarsi not widened, protarsomeres longitudinal.

Body length 7.8-9.6 mm, width 3.4-4 mm.

Female. Body more robust, antennae shorter, with 3 apical antennomeres extending beyond base of pronotum. Pronotum more transverse (1.33-1.36 times as wide as long).

Body length 8.5-11.8 mm, width 3.7-4.7 mm.

Variability. Populations of this widespread and variable species have identical structure of male genitalia but variable tarsi, punctuation, elytral intervals and the form of pronotum. Metatarsi can be longer or shorter; ratio between length of 1<sup>st</sup> and 4<sup>th</sup> metatarsi: 1.75-1.8 (Amasya, Çorum, Yozgat, environs of Tokat),



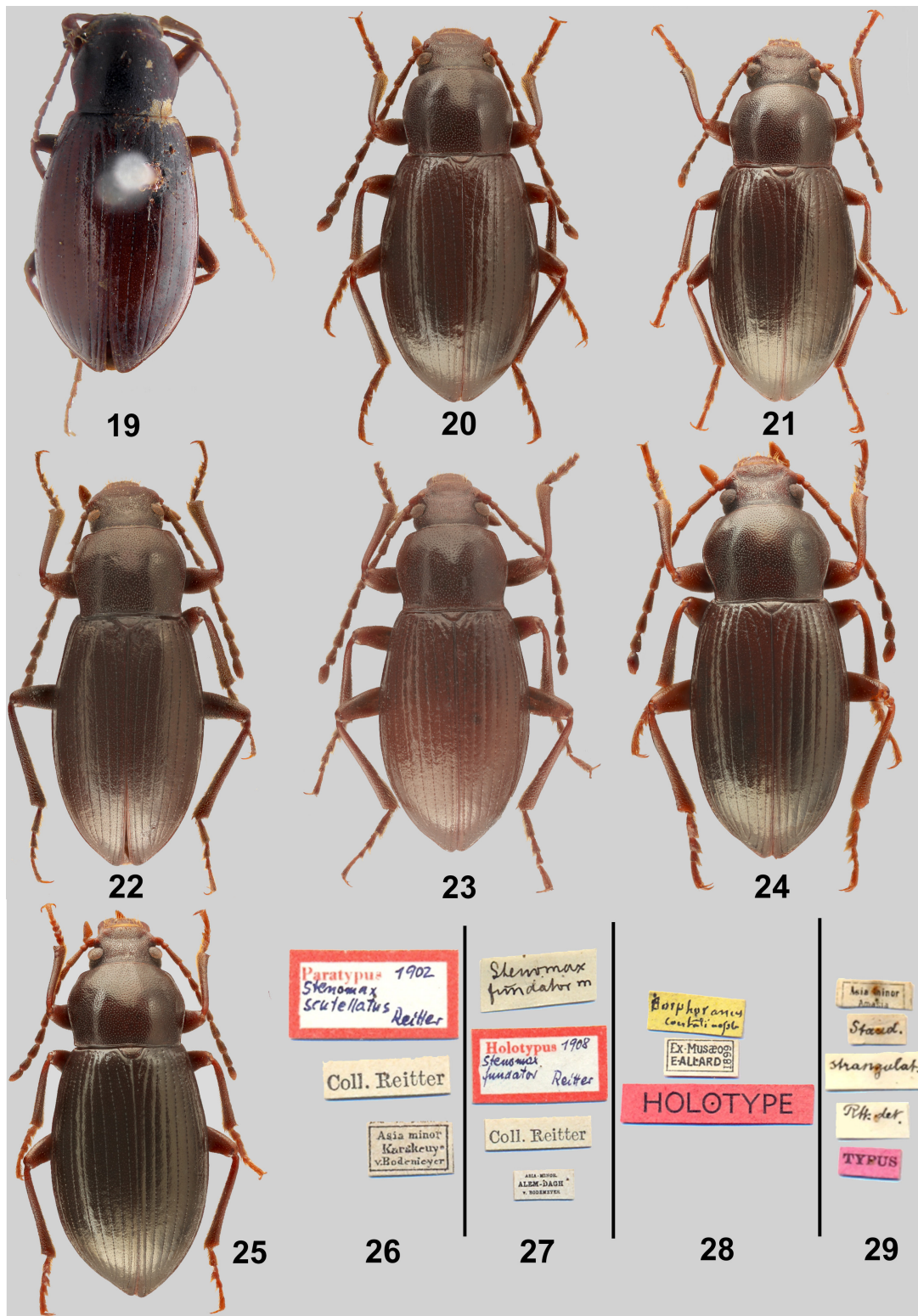
Figs 16-18. *Armenohelops bosporanus*, details of the structure.

16 - male pronotum; 17 - female pronotum; 18 - female abdominal ventrites 4 and 5. Scale bars 1 mm.

Рис. 16-18. *Armenohelops bosporanus*, детали строения.

16 - переднеспинка самца; 17 - переднеспинка самки; 18 - абдоминальные вентриты 4 и 5 самки. Масштабные линейки - 1 мм.



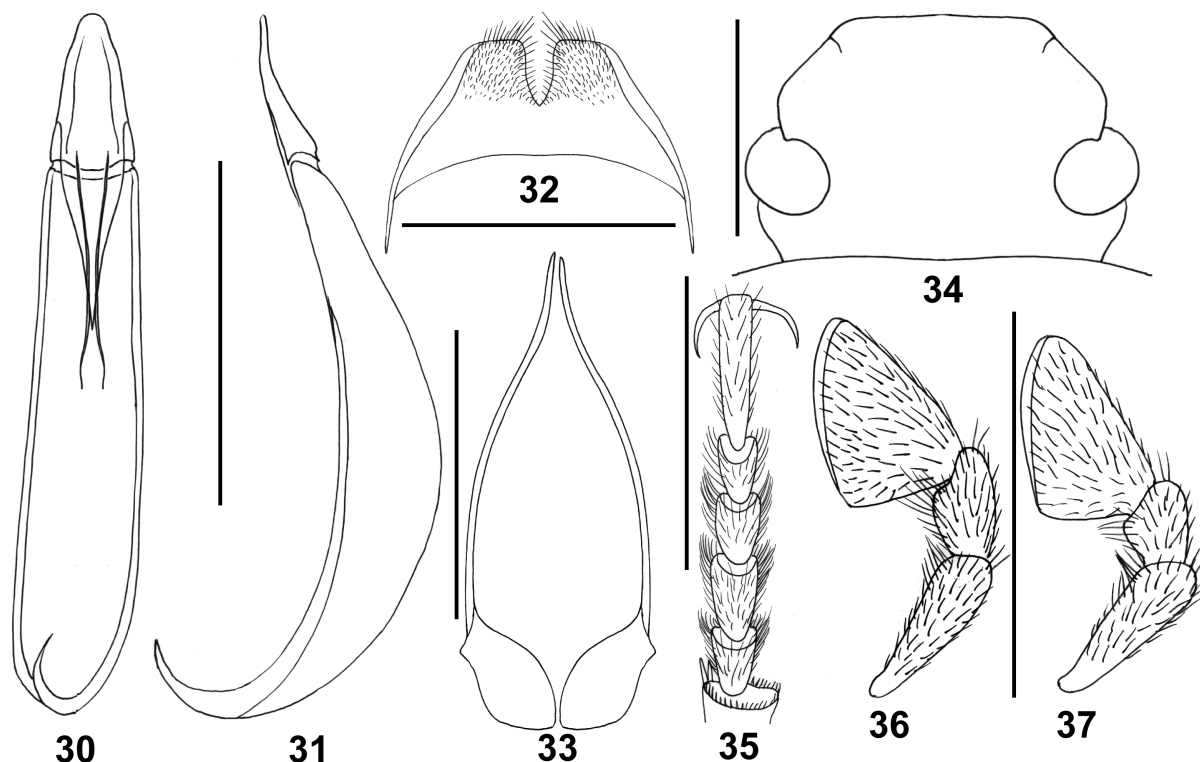


Figs 19–29. *Armenohelops* spp., habitus and type labels.

19–25, 28 – *A. amasiae*; 19 – female, the holotype of *Cylindronotus strangulatus*; 20 – male, Amasya; 21 – female, Amasya; 22 – male, Gümüşhane, Zigana Pass; 23 – male, Artvin, Şavşat; 23 – male, Yozgat, Çampınar; 24 – female, Yozgat, Çampınar; 26 – labels of the paralectotype of *A. scutellatus*; 27 – labels of the lectotype of *Stenomax fundator*; 28 – labels of the holotype of *Stenomax bosporanus*; 28 – labels of the holotype of *Cylindronotus strangulatus*.

Рис. 19–29. *Armenohelops* spp., габитус и типовые этикетки.

19–25, 28 – *A. amasiae*; 19 – самка, голотип *Cylindronotus strangulatus*; 20 – самец, Амасья; 21 – самка, Амасья; 22 – самец, Гюмюшане, перевал Зигана; 23 – самец, Артвин, Шавшат; 23 – самец, Йозгат, Чампынар; 24 – самка, Йозгат, Чампынар; 26 – этикетки паралектотипа *A. scutellatus*; 27 – этикетки лектотипа *Stenomax fundator*; 28 – этикетки голотипа *Stenomax bosporanus*; 28 – этикетки голотипа *Cylindronotus strangulatus*.



Figs 30–37. *Armenohelops amasiae*, details of the structure.

30 – aedeagus, ventral view; 31 – aedeagus, lateral view; 32 – male inner sternite VIII; 33 – gastral spicula; 34 – head; 35 – male protarsus; 36 – male maxillar apical palpomere; 37 – female maxillar apical palpomere. Scale bars 1 mm.

Рис. 30–37. *Armenohelops amasiae*, детали строения.

30 – эдеагус, вентрально; 31 – эдеагус, латерально; 32 – VIII внутренний стернит самца; 33 – гастральная спикула; 34 – голова; 35 – передняя лапка самца; 36 – максиллярный апикальный пальпомер самца; 37 – максиллярный апикальный пальпомер самки. Масштабные линейки – 1 мм.

1.9 (Tokat: Türkfindıcak), 2.3 (Gümüşhane), 2.4 (Kastamonu: Ilgaz Dağları), 2.8 (Artvin: Şavşat).

Population from Türkfindıcak (Erbaa, Tokat): punctation of head very coarse, with connected punctures; punctation of pronotum coarser; body darker and less shiny.

Population from Artvin (Şavşat): legs more slender and longer; punctation of elytral intervals coarser.

Population from Gümüşhane (Zigana Pass, Köse) and Trabzon (Maçka): body larger, pronotum in base visibly shorter than elytra in base; male elytral intervals flat; punctation of pronotum and elytral intervals coarser; females with more projected anterior angles.

Population from Kastamonu (Ilgaz Dağları): body is less convex, legs more slender.

Populations from pass between Sorgun and Aydıncık and Çampınar (Çorum / Yozgat provinces border) clearly differ from other populations by widened protarsi of male, wider and more cordate pronotum of male, coarse transverse wrinkles on male prothoracic sternite.

**Bionomics.** The species inhabits forests with *Quercus cerris*, *Pinus nigra*, *Cedrus libani* and feed on foliose epiphytic lichens at night (from 21:00 to 1:00 a.m.).

**Distribution.** Northern Anatolia from Ankara and Kastamonu to Artvin Province.

**Notes.** We studied also one female from Rize Province (Anatolien: Ovitdag-Gec. 21.05.1989, leg. A. Riedel; deposited in SMNS) which is similar to *A. amasiae*. This specimen has clear differences from *A. amasiae* in the sculpture and punctation of pronotum, visibly flattened body, structure of elytral striae but we don't want to

describe a new species in this taxonomically difficult genus before the study of males.

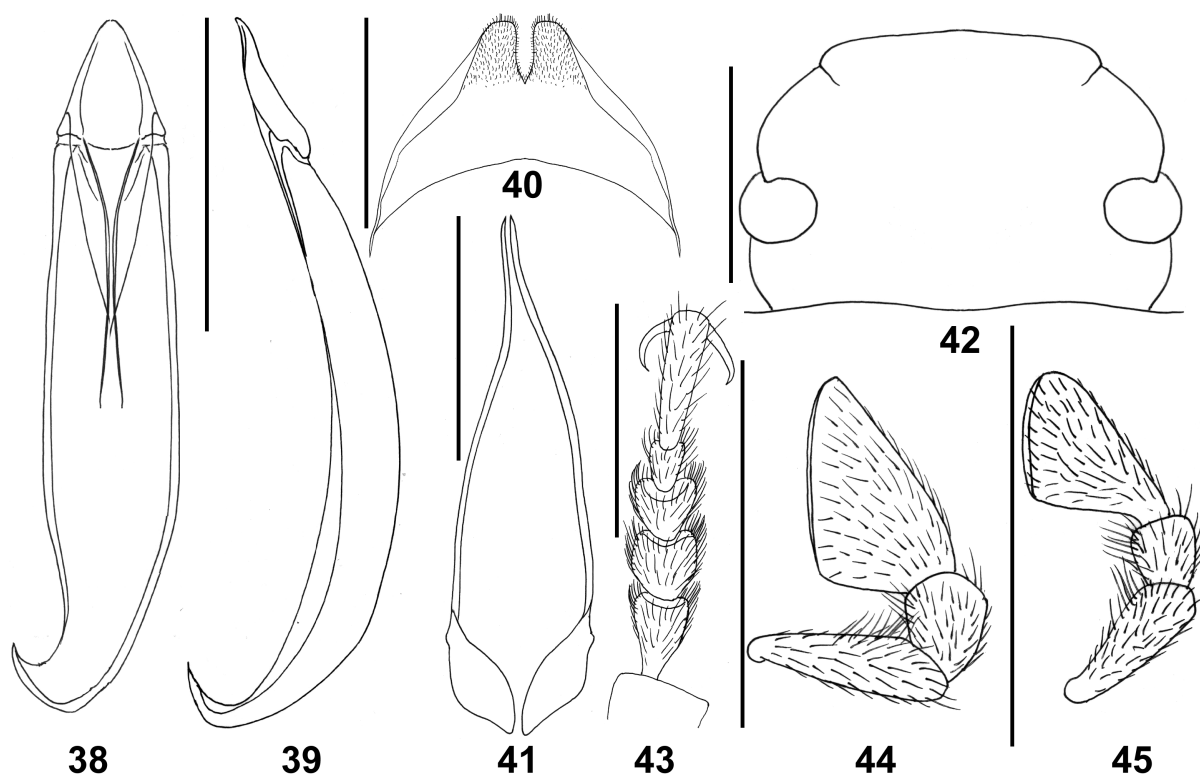
*Armenohelops parvocularis* sp. n.

(Figs 38–45, 48, 49)

**Material.** Holotype, ♂ (ZDEU) and paratypes, 3♂, 2♀ (ZIN), 6♂, 6♀ (in ethanol) and 2♂, 2♀ (dry material) (ZDEU): Turkey, Sivas Prov., near Şarköy, 40°00'14.40"N / 37°58'50.17"E, 1768 m, 19.04.2014 (leg. M.V. and S.V. Nabozhenko, B. Keskin). Paratypes: 1♀ (ZDEU), Turkey, Tokat / Sivas provinces border, Çamlıbel Geçidi above Yıldızeli, 39°57'33.6"N / 36°31'33.9"E, 28.05.2013 (leg. B. Keskin, A. Pektaş); 1♀ (SMNS), Turkey, Sivas, 8 km W bivio Zara, 1400 m, 31.05–18.06.1998 (leg. G. Sama).

**Description.** Male. Body moderately slender, weakly shiny (pronotum shinier than elytra), brown, pronotum and stutellum often lighter or reddish-brown. Head widest at eye level. Eyes dorsally moderately large, weakly convex. Ratio of head width at eyes to distance between eyes 1.55–1.56. Ratio of head width at eye level to head width at genal level 1.07. Lateral margins of genae rounded in basal third and straight or weakly rounded in anterior 2/3. Punctation of head coarse, not dense (distance between punctures 1.5–2 times as long as puncture diameter). Apical maxillar palpomere strongly widened, hatchet-shaped, with length of apical margin equal to length of outer margin. Antennae long (reaching almost elytral half), 4 apical antennomeres extending beyond base of pronotum.

Pronotum transverse (1.2 times as wide as long), widest before middle. Lateral margins weakly rounded, not emarginated or very weakly emarginated in base. Anterior margin widely emarginated, base almost straight. Anterior and posterior angles rounded apically, anterior angles right, posterior weakly obtuse.



Figs 38–45. *Armenohelops parvocularis* sp. n., details of the structure.

38 – aedeagus, ventral view; 39 – aedeagus, lateral view; 40 – male inner sternite VIII; 41 – gastral spicula; 42 – head; 43 – male protarsus; 44 – male maxillary apical palpomere; 45 – female maxillary apical palpomere. Scale bars 1 mm.

Рис. 38–45. *Armenohelops parvocularis* sp. n., детали строения.

38 – эдеагус, вентрально; 39 – эдеагус, латерально; 40 – VIII внутренний стернит самца; 41 – гастральная спикула; 42 – голова; 43 – передняя лапка самца; 44 – максиллярный апикальный пальпомер самца; 45 – максиллярный апикальный пальпомер самки. Масштабные линейки – 1 мм.

Disc of pronotum regularly convex. Punctuation of disc less coarse and dense than on head (puncture diameter 1.5–3 times as long as interpuncture distance in middle and subequal to distance on sides), punctures round. Middle line without punctuation distinctly visible. Prothoracic hypomera with moderately coarse irregular wrinkles, with narrowly flattened outer margins. Prosternal process weakly convex.

Elytra elongate (1.58 times as long as wide), widest at middle, 1.3 times as wide and 2.54 times as long as pronotum, 1.97–2 times as wide as head. Strial punctures oval, connected by narrow grooves. Interstriae flat, with very sparse and fine punctuation, 3<sup>rd</sup>, 5<sup>th</sup> and 7<sup>th</sup> intervals with poorly visible tubercles apically. Epipleural carina wide, completely visible dorsally.

Metaventrite with coarse sparse punctuation (puncture diameter 2–3 times shorter than interpuncture distance). Abdominal ventrites with moderately coarse and moderately dense punctuation (puncture diameter subequal to interpuncture distance); ventrites 3–5 with fine dense punctuation; ventrite 5 beaded apically.

Trochanters covered with dense erected hairs. Femora with moderately dense recumbent pubescence on inner side. Protarsi weakly widened, protarsomeres 2 and 3 weakly transverse or with subequal width and length.

Body length 9.8–11.1 mm, width 3.9–4.2 mm.

Female. Body more robust, antennae shorter, with only 3 apical antennomeres extending beyond base of pronotum. Apical maxillary palpomere hatchet-shaped but visibly narrower than in male (1.33 times as long as wide). Protarsi not widened.

Body length 10–11 mm, width 4–4.2 mm.

**Diagnosis.** This new species is close to *A. amasiae* from which distinctly differs in the weakly convex eyes, widened male protarsi with transverse protarsomeres 2 and 3, presence of sexual dimorphism based on structure of apical maxillary palpomeres (difference from other species of *Armenohelops*).

**Etymology.** The name derives from Latin “parvus” (small) and “ocularis” (pertaining to the eyes).

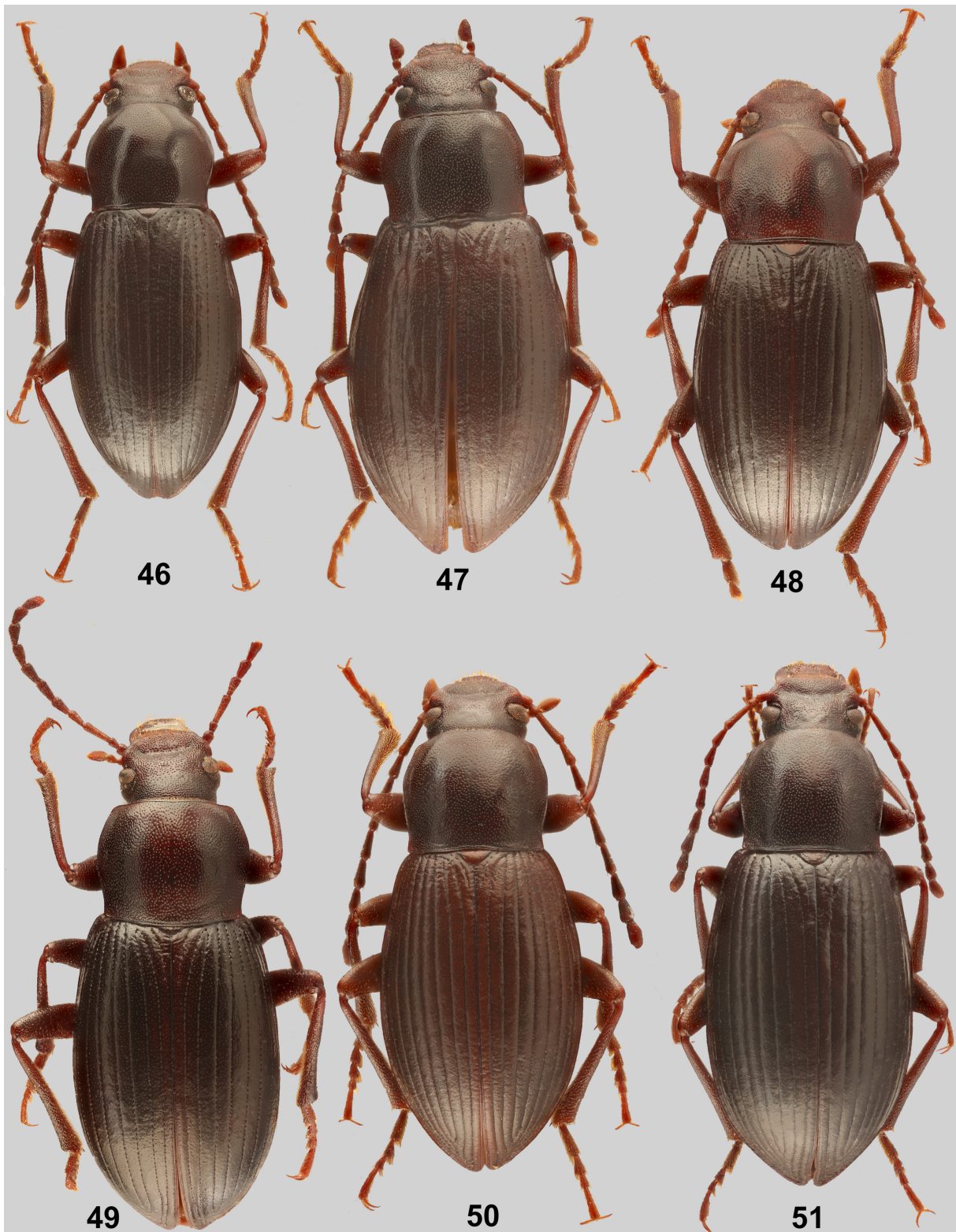
*Armenohelops fouquei* sp. n.

(Figs 1–3, 50–56)

**Material.** Holotype, ♂, and paratypes, 40♂, 47♀ (ZIN), 15♂, 7♀ (in ethanol) and 5♂, 4♀ (dry material) (ZDEU): Turkey, Bitlis Prov., SE of Tatvan, on *Quercus cerris*, 38°28'50.085" N / 42°19'15.23"E, 23.04.2009 (leg. M.V. and S.V. Nabozhenko). Paratypes: 7♂, 3♀ (ZIN), the same place, on Juglans, 23–25.05.2010 (leg. I.V. Shokhin).

**Description.** Male. Body slender, with dull shine, dark brown, convex. Head widest at eye level. Eyes dorsally large, convex. Ratio of head width at eyes to distance between eyes 1.6. Lateral margins of genae strongly rounded in basal third and weakly rounded in anterior 2/3. Punctuation of head irregular: moderately coarse and sparse (puncture diameter 1.5–2 times as short as interpuncture distance) on frons and finer and denser on other dorsal surface. Antennae long (reaching almost elytral half), 4 apical antennomeres extending beyond base of pronotum.

Pronotum weakly transverse (1.13 times as wide as long) and convex, widest before middle, cordate, 1.34 times wider than head. Lateral margins weakly rounded in anterior 2/3 and strongly emarginated in basal third. Anterior margin straight, base weakly

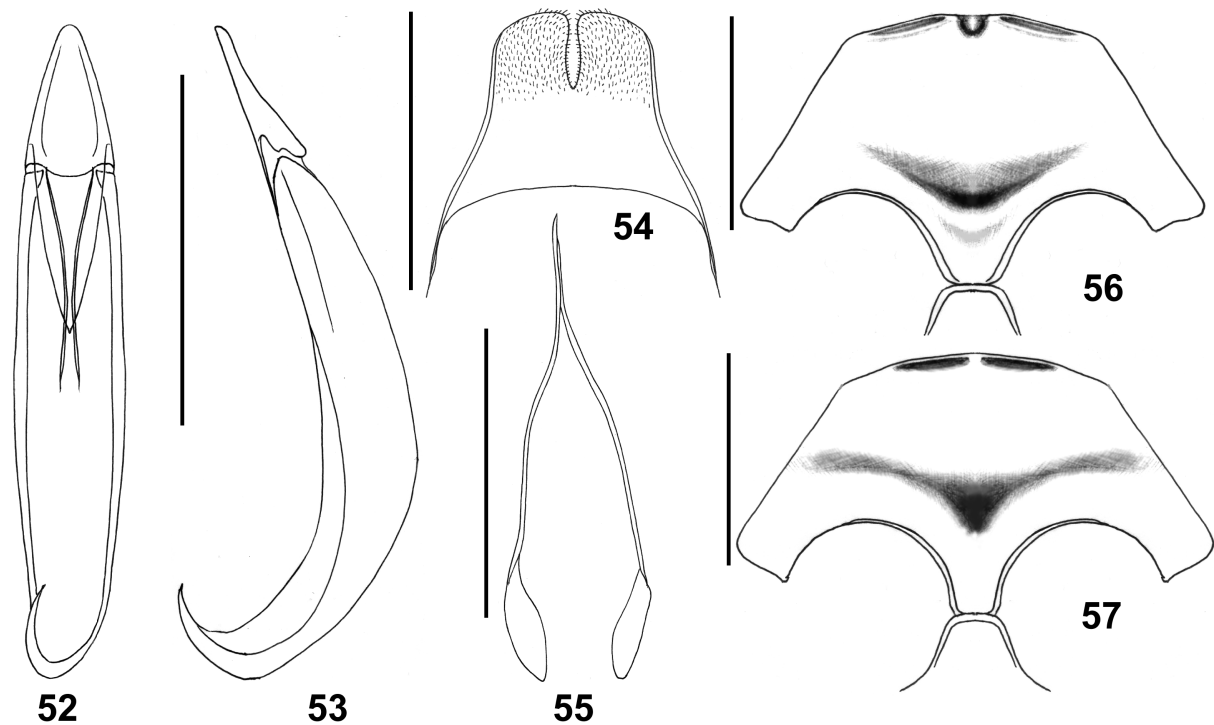


Figs 46–51. *Armenohelops* spp., habitus.

46–47 – *A. kasatkini*; 48–49 – *A. parvocularis* sp. n.; 50–51 – *A. fouquei* sp. n. 46, 48, 50 – males; 47, 49, 51 – females.

Рис. 46–51. *Armenohelops* spp., габитус.

46–47 – *A. kasatkini*; 48–49 – *A. parvocularis* sp. n.; 50–51 – *A. fouquei* sp. n. 46, 48, 50 – самцы; 47, 49, 51 – самки.



Figs 52–57. *Armenohelops* spp., details of the structure.

52–56 – *A. fouquei* sp. n.; 57 – *A. armeniacus*. 52 – aedeagus, dorsal view; 53 – aedeagus, lateral view; 54 – male inner sternite VIII; 55 – gastral spicula; 56–57 – mesoventrite. Scale bars – 1 mm.

Рис. 52–57. *Armenohelops* spp., детали строения.

52–56 – *A. fouquei* sp. n.; 57 – *A. armeniacus*. 52 – эдеагус, вентрально; 53 – эдеагус, латерально; 54 – VIII внутренний стернит самца; 55 – гастральная спикула; 56–57 – мезовентрит. Масштабные линейки – 1 мм.

rounded. Anterior angles not projected, obtuse, posterior angles acute or right. All margins of pronotum completely narrowly beaded. Disc of pronotum strongly regularly convex. Punctuation of disc irregular: fine and sparse in anterior third (puncture diameter 3–4 times as short as interpuncture distance) and moderately coarse and sparse on other surface (puncture diameter about 1.5 times as short as interpuncture distance). Middle line without punctuation distinctly visible. Prothoracic hypomera with fine irregular wrinkles and not flattened outer margins. Prosternal process weakly convex.

Elytra oval (1.5 times as long as wide), widest at middle, 1.54 times as wide and 2.65 times as long as pronotum, 2–2.07 times as wide as pronotum. Strial punctures oval, connected by narrow grooves. Interstriae very weakly convex, with very sparse and fine punctuation, without tubercles apically. Epipleural carina wide, completely visible dorsally.

Mesoventrite often with round depression in middle of anterior margin. Metaventrite with coarse sparse punctuation (puncture diameter 2–3 times as short as interpuncture distance). Abdominal ventrites with moderately dense fine punctuation in middle and sparse fine punctuation on lateral sides. Abdominal ventrite 5 not beaded on apex.

Trochanters with dense pubescence of erect hairs, femora with recumbent hairs on inner side. Legs slender, tibiae straight, protarsi not widened.

Body length 8.1–10.8 mm, width 3.2–4.3 mm.

Female. Body more robust, antennae shorter (3 apical antennomeres extending beyond base of pronotum reaching basal third of elytra). Frons often denser punctated (puncture diameter subequal to interpuncture distance). Strial elytral punctures not merged, interstriae flat. Mesoventrite always with round depression in middle of anterior margin.

Body length 8.6–11.7 mm, width 3.3–4.7 mm.

**Diagnosis.** *Armenohelops fouquei* sp. n. differs from all species of the genus in the presence of round depression (for prosternal process) in the middle of anterior margin of mesoventrite, irregular punctuation of head (frons with very sparse punctuation in middle) and straight apical piece of aedeagus.

**Etymology.** The species is named in memory of our tragically dead in 2016 colleague René Fouquè (Czech Republic).

#### Key to species of the genus *Armenohelops*

- 1(2). Mesoventrite in male (often) and in female (always) with round depression in middle of anterior margin. Male frons with very sparse punctuation or without punctuation. Apical piece of aedeagus straight ventrally ..... *A. fouquei* sp. n.
- 2(1). Mesoventrite in both sexes without round depression in middle of anterior margin. Male frons with sample punctuation (as on other head surface). Apical piece of aedeagus curved ventrally.
- 3(4). Profemora with transverse oval depression on inner side. Body dull ..... *A. kagyzmanicus*
- 4(3). Profemora without oval depression on inner side. Body shiny.
- 5(8). Epipleural carina dorsally visible only near humoral angles or only in anterior half.
- 6(7). Epipleural carina dorsally visible only near humoral angles. Pronotum of male and female cordate. Male protarsi not widened. Female abdominal ventrite 5

- without oval depression in anterior half and with regular punctation ..... *A. bosporanus*
- 7(6). Epipleural carina dorsally visible from humeral angles to elytral half. Male with cordate pronotum, female with not cordate pronotum (lateral margins of pronotum regularly rounded, pronotum widest at middle or after middle). Male protarsomeres 3–4 widened. Female abdominal ventrite 5 with oval depression in anterior half and with coarser and denser punctation on place of depression ..... *A. scutellatus*
- 8(5). Epipleural carina dorsally completely visible.
- 9(10). Eyes weakly convex. Ratio of head width at eye level to head width at genal level 1.07. Male protarsomeres 1–3 widened, protarsomeres 2–3 with subequal width and length. Male and female with sexual dimorphism in apical maxillar palpomere: male palpomere strongly widened, hatchet-shaped, with equal lengths of apical margin and outer margin; female palpomere visibly narrower than in male, 1.33 times as long as wide ..... *A. parvocularis* **sp. n.**
- 10(9). Eyes strongly convex. Ratio of head width at eye level to head width at genal level 1.2 and more. Male protarsi not widened, all protarsomeres narrow and elongate. Male and female without sexual dimorphism in apical maxillar palpomere, which strongly widened in both sexes.
- 11(12). Elytra strongly elongate, 2.6–3 times as long as wide. Body weakly convex ..... *A. armeniacus*
- 12(11). Elytra moderately elongate, oval, 1.53 – 1.7 times as long as wide. Body convex.
- 13(14). Body weakly shiny, almost dull. Abdominal ventrite 5 not beaded apically ..... *A. medvedevi*
- 14(13). Body moderately or strongly shiny. Abdominal ventrite 5 beaded apically.
- 15(16). Elytral striae as fine dotted line, punctures not deep and not connected. Apex of parameres truncated ..... *A. kasatkini*
- 16(15). Elytral striae with deep oval punctures connected by interrupted grooves. Apex of parameres rounded .... *A. amasiae*

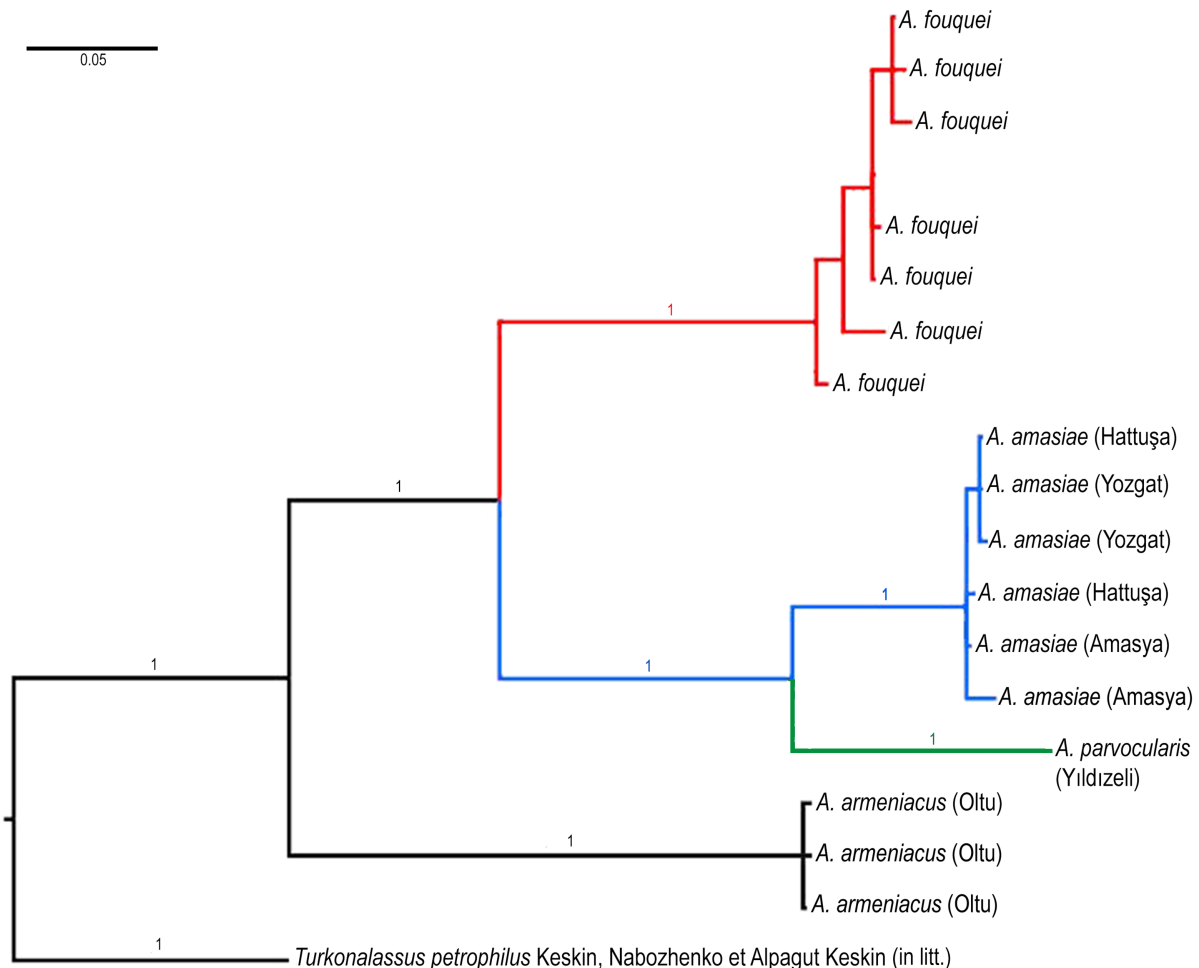


Fig. 58. Phylogenetic tree derived from Bayesian analysis of the COI sequences of different populations of *Armenohelops amasiae*, type species of the genus *A. armeniacus*, species *A. fouquei* **sp. n.**, and *A. parvocularis* **sp. n.** using *Turkonalassus petrophilus* (in litt.) as outgroup taxon. Nodal support values (PP) are presented above the respective branches of the consensus tree from the MrBayes. PP – BI posterior probabilities.

Рис. 58. Филогенетическое древо на основе байесовского анализа последовательностей COI различных популяций *Armenohelops amasiae*, типового вида рода *A. armeniacus*, *A. fouquei* **sp. n.** и *A. parvocularis* **sp. n.**, с использованием *Turkonalassus petrophilus* (in litt.) в качестве внешней группы таксона. Узловые значения поддержки (PP) представлены выше соответствующих ветвей консенсусного древа MrBayes. PP – BI-апостериорные вероятности.

## Molecular analyses

Bayesian analyses of COI sequence data representing different populations of *A. amasiae*, type species of the genus *A. armeniacus*, *A. parvocularis* **sp. n.** and *A. fouquei* **sp. n.** resulted in three clades (Fig. 58). All the studied species of *Armenohelops* were recovered as monophyletic with strong support in BI analysis. The specimens identified as *A. amasiae* from different populations were clustered together with a high nodal support value (PP = 1). *Armenohelops parvocularis* **sp. n.** was recovered as sister to *A. amasiae* with a high support.

Although all the studied material of *Armenohelops* was recovered as monophyletic with strong support in BI analysis, these preliminary findings need to be tested with complete sampling of *Armenohelops* species using different phylogenetic methods. Data from additional loci would be also necessary for reconstruction of the phylogeny of the genus *Armenohelops* and delimiting species boundaries.

## Acknowledgements

The authors are much obliged to Ottó Merkl (HNHM), Antoine Mantilleri (MNHP), Eva Sprecher (NMB), Wolfgang Schawaller (SMNS), Mark Volkovitsh (ZIN) and Mark Kalashian (Yerevan, Armenia) for providing the material, to Denis Kasatkin (Quarantin Inspection, Rostov-on-Don, Russia) for preparing the photographs, to Svetlana Nabozhenko (Institute of Arid Zones SSC RAS, Rostov-on-Don, Russia) for her help and collection of beetles during Turkish expeditions.

The study was supported by State project of Caspian Institute of Biological Resources RAS No 0205-2014-0001 “Laws of formation of biological and landscape diversity and the development of biological resources management in the Eastern Caucasus” for the first author and by Ege University Research Found projects of 2013 BIL 010 and 2009 BIL 005 for the second and third authors.

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