Published August 26, 2019

Klapalekiana, **55**: 23–35, 2019
ISSN 1210-6100

# Three new species of the subgenus *Pseudoleirides* (Coleoptera: Carabidae: *Amara*) from the Zagros Mountains (Iran)

# Tři nové druhy podrodu *Pseudoleirides* (Coleoptera: Carabidae: *Amara*) z pohoří Zagros (Írán)

Jiří HEJKAL[1)] & Jan MUILWIJK[2)]

[1)]Wolkerova 711, CZ-358 01 Kraslice, Czech Republic; e-mail: amara@volny.cz
[2)]Department of Entomology, Naturalis Biodiversity Centre,
NL 2300 RA Leiden, Netherlands; e-mail: Jan.Muilwijk@gmail.com

**Taxonomy, new species, Coleoptera, Carabidae, Zabrini, *Amara*, Palaearctic region, Iran**

**Abstract.** Three new *Amara* Bonelli, 1810 of the subgenus *Pseudoleirides* Kryzhanovskij, 1968 are described and compared with closely related species: *A.* (*P.*) *fuscolucida* Hejkal et Muilwijk sp. nov., *A.* (*P.*) *murastyii* Hejkal et Muilwijk sp. nov., and *A.* (*P.*) *rutjani* Muilwijk et Hejkal sp. nov. *Amara* (*P.*) *rutjani* Muilwijk et Hejkal sp. nov. is the first *Pseudoleirides* species with setose elytra. All new species live at high altitude (ca. 2550–3700 m a.s.l.) in the Zagros Mountains (Iran).

## INTRODUCTION

*Amara* Bonelli, 1810 is one of the most species rich ground beetle genera in Iran. So far 67 species divided over 17 subgenera are known from Iran (Hieke 2017). In fact, Hieke (2017) listed 68 *Amara* species for Iran, but *Amara zagrosensis* (Morvan, 1973) was counted twice, once erroneously as *Curtonotus* Stephens, 1827 and once as *Pseudoleirides* Kryzhanovskij, 1968. Seventeen *Amara* taxa are endemic to Iran, of which 12 species and one subspecies are from the subgenus *Pseudoleirides*. Nine species of the subgenus *Pseudoleirides* are known from the Zagros Mountains: *Amara* (*P.*) *cadoudali* Morvan, 1977, *A.* (*P.*) *escalerai* Hejkal, 2008, *A.* (*P.*) *iranica* Kryzhanovskij, 1968, *A.* (*P.*) *khorramabadensis* Hejkal, 2008, *A.* (*P.*) *loeffleri* Jedlička, 1963, *A.* (*P.*) *shirazica* Hejkal, 2008, *A.* (*P.*) *szekessyi* Jedlička, 1953, *A.* (*P.*) *yasujensis* Hejkal, 2008, and *A.* (*P.*) *zagrosensis* (Morvan, 1973) (Jedlička 1953, 1963; Kryzhanovskij 1968; Morvan 1973, 1977; Hejkal 2008). An identification key to the Iranian species of *Pseudoleirides* was published by Hejkal (2008).

Among the material collected by W. Heinz (2014: Fars province, pass between Komehr and Ardakan), J. Muilwijk (2006: Fars province, Baba Hasan pass; 2018: Chaharmahal-va-Bakhtiyari province, Cheri pass), D. Murastyi (2016: Chaharmahal-va-Bakhtiyari province, Cheri pass; 2016 and 2017: Esfahan province, Kamaran pass), J. Rieger (2016: Chaharmahal-va-Bakhtiyari province, Cheri pass) and E. V. Rutjan (same data as for D. Murastyi) in the Zagros Mountains, a number of *Pseudoleirides* specimens were present. In this material three new species of this subgenus were present and these species are described below.

## MATERIAL AND METHODS

In total, 183 specimens of *Amara* (*Pseudoleirides*) were studied. The specimens are deposited in the following collections:

HMIM = Hayk Mirzayans Insect Museum, Tehran, Iran;
NBCL = Naturalis Biodiversity Centre, Leiden, Netherlands;
NMP = Department of Entomology, National Museum, Prague, Czech Republic;
cDM = collection of D. Murastyi, Kiev, Ukraine;
cDW = collection of D. W. Wrase, Gusow-Platkow, Germany;
cER = collection of E. V. Rutjan, Kiev, Ukraine;
cJH = collection of J. Hejkal, Kraslice, Czech Republic;
cMU = collection of J. Muilwijk, Bilthoven, Netherlands;
cVZ = collection of V. Zieris, Pardubice, Czech Republic;
cWH = collection of W. Heinz, Schwanfeld, Germany.

Measurements of body parts and body ratios used in the text were taken as follows:
total length = length measured from the anterior margin of labrum to the apex of elytra;
pronotum length = length measured along the middle line;
elytra length = length measured along suture from the base to the apex;
length of median lobe = length of median lobe in dorsal view;
pronotum width = maximum width of pronotum;
elytra width = maximum width of elytra;
width of median lobe = maximum width of median lobe in dorsal view;
ratio of width/length of pronotum = ratio of maximum width of pronotum/length of pronotum measured along middle line;
ratio of length/width of elytra = ratio of length measured along suture from the base to the apex of elytra/ maximum width of elytra;
ratio of length of elytra/length of pronotum = length measured along suture from the base to the apex of elytra/length of pronotum measured along middle line;
ratio of length/width of apex of median lobe = ratio of length of apex measured from apical border of internal sac to tip of median lobe/maximum width of apex in dorsal view;
ratio of anterior margin/posterior margin of pronotum = ratio of width of pronotum between anterior angles/width of pronotum between posterior angles.

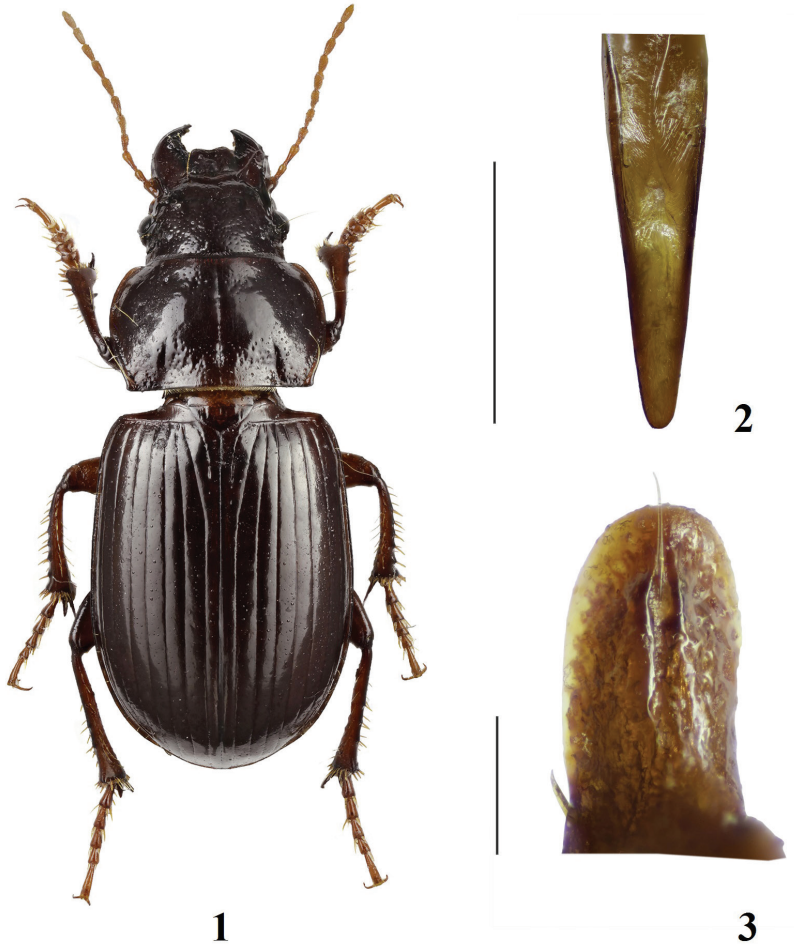
The following technical equipment was used:
J. Hejkal: Measurements were made with a MBS-10 stereo microscope at magnifications of 8× to 98× with an ocular micrometre.
P. Krásenský: Images were taken with a Canon EOS 5D mark II in combination with a Canon MP-E65 1-5× macro lens. Resulting images were focus stacked using Zerene Stacker and then postprocessed in Adobe Photoshop CC 2018.
J. Muilwijk: Measurements were taken using a Leica MZ 12.5 stereo microscope with an ocular micrometre. Images were taken with a Canon 750D and Canon MP-E65 1-5× macro lens or a NIKON 10× objective. Images were taken using Helicon Remote controlling a Stackshot Macro Rail and stacked with Helicon Focus and then postprocessed in Adobe Photoshop Elements 2018. Genitalia were dissected, cleaned in 10% KOH and fixed in Euparal.

Forward slash in "Type material" indicates separate labels.

## RESULTS

### *Amara* (*Pseudoleirides*) *fuscolucida* Hejkal et Muilwijk sp. nov.
(Figs 1–3)

**Type material.** Holotype: ♂, labelled: "Iran, Fars, Baba Hasan pass, 2568m, 2-5-2006, Muilwijk leg." / "HOLOTYPE, *Amara* (*Pseudoleirides*) *fuscolucida* sp. n. J.Hejkal & J.Muilwijk des. 2018" (red printed label), deposited in HMIM. Coordinates of the type locality: ca. 30°40.3′N, 51°42.3′E. Paratype: ♀, with same data as for the holotype, labelled:




Figs 1–3. *Amara* (*Pseudoleirides*) *fuscolucida* sp. nov. 1, 2: holotype, male, body length 10.9 mm; 3: paratype, female. 1: habitus in dorsal view, 2: apex of median lobe in dorsal view, 3: last stylomere in ventral view. Scale: 1 mm for Fig. 2; 0.3 mm for Fig. 3. Photographs by P. Krásenský.
Obr. 1–3. *Amara* (*Pseudoleirides*) *fuscolucida* sp. nov. 1, 2: holotypus, samec, délka těla 10,9 mm; 3: paratypus, samice. 1: habitus v dorsálním pohledu, 2: špice penisu v dorsálním pohledu, 3: poslední článek stylu ve ventrálním pohledu. Měřítko: 1 mm pro obr. 2; 0,3 mm pro obr. 3. Fotografie P. Krásenský.

"PARATYPE No 1, *Amara* (*Pseudoleirides*) *fuscolucida* sp. n. J.Hejkal & J.Muilwijk des. 2018" (red printed label), deposited in cMU.

**Additional material examined.** 1 ♂, 1 ♀, teneral specimens, labelled: "IR (Fars): Pass 27/2800 m, zw. Komehr u. Ardakan, Heinz leg., 24/25.IV.2014", deposited in cWH (1/0) and cJH (0/1).

**Diagnosis.** Body slightly to strongly convex, dorsal side including labrum and mandibles dark red-brown to dark brown (lateral margins of pronotum, lateral margins and base of elytra

paler, red-brown to brown-red), antennae, legs, maxillary and labial palpi brown-red, dorsal side markedly shining in male and shining in female; ventral side brown-red to red-brown; wingless (Fig. 1). Total length 10.9–13.2 mm (holotype 10.9 mm, paratype 13.2 mm).

Head broadened, densely and finely to mostly coarsely punctate, eyes slightly convex. Two supraorbital setae, anterior margin of labrum with six setiferous punctures. Anterior part of clypeus without (in paratype) or with only suggested convexity (in holotype). Frontal furrows short, narrow and moderately deepened. Antennae reaching hind margin of pronotum. Antennomere 1 relatively narrow.

Pronotum transverse (ratio of width/length = 1.61–1.63, holotype 1.61), slightly convex, widest at middle, markedly narrowed toward both anterior and posterior angles (ratio of anterior margin/posterior margin = 0.85–0.88, holotype 0.85), lateral margins slightly convex to almost straight before posterior angles. Anterior margin of pronotum very shallowly emarginate, anterior angles not protruding, rounded. Posterior angles very short, slightly obtuse, with shortly rounded apex. Pronotal base very shallowly emarginate. Inner basal impression deep, wide and long, with longitudinal median groove. Outer basal impression almost absent (in holotype) to shallow and short (in paratype), not separated from lateral margin by a callus. Anterior part of pronotum sparsely and finely to coarsely punctate. Lateral margin of pronotum narrowly flattened, very sparsely and finely to coarsely punctate. Pronotal base densely to sparsely and coarsely punctate. Two pairs of lateral setae, one pair located markedly before middle of lateral margin, one pair near posterior angles.

Elytra large and elongate (ratio of length/width = 1.50–1.52, holotype 1.50), slightly to strongly convex, declivity of elytra steep before apex in lateral view. Striae distinct, moderately deepened and widened, finely to very finely punctate. Row of setiferous punctures in stria 8 interrupted. Stria 7 mostly with two to three distinct setiferous punctures before apex. Scutellar stria continuous, joining elytral stria 1 (stria 1 interrupted). Scutellar setiferous puncture absent. Base of elytra slightly sinuate to almost straight, basal bead narrow and slightly sinuate. Elytral humeri angulate (in holotype) to shortly rounded (in paratype), very obtuse, distinct humeral tooth absent. Elytra almost not microsculptured (in male) or microsculpture fine, consisting of regular meshes (in female).

Ventral. Mentum with simple (i.e. not bifid) median tooth. Prosternum in middle smooth. Prosternal process shallowly to very shallowly beaded (in paratype bead in middle interrupted), with two setae anteriorly. Episternum of prothorax smooth. Episternum of mesothorax sparsely and coarsely punctate. Episternum of metathorax very sparsely and coarsely punctate, as wide as long. Sides of abdominal ventrites 1 and 2 sparsely to very sparsely and finely to coarsely punctate, sides of abdominal ventrite 3 almost smooth (in holotype) to very sparsely and finely punctate (in paratype), sides of abdominal ventrites 4 to 6 almost smooth. Abdominal ventrites 3 to 5 with one pair of setiferous punctures (abdominal ventrite 4 with three setiferous punctures in paratype). Male with two, female with four setiferous punctures at posterior margin of last abdominal ventrite.

Legs. Femora of front legs behind anterior margin with 4 setiferous punctures ventrally. Femora of middle legs before posterior margin with 4 to 5 setiferous punctures ventrally. Femora of hind legs before posterior margin with 4 setiferous punctures ventrally. Inner edge of male middle tibiae without teeth. Inner side of male hind tibiae without brush-like setae.

Aedeagus. Median lobe elongate and narrow in dorsal view (length 2.83 mm, width 0.53 mm) Apex of median lobe elongate in dorsal view (ratio of length/width = 2.55), slightly curved to right (Fig. 2). Right paramere without hook.

Styli large, last stylomere narrow and tongue-shaped, with short and fine lateral spurs (Fig. 3).

**Note.** Two teneral specimens collected along the mountain pass between the villages Komehr and Ardakan are somewhat different from the type specimens. They share with the type specimens a number of significant characters: habitus, total length (11.4 mm in male, 14.2 mm in female), broadened head, slightly convex eyes, transverse pronotum (ratio of width/length = 1.59–1.60), narrowly flattened lateral margin of pronotum, length and width of median lobe (2.83 mmm and 0.55 mm), identically shaped styli, bright lustre of dorsal side of the body (elytra of male almost without microsculpture), similar punctation of dorsal and ventral sides of the body. These specimens differ in having broader elytra (ratio of length/width = 1.44), markedly obtuse posterior angles, and somewhat broader apex of median lobe (ratio of length/width = 2.30). Linear distance between the type locality and the above mentioned pass is about 40 kilometres. We suppose that specimens from these two localities belong to the same species.

**Differential diagnosis.** *Amara* (*P.*) *fuscolucida* sp. nov. is most closely related to *A.* (*P.*) *loeffleri* (Southwestern Iran, Chaharmahal-va-Bakhtiyari province, the Zagros mountain range, the Kuh-e Zard Mountains: Hejkal 2008), with which it shares a number of characters (total length, robust body, broadened head, slightly convex eyes, transverse pronotum, punctation of head and pronotum, and similarly shaped aedeagus). *Amara* (*P.*) *loeffleri* differs in having distinct and coarser elytral microsculpture, female elytra with slight lustre to dull, more convex and broader elytra (ratio of length/width = 1.36–1.43; see Hejkal 2008), and shorter antennae. The sympatric occurrence of *Amara* (*P.*) *fuscolucida* sp. nov. with any related species is not known.

**Distribution and habitat.** *Amara* (*P.*) *fuscolucida* sp. nov. was found in the Zagros Mountains in the North of the province of Fars near the border with the Kohgiluyeh-va-Boyer Ahmad province in the Southwest of Iran. Two type specimens were collected in a stony area with sparse vegetation (covered with snow until the beginning of May) at an altitude about 2568 m a.s.l. Two other individuals were found in the Southern Zagros mountain range in the Fars province in alpine meadows and a rocky area with snow-fields and sources of fresh water at an altitude of ca. 2700–2800 m a.s.l. (W. Heinz, pers. comm.).

**Etymology.** The brown colour and bright lustre of dorsal side of the body suggested the Latin name of this new species.

### ***Amara* (*Pseudoleirides*) *murastyii*** Hejkal et Muilwijk sp. nov.
(Figs 4–7, 9, 10)

**Type material.** Holotype: ♂, labelled: "W. IRAN, Isfahan prov., Fereidun Shahr, Kameran pass, 3700 m, 18.VII.2016, leg. Murastyi D." / "HOLOTYPE, *Amara* (*Pseudoleirides*) *murastyii* sp. n. J.Hejkal & J.Muilwijk des. 2018" (red printed label), deposited in NMP. Coordinates of the type locality: 32°44′37.15″N, 49°57′45.83″E (E. V. Rutjan, pers. comm.). Paratypes: in total 101 ♂♂, 59 ♀♀, labelled: "PARATYPE No 1 to No 160, *Amara* (*Pseudoleirides*) *murastyii* sp. n. J.Hejkal & J.Muilwijk des. 2018" (red printed labels): 30 ♂♂, 3 ♀♀, with same data as for the holotype, deposited in NMP (1/1), cDW (1/1), cDM (25/1) and cJH (3/0); 8 ♂♂, labelled: "IRAN, ZAGROS Mts., ESFAHAN prov., Fereidunshahr-Meidanak-Kamaran road, Kamaran pass, Ferdun mts., alt. 3150–3400 m, 17–18.VII.2016, E. Rutjan leg.", deposited in

cDW (6/0) and cMU (2/0); 1 ♂, labelled: “Iran, Zagros Mts, Esfahan, Fereydunshahr-Kamaran road, Kamaran Pass, 3400–3450 m, 17–18.VII.2016, E.Rutjan leg.”, deposited in cMU; 13 ♂♂, 5 ♀♀, labelled: “IRAN, ZAGROS Mts., ESFAHAN prov., Fereidunshahr-Meidanak--Kamaran road, Kamaran pass, alt. 3400–3650 m, 17–18.VII.2016, E. Rutjan leg.”, deposited in HMIM (1/1), cER (9/1), cJH (1/1) and cMU (2/2); 22 ♂♂, 21 ♀♀, labelled: “W. IRAN, Isfahan prov., SW Fereidun Shahr, Kameran pass, 3500–3650m, 2.–3.VII.2017, leg. Murastyi D.”, deposited in cDM (19/18), cJH (1/2) and cMU (2/1); 27 ♂♂, 30 ♀♀, labelled: “IRAN, ZAGROS Mts., ESFAHAN prov., Fereidunshahr-Meidanak-Kamaran road, Kamaran pass, Ferdun mts., alt. 3150–3400 m, 2–3.VII.2017, E. Rutjan leg.”, deposited in cER (22/25), cJH (2/2) and cMU (3/3).

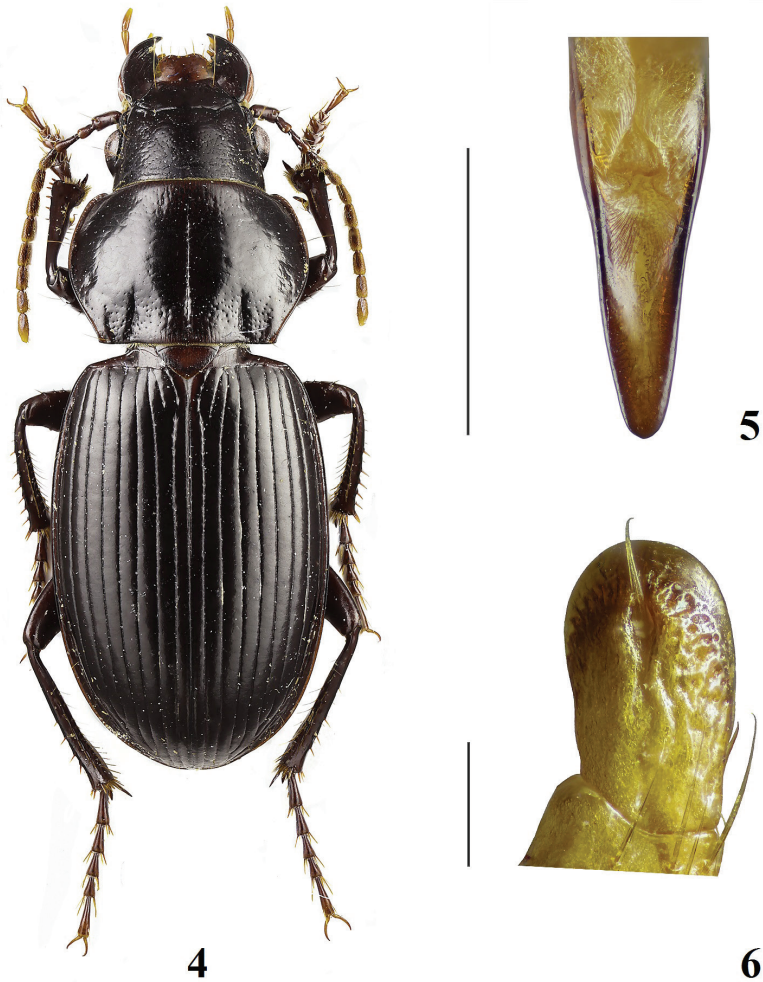
**Diagnosis.** Body strongly convex, dorsal side dark brown, labrum red-brown, mandibles red-brown to dark brown, antennae and legs brown-red to red-brown, maxillary and labial palpi brown-red, dorsal side shining in males and shining or with slight lustre in females; ventral side red-brown; wingless (Figs 4, 7). Total length 9.8–12.8 mm, males: 9.8–12.0 mm (holotype 11.5 mm, average 10.9 mm, $n$ = 102), females: 10.2–12.8 mm (average 11.8 mm, $n$ = 59).

Head slightly broadened, sparsely to densely and finely to coarsely punctate, eyes slightly to very slightly convex. Two supraorbital setae, anterior margin of labrum with six setiferous punctures. Anterior part of clypeus with arcuate callus. Frontal furrows short, wide and shallow to almost absent. Antennae relatively long, surpassing or reaching hind margin of pronotum. Antennomere 1 broad.

Pronotum relatively narrow (ratio of width/length = 1.44–1.50, holotype 1.45), strongly convex, widest at middle, markedly narrowed toward both anterior and posterior angles (ratio of anterior margin/posterior margin = 0.94–1.00, holotype 0.99), lateral margins slightly convex before posterior angles. Anterior margin of pronotum very shallowly emarginate, anterior angles slightly protruding, rounded. Posterior angles very short, markedly to slightly obtuse, in some paratypes right-angled, with shortly rounded or distinct apex. Pronotal base very shallowly emarginate to almost straight. Inner basal impression mostly deep, narrow or wide, long. Outer basal impression shallow and short, not separated from lateral margin by a callus. Anterior part of pronotum sparsely to densely and mostly finely punctate. Lateral margin of pronotum sparsely to very sparsely and finely to coarsely punctate. Pronotal base densely to sparsely and finely to coarsely punctate. Two pairs of lateral setae, one pair located slightly to markedly before middle of lateral margin (exceptionally with 2 setiferous punctures at side margin unilaterally), one pair near posterior angles.

Elytra narrow, elongate and almost parallel-sided (ratio of length/width = 1.52–1.64, holotype 1.55), strongly convex, declivity of elytra steep before apex in lateral view. Striae distinct, mostly moderately deepened and widened, finely to very finely punctate. Row of setiferous punctures in stria 8 widely interrupted. Stria 7 mostly with two distinct setiferous punctures before apex. Scutellar stria very variable, continuous, in some specimens interrupted at posterior part, not touching (in holotype) or joining elytral stria 1. Scutellar setiferous puncture absent. Base of elytra slightly sinuate to almost straight, basal bead slightly sinuate. Elytral humeri angulate to shortly rounded, obtuse to very obtuse, humeral tooth absent. Microsculpture consisting of regular meshes.

Ventral. Mentum with simple (i.e. not bifid), rounded and moderately elongate median tooth. Prosternum in middle smooth to almost smooth (in holotype) or very sparsely to sparsely and coarsely to finely punctate, in some specimens with transverse impression. Prosternal




Figs 4–6. *Amara* (*Pseudoleirides*) *murastyii* sp. nov. 4, 5: holotype, male, body length 11.5 mm; 6: paratype No 159, female. 4: habitus in dorsal view, 5: apex of median lobe in dorsal view, 6: last stylomere in ventral view. Scale: 1 mm for Fig. 5; 0.3 mm for Fig. 6. Photographs by P. Krásenský.
Obr. 4–6. *Amara* (*Pseudoleirides*) *murastyii* sp. nov. 4, 5: holotypus, samec, délka těla 11,5 mm; 6: paratypus č. 159, samice. 4: habitus v dorsálním pohledu, 5: špice penisu v dorsálním pohledu, 6: poslední článek stylu ve ventrálním pohledu. Měřítko: 1 mm pro obr. 5; 0,3 mm pro obr. 6. Fotografie P. Krásenský.

process mostly shallowly beaded (in holotype), some specimens with bead interrupted or absent, with 2–4 (mostly 2; 3 in holotype) setae anteriorly. Episternum of prothorax sparsely and coarsely to finely punctate. Episternum of mesothorax densely and coarsely punctate. Episternum of metathorax densely to sparsely and coarsely punctate, as wide as long. Sides of abdominal ventrite 1 densely and coarsely punctate, sides of abdominal ventrites 2 and 3

densely and finely to coarsely punctate, sides of abdominal ventrites 4 to 6 densely to sparsely and finely punctate. Abdominal ventrites 3 to 5 with one pair of setiferous punctures. Males with two (in some males three), females with four setiferous punctures at posterior margin of last abdominal ventrite (in some females five or six).

Legs. Femora of front legs behind anterior margin with 4–7 setiferous punctures ventrally. Femora of middle legs before posterior margin with 3–6 (mostly 4–5; 5 in holotype) setiferous punctures ventrally. Femora of hind legs before posterior margin with 3 setiferous punctures ventrally. Inner edge of male middle tibiae without teeth, only with distinct tubercles. Inner side of male hind tibiae without brush-like setae.

Aedeagus. Median lobe elongate and relatively broad in dorsal view (length 2.55–2.86 mm, width 0.56–0.64 mm; holotype 2.85 and 0.58 mm), almost symmetrical. Apex of median lobe elongate in dorsal view (ratio of length/width = 2.16–2.55, holotype 2.21), very slightly curved to right (in holotype) or almost symmetrical (Figs 5, 9, 10). Right paramere without hook, flattened.

Styli large, last stylomere broad and tongue-shaped, with short and fine lateral spurs (Fig. 6).

**Differential diagnosis.** *Amara* (*P.*) *murastyii* sp. nov. is most closely related to *A.* (*P.*) *yasujensis* (Southwestern Iran, the border between the Kohgiluyeh-va-Boyer Ahmad and Esfahan provinces, the Zagros mountain range, the Kuh-e Dinar Mountains: Hejkal 2008), with which it shares a number of characters (slightly broadened head, narrow pronotum, narrow and almost parallel-sided elytra, slightly to very slightly convex eyes). *Amara* (*P.*) *yasujensis* (Fig. 8) differs especially in having more densely and more coarsely punctate head and pronotum, slightly convex pronotum and elytra, pronotum widest before middle, pronotum less narrowed toward anterior angles, flattened lateral margin of pronotum, elytral humeri less obtuse, longer (length 3.00–3.15 mm) and narrower (width 0.50–0.53 mm) median lobe of aedeagus, markedly elongate apex of median lobe in dorsal view (ratio of length/width = 2.58–3.16), and median lobe slightly broadened toward apex dorsally (Figs 11, 12). The sympatric occurrence of *Amara* (*P.*) *murastyii* sp. nov. with any related species is not known.

**Distribution and habitat.** *Amara* (*P.*) *murastyii* sp. nov. was found in the Zagros Mountains in the Esfahan province in Western Iran. The new species is so far known only from the type locality (the Kamaran pass). The individuals were collected under stones near snow-fields, often in wet soil near roots of *Astragalus* spp. (E. V. Rutjan, pers. comm.) at an altitude of ca. 3150–3700 m a.s.l.

**Etymology.** Dedicated, with great pleasure, to our friend and collector Dmytro Murastyi (Kiev, Ukraine), a specialist in Lycaenidae (Lepidoptera).

### ***Amara* (*Pseudoleirides*) *rutjani*** Muilwijk et Hejkal sp. nov.
(Figs 13–15)

**Type material.** Holotype: ♂, labelled: "Iran, Chahar Mahaal Va Bakhtiari, Cheri Pass 9 km W. Samsami, 2750–3100 m, 8.vii.2016, E. Rutjan leg." / *Amara* (*Pseudoleirides*) *rutjani* sp. nov. Muilwijk & Hejkal / Holotype (red printed label), deposited in NMP. Coordinates of the type locality: ca. 32°09′31″N, 50°10′47″E. Paratypes: 1 ♂, with same data as for the holotype; 5 ♀♀, labelled: "Iran, Chahar Mahaal Va Bakhtiari, Cheri Pass 9 km W. Samsami, 2850–3000 m, 8–9.vii.2016, Murastyi D. leg."; 3 ♂♂, 1 ♀, labelled: "Iran, Chahar Mahaal Va Bakhtiari, Cheri Pass 9 km W. Samsami, 7–9.vii.2016, 2750-3100 m, J. Rieger lgt"; 3 ♂♂,




Figs 7, 8. *Amara* (*Pseudoleirides*) spp. Habitus in dorsal view. 7: *A. murastyii* sp. nov., paratype No 104, body length 9.9 mm; 8: *A. yasujensis*, holotype, body legth 11.6 mm. Photographs by P. Krásenský.
Obr. 7, 8. *Amara* (*Pseudoleirides*) spp. Habitus v dorsálním pohledu. 7: *A. murastyii* sp. nov., paratypus č. 104, délka těla 9,9 mm; 8: *A. yasujensis*, holotypus, délka těla 11,6 mm. Fotografie P. Krásenský.

4 ♀♀, labelled : "Iran, Chahar Mahaal Va Bakhtiari, Cheri Pass 9 km W. Samsami, 3000m, 4.vi.2018, Muilwijk J. leg." / *Amara* (*Pseudoleirides*) *rutjani* sp. nov. Muilwijk & Hejkal / Paratype (red printed label). Seven paratypes are deposited in cMU, 2 in cJH, 1 in HMIM, 1 in NBCL, 2 in cDM, 1 in cER, 3 in cVZ.

**Diagnosis.** Body large and strongly convex, dorsal side dark brown to black-brown, slightly shining in males, at most pronotum shining in females, antennae and legs red-brown to brown, outer intervals of elytra with long yellow hair and punctures; ventral side red-brown to dark

brown; wingless (Fig. 13). Total length 13.2–16.3 mm, males: 13.2–14.3 mm (holotype 13.9 mm, average 13.7 mm, *n* = 8), females: 14.3–16.3 mm (average 14.9 mm, *n* = 10).

Head broadened, densely and coarsely punctate, eyes strongly protruding, frontal furrows very superficial. One (two) short setae in the groove of the mandibles, two supraorbital setae, anterior margin of labrum with six setae, clypeus with two setae. Antennae short, reaching posterior margin of pronotum; first antennomere short, not cylindrical but more box-like. Penultimate segment of labial palpus with seven to nine long setae, ultimate segment with short hairs. Microsculpture in males consists of fine punctures, in females fine punctures combined with polygonal cells.

Pronotum transverse (ratio of width/length = 1.43–1.56, holotype 1.52) widest before or at middle, markedly narrowed toward posterior angles (ratio of anterior margin/posterior margin = 0.94–1.06, holotype 1.06), hind angles rectangular to slightly acute, with distinct apex. Anterior margin of pronotum almost straight. Pronotal base shallowly emarginate. Holotype with coarse punctures along posterior and anterior margin, less coarse punctation on disc and along lateral sides; punctation in some paratypes only along posterior and anterior margin. Inner basal impression deep and straight; outer impression superficial and separated by a short callus from the lateral margin. Two setae in the lateral margin, one in the hind angle and one slightly before middle. Microsculpture in males consists of fine punctures, in females fine punctures combined with polygonal cells.

Elytra large and broad (ratio of length/width = 1.39–1.53, holotype 1.49), intervals with remote long yellow procumbent hair. Intervals 1–3 with hairs in the posterior third; interval 4 until the middle, interval 5 almost complete and intervals 6–8 complete covered with hairs




Figs 9–12. *Amara* (*Pseudoleirides*) spp. Apex of median lobe in dorsal view. 9, 10: *A. murastyii* sp. nov. (9: paratype No 105, 10: paratype No 104); 11, 12: *A. yasujensis* (11: paratype No 1, 12: holotype). Scale: 1 mm. Photographs by P. Krásenský.

Obr. 9–12. *Amara* (*Pseudoleirides*) spp. Špice penisu v dorsálním pohledu. 9, 10: *A. murastyii* sp. nov. (9: paratypus č. 105, 10: paratypus č. 104); 11, 12: *A. yasujensis* (11: paratypus č. 1, 12: holotypus). Měřítko: 1 mm. Fotografie P. Krásenský.





14



13

15

Figs 13–15. *Amara* (*Pseudoleirides*) *rutjani* sp. nov. 13: holotype, male; 14: paratype, male, coll. J. Hejkal; 15: paratype, female, coll. J. Muilwijk. 13: habitus in dorsal view, 14: apex of median lobe in dorsal view, 15: last stylomere in ventral view. Scale: 10 mm for Fig. 13; 1 mm for Fig. 14; 0.3 mm for Fig. 15. Figs 13, 15: photographs by J. Muilwijk; Fig. 14: photograph by P. Krásenský.
Obr. 13–15. *Amara* (*Pseudoleirides*) *rutjani* sp. nov. 13: holotypus, samec; 14: paratypus, samec, coll. J. Hejkal; 15: paratypus, samice, coll. J. Muilwijk. 13: habitus v dorsálním pohledu, 14: špice penisu v dorsálním pohledu, 15: poslední článek stylu ve ventrálním pohledu. Měřítko: 10 mm pro obr. 13; 1 mm pro obr. 14; 0,3 mm pro obr. 15. Obr. 13, 15: fotografie J. Muilwijk; obr. 14: fotografie P. Krásenský.

in deep punctures. Striae deepened with punctures. Scutellar stria continuous, mostly joining elytral stria 1. No scutellar puncture; humeri well-developed, humeral tooth small. Basal bead relatively broad. Series umbilicata with 20 punctures. Microsculpture in males consists of fine punctures combined with superficial polygonal cells, in females fine punctures combined with very dense and coarse polygonal cells.

Ventral. Mentum tooth simple, posterior portion of tooth at each site with a seta. Gula and mentum glabrous, with two long setae on each site. Prosternum with punctures; anterior margin with a comb of yellow hairs. Proepisternum with punctures. Prosternal process not bordered; on each side with two lateral setae. Mesosternum with a few punctures. Mesepisternum with punctures. Metasternum with punctures along lateral margin. Metaepisternum punctured; very short, not longer than in anterior part wide. Ventrites 1 and 2 with punctures; ventrites 3 to 5 with punctures along lateral sides and two setae in the middle; ventrite 6 on each side with two to three setae in males and three to five setae in females along apical margin.

Legs. Fore coxa glabrous. Middle coxa with two/three setae. Middle trochanter with one seta. Hind coxa with one/two setae at each site. All legs short and stout; tibia without brush-like setae. Fore tibia with one big spur behind incision and with one big and one small end spur, not tridentate; dorsal side with a small row of thorns. Fore femur with a row of setae on ventral side. Middle femur with a row of thorns along anterior margin and two rows of setae (together 6–11 setae) on ventral side. Hind femur with a row of setae along posterior margin.

Aedeagus. Median lobe very long and narrow in dorsal view (length 3.65–3.73 mm, width 0.66–0.68 mm, $n = 2$), almost symmetrical and markedly broadened dorsally toward apex. Apex of median lobe markedly elongate in dorsal view (ratio of length/width = 2.69–2.75, $n = 2$) (Fig. 14). Right paramere without hook, flattened.

Styli large, last stylomere tongue-shaped, with fine lateral spurs (Fig. 15).

**Differential diagnosis.** *Amara* (*P.*) *rutjani* sp. nov. is closely related to *A.* (*P.*) *khorramabadensis* (Western Iran, the Lorestan province, the Zagros Mountains: Hejkal 2008), with which it shares a number of characters (habitus, broadened head, transverse pronotum, and similarly shaped aedeagus). *Amara* (*P.*) *rutjani* sp. nov. differs from *A.* (*P.*) *khorramabadensis* and all other *Pseudoleirides* species in having elytra with long hairs and punctures. The sympatric occurrence of *Amara* (*P.*) *rutjani* sp. nov. with any related species is not known.

**Discussion.** Because of the punctate head, chaetotaxy (arrangement of setae on ventral part of body), convex and large body and form of aedeagus including parameres we placed *A. rutjani* in the subgenus *Pseudoleirides*. In all other species of this subgenus the hairs and punctures on the elytra are absent. In our view, the presence of these characteristics is not sufficient for the placement of this species in a new subgenus. The subgenus *Phanerodonta* Tschitschérine, 1894 also includes species with and without setiferous punctures on the elytra.

**Distribution and habitat.** *Amara* (*P.*) *rutjani* sp. nov. was found in Southern Kuh-e Zard Mountains, which belong to the Zagros mountain range, in the Chaharmahal-va-Bakhtiyari province in Southwestern Iran. The new species is so far known only from the type locality (the Cheri pass near the city of Samsami). Specimens were collected under stones near snowfields at an altitude of ca. 2750–3100 m a.s.l.

**Etymology.** Cordially dedicated to our friend and collector Evgeniy Rutjan (Kiev, Ukraine), a specialist in Psychidae (Lepidoptera).

ACKNOWLEDGEMENTS. We wish to thank W. Heinz (Schwanfeld, Germany), D. Murastyi (Kiev, Ukraine) and E. V. Rutjan (Kiev, Ukraine) for providing their material, and all collectors mentioned in the material and methods section, for the kind loan of specimens of the genus *Amara* from their collections. We are obliged to J. Hájek (National Museum Prague) for his help with the loan of the type material. Special thanks go to P. Krásenský (Chomutov, Czech Republic) for preparing photographs of specimens of some *Amara* species including male and female genitalia.

## REFERENCES


HEJKAL J. 2008: Six new species of the subgenus Pseudoleirides (Coleoptera: Carabidae: Amara) from Iran. *Klapalekiana* **44**: 129–164.

HIEKE F. 2017: subtribe Amarina C. Zimmermann, 1832. Pp. 794–828. In: LÖBL I. & LÖBL D. (eds): *Catalogue of Palaearctic Coleoptera. Volume 1. Revised and Updated Edition. Archostemata–Myxophaga–Adephaga*. Brill, Leiden, Boston, 1443 pp.

JEDLIČKA A. 1953: Neue palaearktische Carabiden aus der Sammlung des Ungarischen Naturwissenschaftlichen Museums (Coleoptera). *Annales Historico-Naturales Musei Nationalis Hungarici* (*S. N.*) **3 (1952)**: 105–113.

JEDLIČKA A. 1963: Die Ergebnisse der Österreichischen Iran-Expedition 1949/50. Coleoptera VIII. Teil. Neue Arten aus der Familie Carabidae. *Sitzungsberichte der Österreichischen Akademie der Wissenschaften, Mathematisch-naturwissenschaftliche Klasse* (*Abt. I*) **172**: 167–178.

KRYZHANOVSKIJ O. L. 1968: Novye i maloizvestnye zhuzhelitsy (Coleoptera, Carabidae) fauny SSSR i granichashchikh s nim stran. (New and poorly known ground-beetles (Coleoptera, Carabidae) from the fauna of U.S.S.R. and adjacent countries). *Entomologicheskoe Obozrenie* **47**: 160–175 (in Russian, with English title).

MORVAN P. 1973: Nouveaux coléoptères carabiques d'Iran. *Bulletin du Muséum National d'Histoire Naturelle* (*3e* série, nº 110), *Zoologie* **84**: 169–186.

MORVAN P. 1977: Contribution à la connaissance des Carabidae de l'Iran. *Journal of the Entomological Society of Iran* **4**: 21–64.


## SOUHRN


Z Íránu je známo sedmnáct endemických taxonů z rodu *Amara* Bonelli, 1810, z toho 12 druhů a jeden poddruh patří do podrodu *Pseudoleirides* Kryzhanovskij, 1968. Devět endemických druhů je popsáno z pohoří Zagros: *Amara* (*P.*) *cadoudali* Morvan, 1977, *A.* (*P.*) *escalerai* Hejkal, 2008, *A.* (*P.*) *iranica* Kryzhanovskij, 1968, *A.* (*P.*) *khorramabadensis* Hejkal, 2008, *A.* (*P.*) *loeffleri* Jedlička, 1963, *A.* (*P.*) *shirazica* Hejkal, 2008, *A.* (*P.*) *szekessyi* Jedlička, 1953, *A.* (*P.*) *yasujensis* Hejkal, 2008, a *A.* (*P.*) *zagrosensis* (Morvan, 1973).

Z rozsáhlého pohoří Zagros jsou v práci popsány další tři nové druhy: *Amara* (*P.*) *fuscolucida* Hejkal et Muilwijk sp. nov. (jihozápadní Írán), *A.* (*P.*) *murastyii* Hejkal et Muilwijk sp. nov. (západní Írán) a *A.* (*P.*) *rutjani* Muilwijk et Hejkal sp. nov. (jižní část hor Kuh-e Zard v jihozápadním Íránu). Jedná se vesměs o vysokohorské druhy, které byly nalezeny v letech 2006–2017 v nadmořských výškách 2550–3700 m.

Popis nových druhů zahrnuje typový materiál, diferenciální diagnózu, rozšíření, biotop a etymologii druhového jména.

*Amara* (*P.*) *rutjani* Muilwijk et Hejkal sp. nov. je prvním známým druhem podrodu *Pseudoleirides*, který se vyznačuje přítomností sét na krovkách. Stejný znak byl v rámci rodu *Amara* zjištěn ještě u podrodu *Phanerodonta* Tschitschérine, 1894, do kterého také patří druhy s přítomností i nepřítomností sét v mezirýžích krovek. Vzhledem ke skutečnosti, že *Amara* (*P.*) *rutjani* sp. nov. se s výjimkou „ochlupení" krovek vyznačuje všemi znaky charakteristickými pro podrod *Pseudoleirides* (zejména silně vyklenuté a velké tělo, nepřítomnost křídel, tmavé zbarvení vrchní části těla bez kovového lesku, tečkovaná hlava, uspořádání sét na ventrální části těla, tvar a velikost aedeagu a stylů), nepovažujeme přítomnost sét na krovkách za dostačující pro zařazení druhu do nového podrodu.