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A new species of the genus *Merdigera* Held, 1837 (Gastropoda: Pulmonata: Enidae) from Northwest Caucasus

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ABSTRACT. A new species *Merdigera invisa* Kijashko sp. nov. from the high-mountainous part of Northwest Caucasus is described. Taking into account the characters of this species, the diagnosis of the subfamily *Merdigerinae* Schileyko, 1984 is defined more exactly.

There are discordant literature data on the distribution of molluscs of the genus *Merdigera* Held, 1837 (type species — *Helix obscura* Müller, 1774) on Caucasus. A. Schileyko [1984] excludes Caucasus from the range of the sole representative of this genus, believing that «Multiple mentions about the presence of the species "*Ena" obscura* on Caucasus are due to the fact that the shell of this species is extremely similar to caucasian *Akramovskiella umbrosa* (Mousson, 1873)...» [Schileyko, 1984]. A. Kuznetsov [1999] published data that expanded the range of *Merdigera obscura* (Müller, 1774) from Europe eastward up to Dzungaria. Among other territories included into the range of this species, he mentioned northwest Caucasus. However, molluscs from Caucasian were not included in the list of material studied by him. In the "Catalogue of molluscs of Russia and adjacent countries" by Yu. Kantor and A. Sysoev [2005], the range of *M. obscura* is given according to Kuznetsov. It includes Western, Central and partially Southern Europe; Balkan Peninsula; northwest Africa; territories of Byelorussia (Vitebsk Region); Russia (the Tver, Smolensk, Yaroslavl regions, suburbs of St.-Petersburg and Moscow, northwest Caucasus); Ukraine (mountain Crimea); Uzbekistan (western Tien Shan) and Kazakhstan (Dzungaria). Taking into account the presence of *Merdigera* in Crimea, Central Asia and Kazakhstan, molluscs of this genus undoubtedly should live on Caucasus as well. However, I could not find information about specimens of *Merdigera* from Caucasus reliably identified by anatomic characters.

In summer 2001, eighteen specimens of terrestrial molluscs similar to *Merdigera obscura* have been collected by me in the expedition to Lagonaki Mountains (Adygeja, Norhwest Caucasus). All of them were identified as a new species of *Merdigera*. This species is described below.

Family Enidae Woodward, 1903
Subfamily Merdigerinae Schileyko, 1984
Genus *Merdigera* Held, 1837

Type species — *Helix obscura* Müller, 1774

Merdigera ***invisa*** Kijashko, sp. nov.

(Figs. 1 A, B, C)

Material. Northwest Caucasus, Adygeja, Lagonaki Mountains, southern foot of Lagonaki Ridge, right riverbank of Tsitse (right tributary of the river Psheha), (~ 1200 m above sea level), lime rocks. June 29, 2001; coll. P.V. Kijashko (holotype and paratypes). Holotype and 17 paratypes are stored in the Zoological Institute of Russian Academy of Sciences (St.-Petersburg, № 527-2006).

Diagnosis. The shell practically does not differ from that of *Merdigera obscura* and *Akramovskiella umbrosa*. Epiphallus approximately twice longer than penis, without sharp flexures, flagellum very short. Border between penis and epiphallus not clear. Penis and penial appendix devoid inflations, verges and papillas, distal part of penis with thick walls, proximal rather thin-walled, inner surface smooth, with small blurred annular pillaster on border with epiphallus. Penial appendix weakly subdivided into sections. A_1 by its size and shape similar to proximal part of penis, inside with high annular pilaster on border between A_1 and A_2. A_2 — thin-walled, approximately twice as long as A_1. Diverticle of spermathecal stalk reaching albuminous gland. Penial retractor with two branches standing apart immediately near to male ducts, one branch attached to proximal part of penis, another to middle of A_1.

[**Диагноз.** Раковина практически не отличается от *Merdigera obscura* и *Akramovskiella umbrosa*. Флагеллюм очень короткий, иногда практически отсутствует. Эпифаллус примерно в два раза длиннее пениса, без резких изгибов. Граница между пенисом и эпифаллусом не выражена. Пенис и пениальный аппендикс лишены вздутий и папилл, дистальная часть пениса с

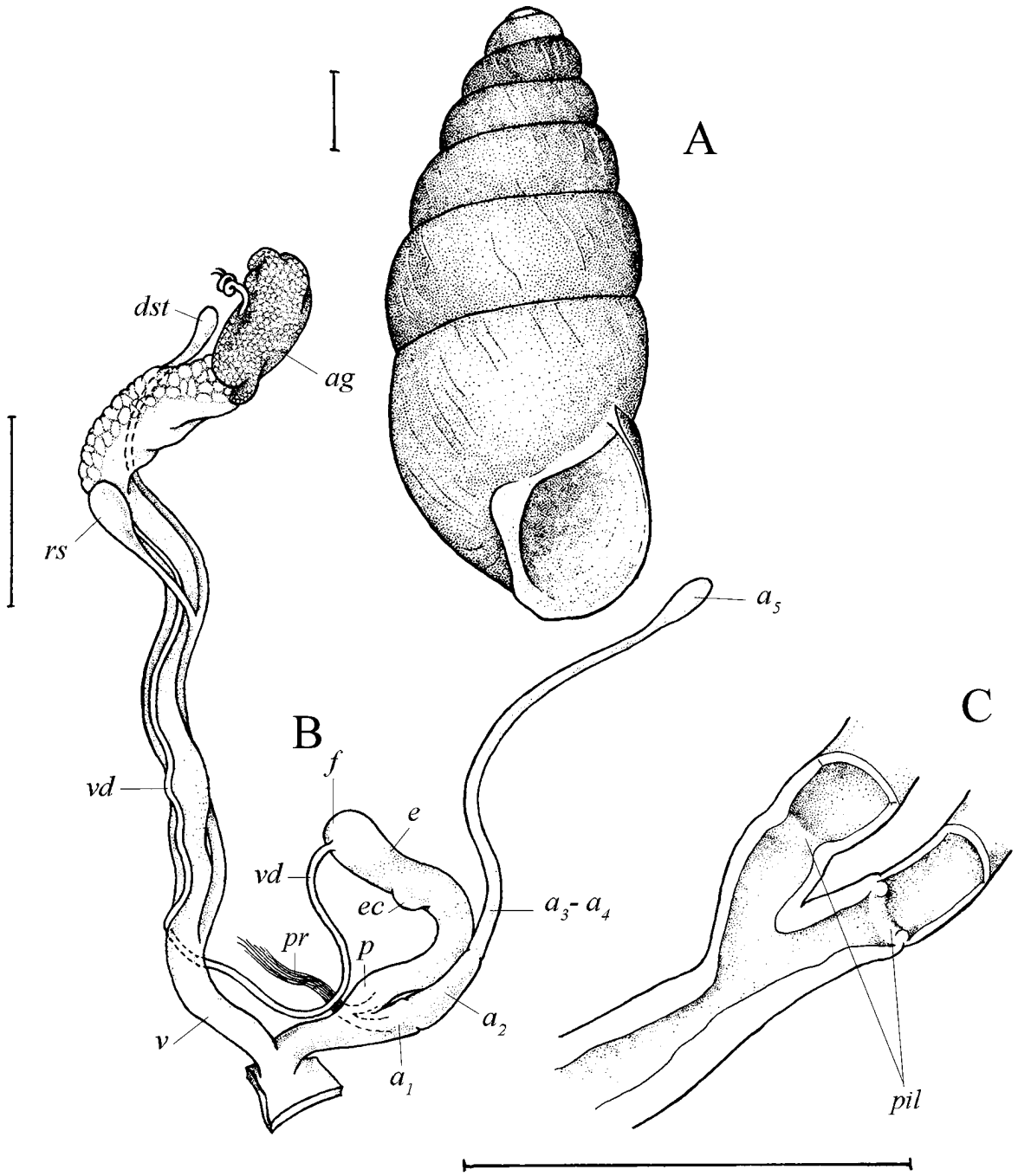

FIG. 1. *Merdigera* ***invisa*** sp. nov. A — shell (holotype); B — reproductive tract (paratype); C — interior of penis and proximal part of appendix (paratype); a_1, a_2, a_3, a_4, a_5 — divisions of penial appendix; *ag* — albumen gland; *dst* — diverticle of spermatheca; *e* — epiphallus; *ec* — epiphallic caecum; *f* — flagellum; *p* — penis; *pil* — pilaster; *pr* — penial retractor; *rs* — reservoir of spermatheca; *v* — vagina; *vd* — vas deferens. Scale bar 1 mm.

РИС. 1. *Merdigera* ***invisa*** sp. nov. A — раковина (голотип); B — половая система (паратип); C — внутреннее строение пениса и проксимальной части пениального аппендикса (паратип); a_1, a_2, a_3, a_4, a_5 — отделы пениального аппендикса; *ag* — белковая железа; *dst* — дивертикул семяприемника; *e* — эпифаллус; *ec* — цекум эпифаллуса; *f* — флагеллум; *p* — пенис; *pil* — пилястр; *pr* — пениальный ретрактор; *rs* — резервуар семяприемника; *v* — вагина; *vd* — семяпровод. Масштаб 1 мм.

толстыми стенками, проксимальная относительно тонкостенная. Внутренняя поверхность гладкая, на границе с эпифаллусом имеется небольшой расплывшийся кольцевой пилястр. Пениальный аппендикс внешне слабо дифференцирован на отделы. A_1 по размерам и форме сходен с проксимальным отделом пениса, внутри, на границе между A_1 и A_2 имеется мощный кольцевой пилястр. A_2 — тонкостенный, приблизительно вдвое длиннее A_1. Дивертикул семяприемника достигает белковой железы. Пениальный ретрактор с

двумя ветвями, обособляющимися непосредственно вблизи мужских половых протоков, одна ветвь крепится к проксимальной части пениса, а другая к середине A_1.]

Description. Shell ovate-conic, rather thin, dull. Embryonic whorls (about 2) smooth, postapical whorls (about 5-6) brownish-corneous, with weak irregular radial wrinklets. Upper whorls convex, with deep suture, lower whorls rather flattened. Last whorl (about half height of shell) very weakly elevated before aperture. Aperture ovate, slightly oblique. Margins thin, moderately reflexed, with blurred lip. Columellar margin reflexed more strongly in comparison with others and slightly covers slit-like umbilicus.

Dimensions: height 7.5-8.0 mm; diameter 3.3-3.5 mm; height of aperture 2.5-2.8 mm; width of aperture 2/1-2.3 mm. Dimensions of holotype: 7.8; 3.3; 2.7; 2.3, respectively.

Reproductive anatomy. Albuminous gland with weak apical groove, upper vagina three times longer lower. Vas deferens entering epiphallus laterally, leaving very short rounded flagellum. Sometimes (in 1 specimen of 5 dissected) flagellum reduced and vas deferens entering epiphallus almost apically. Epiphallus approximately twice longer than penis, without sharp flexures, with small rounded caecum. Border between penis and epiphallus not clear. Penis and penial appendix lacking inflations, verges and papillae, distal part of penis with thick walls, proximal rather thin-walled, inner surface smooth. Penial appendix weakly differentiated into sections. A_1 similar to proximal part of the penis in size and shape, inside with high annular pilaster on border between A_1 and A_2.

Ecology. Species inhabits calcareous rocks in high-mountain forests, and on border of forest and alpine zones (1200-1800 m above sea level).

Etymology. The name of the new species comes from Latin *invisus* (invisible) as the shells of these molluscs are covered with a crust of calcareous dust and bits of lichens glued by mucus, making it difficult to find.

Remarks. The shell of the new species practically does not differ from that of *Merdigera obscura* (Müller, 1774) and *Akramovskiella umbrosa* (Mousson, 1873). Minor differences which I could find virtually disappear owing to individual variability of specimens, clearly seen int comparison of numerous shells. Particular characters of the genital apparatus (absence of inflations of penis and appendix, the shape of appendix and penial retractor) indicate the belonging of described species to *Merdigera.* Anatomically *M.* ***invisa*** differs from *M. obscura* by the absence of verge or papilla inside penis and penial appendix respectively. Instead there are annular pilasters: a small blurred pilaster on border between penis and epiphallus and a high pilaster on border between A_1 and A_2. Possibly these differences are a result of a single-stage reduction (without intermediate forms) of the penial structures.

The description of new species *Merdigera* makes necessary to update the diagnosis of the subfamily Merdigerinae Schileyko, 1984.

Subfamily Merdigerinae Schileyko, 1984

Shell weakly sculptured. Aperture toothless. Embryonic whorls smooth. Epiphallus with short rounded flagellum. Epiphallic caecum well developed. Penis short, containing closed short thin-walled verge, penis with very thin, transparent walls. If verge absent, penis with significantly thicker walls and contains blurred annular pilaster on border with epiphallus. Prismoconic tubercles or proximal process of penis absent. Penial appendix weakly differentiated into sections. A_1 short, A_2 comparatively large, with subglobular papilla similar to penial verge or there is a high annular pilaster on border between A_1 and A_2. A_3 rather long. Diverticle of spermathecal stalk well developed.

Distribution. Europe; Western Caucasus; Central Asia; Kazakhstan; Northwest Africa. 2 species: *Merdigera obscura* (Müller, 1774), *Merdigera* ***invisa*** sp. nov.

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Новый вид рода *Merdigera* Held, 1837 (Gastropoda: Pulmonata: Enidae) с Северо-Западного Кавказа

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РЕЗЮМЕ. Приводится описание нового вида *Merdigera* ***invisa*** Kijashko sp. nov. из высокогорной части Северо-Западного Кавказа. С учетом признаков нового вида уточняется диагноз подсемейства Merdigerinae Schileyko, 1984.