

An Iberian surprise, *Henkia mariannae* gen. & spec. nov. and *H. antoni* gen. & spec. nov. (Gastropoda, Pulmonata, Hygromiidae)

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A new genus of small Hygromiidae is described, *Henkia*, with two new species, viz. *H. mariannae* gen. & spec. nov. (type species) and *H. antoni* gen. & spec. nov., both from the southern Iberian peninsula. Shell shape and sculpture are not unique, but are only known from species that differ substantially in genital tract.

Key words: Gastropoda, Hygromiidae, taxonomy, Portugal, Spain.

INTRODUCTION

Over 30 years ago, two enigmatic species of small Hygromiidae, with hairy shells, were discovered in the southern part of the Iberian peninsula but remained undescribed till now. Their occurrence was reconfirmed by several Dutch malacologists, but only once some live specimens of one of the species were found. The structure of the genital tract turned out to differ substantially from that of other hygromiids, so that a new genus should be introduced.

As long as only specimens of one species could be dissected, the generic characteristics remain somewhat uncertain.

For collections, the following abbreviations are used: HM, H.P.M.G. Menkhorst (Krimpen aan de IJssel)(in RMNH); JE, J.C.A. Eikenboom (Hellevoetsluis); RB, R.W.B. Bruins (Nieuw Loosdrecht); RMNH, Netherlands Centre for Biodiversity Naturalis (Leiden).

Systematic part

Family Hygromiidae Tryon, 1866

Henkia gen. nov.

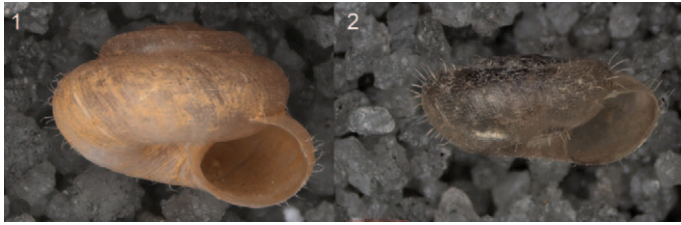
Type species: *Henkia mariannae* spec. nov.

Additional species: *Henkia antoni* spec. nov.

Derivatio nominis. – After Ir. Henk P.M.G. Menkhorst, who discovered *H. mariannae* some decades ago.

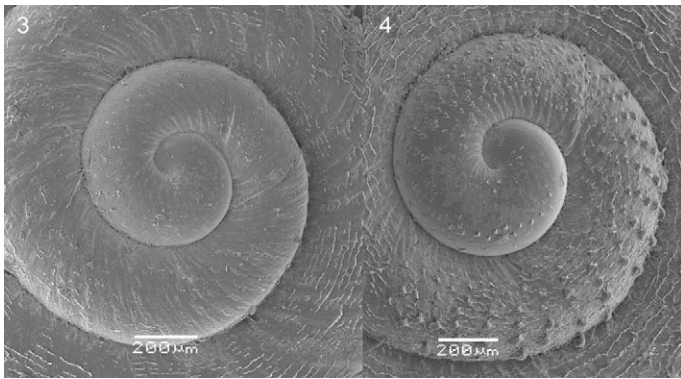
Description. – Shell (Figs 1-4, 7) with a conspicuously flattened spire because the initial whorls are not turning down. Protoconch with elongated scale-like, curved outgrowths, with tips touching the shell surface again. Teleoconch densely sculptured with rather coarse, irregular growth-lines, long to very long hairs, and irregular, spirally arranged, fine periostracal crests.

Anatomy (Figs 5, 6), after *H. mariannae* only. – Two specimens were dissected, and transparent genital slides (Fig. 5) were made. The right ommatophoran retractor runs next to the genitalia. The connection of the penial nerve to the ganglia could not be traced with certainty. The penis is about as long as the gradually tapering flagellum and half as long as the epiphallus. Its proximal part (closest to the body wall from which it develops as a protrusion) is slightly longer than the distal part and somewhat broader as a consequence of the presence of a prominent penial papilla. Where the re-



Figs 1, 2. *Henkia* spec. 1, *H. mariannae* spec.nov., holotype (RMNH 260563), Portugal, Faro (Algarve), rocky slope 1 km N of Lagos along road N125 [UTM NB20], H.P.M.G. Menkhorst leg. 1.viii.1980, actual width 4.0 mm. 2, *H. antoni* spec. nov., holotype (RMNH 260565), Spain, province of Malaga, Alosaina [UF36], near Coin, among humus on igneous rocks, H.P.M.G. Menkhorst leg. 8.iv.1980, actual width 3.6 mm. Photos by D. Groenenberg.

tractor muscle inserts, the distal part has a strongly thickened wall, probably consisting of glandular tissue, which is lacking elsewhere in the male part of the genitalia (maybe there is an additional, very thin, separate surface layer, but that could not be ascertained); more proximally, the penial wall is relatively thin and borders a cavity around the base of the penial papilla. What seems to be a simple, blunt penial papilla in the penis proximalis at first sight, is in fact a sheath covering the true papilla. At its tip, the penial papilla is connected to its sheath. The vagina is strongly inflated, bell-shaped; its dart-sac complex, consisting of two groups of a dart-sac and an accessory sac (used here as a neutral



Figs 3, 4. Protoconchs of *Henkia* spec. from type localities. 3, *H. mariannae*; 4, *H. antoni*. SEM photos by L. van Ofwegen.



Fig. 5. Genital tract of *Henkia mariannae* from the type locality, coloured with cochineal dye in ethanol 70%, cleared in Euparal essence and fixed in Euparal. A, glandula albuminifera; B, bursa of bursa copulatrix; BC, pedunculus of bursa copulatrix; D, dart-sac complex; E, epiphallus; F, flagellum; G, digitiform gland; GA, genital atrium; O, oviduct; P, penis; R, retractor penis; V, vagina; VD, vas deferens.

term, without developmental or phylogenetic implications), inserts near its proximal end. The simple darts are slightly curved. Inside the vagina there are some thick longitudinal ridges. The digitiform glands insert in two groups of two, opposite each other near the distal end of the vagina; their connection to the lumen seems to be more proximally. Oviduct, vagina and penis are about equal in length. The bursa copulatrix has a prominent pedunculus and a large bursa with a vague protrusion at one side. The genital atrium is nearly as long as the penis and about as broad as the oviduct.

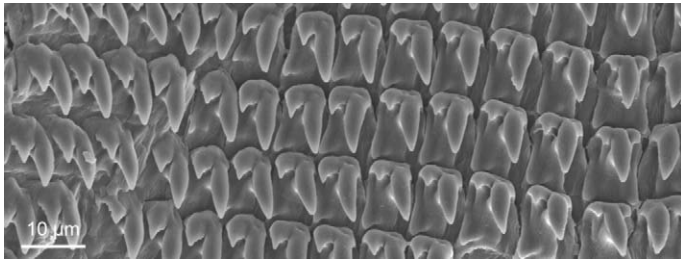


Fig. 6. Central tooth and lateral teeth 1-12 of *Henkia mariannae* from the type locality.

Ureter. – The ureter opens halfway the tip of the kidney and the border of the mantle.

Mantle border. – Only a right lateral lobe, tapering from left to right, is clearly discernible. The left lateral lobe may be recognized near the pneumostome; more downwards it passes gradually into the mantle border.

Radula (Fig. 6). – In a half row, in one specimen, there are 17 bicuspid teeth next to the tricuspid central tooth. The central tooth is as large as the adjoining teeth; its side cusps are smaller than those of the other teeth. After the seventh tooth in a half row, the side cusps may be slightly serrated.

Differentiation. – The shells are strikingly similar to those of species of *Schileykiella* Manganelli, Sparacio & Giusti, 1989, especially in the sculpture of the teleoconch. The type species of *Schileykiella*, *S. parlatoris* (Bivona, 1839), and *S. bodoni* Cianfanelli, Manganelli & Giusti, 2004, are even more similar by the flattened spire of the shells. The genital tract of *Schileykiella* is very different however, since a dart-sac complex is lacking and the penial structure is completely different; see Manganelli et al. (1989) and Cianfanelli et al. (2004) for further details. *Helicotricha* Giusti, Manganelli & Crisci, 1992, has a similar dart-sac complex, but the vagina is not inflated, glandular tissue is present on the proximal end of the penis and in the lumen next to the quite different penial papilla, which has a T-shaped pilaster and no sheath. The shell has very short hairs and lacks the periostracal crests. In *Xerotricha* Monterosata, 1982, *X. apicina* in particular recalls *Henkia* by the presence of long hairs and longitudinal crests on the shell (Giusti & Manganelli, 1989: pl. 6 fig. E), but the penis distalis and the penial papilla differ, whereas the accessory sacs of the dart-sac complex are

minute or not discernible on outside inspection; in *X. apicina* the vagina is strongly inflated towards the genital atrium and narrow where the oviduct starts. A combination of spiral striae, hairs and fine, periostracal, spirally arranged crests has also been described and illustrated for *Plentuisa vendia* Puente & Prieto, 1992, by Puente & Prieto (1992: fig. 14) and for *Montserratina bofilliana* (Fagot, 1884) by Giusti & Manganelli (1988: pl. 1 figs B-G). Even the penial papilla in *Henkia* recalls the papilla described for *Montserratina* by Giusti & Manganelli (1988: fig. 2A, B), but that is where the similarity ends, since the latter genus and *Plentuisa* Puente & Prieto, 1992, differ clearly in other characters of the genital tract, as for example by the absence of a dart-sac complex.

The phylogenetic relationships of *Henkia* can be discussed more fruitfully when molecular data are available.

Henkia mariannae spec. nov. (Figs 1, 3, 5, 6)

Material, shells (holotype and paratypes). – Portugal, Faro (Algarve): rocky slope 1 km N of Lagos along road N125 [UTM NB20], H.P.M.G. Menkhorst leg. 1.viii.1980 (holotype, RMNH 260563; RMNH 260564/5; HM/45 & 18); 1 km NE of Lagos, along N125 direction Portimao H.P.M.G. Menkhorst leg. 5.viii.1980 (HM/5); 3 km N of Sagres [NA09], H.P.M.G. Menkhorst leg. 5.viii.1980 (HM/9); 3 km NE of Burgau [NB20], H.P.M.G. Menkhorst leg. 29.xii.1985 (HM/6); 1 km E of Almedena, 10 km W of Lagos [NB10], H.P.M.G. Menkhorst leg. (HM/1); 2 km NE Boliqueime [NB71], J. Eikenboom leg. 6.vi.2007 (JE/15); rocky slope SE of Bensafrim [NB21], J. Eikenboom leg. v.2001 (JE/1), B. Bruins leg. 19.v.2011 (RB/3).

Shell. – Shell pale yellowish brown, with up to four convex whorls; the initial c. two whorls hardly descend, resulting in a flattened spire, contrasting with the adjoining, increasingly prominently descending whorls. Umbilicus open, measuring 1/5-1/7 of the shell width. Teleoconch with periostracal hairs measuring 0.2-0.4 mm. Proto- and teleoconch with very fine, incised spiral striae. Protoconch with scattered ‘scales’. Height up to 2.8 mm; width up to 4.0 mm.

Differentiation. – See sub *H. antoni* spec. nov.

Genital slides (RMNH, Mollusca 1155a, b), paratypes, from type locality, H.P.M.G. Menkhorst leg. 1.viii.1980.

Note. – The species is not shown in Locard’s (1899) often neglected monograph.

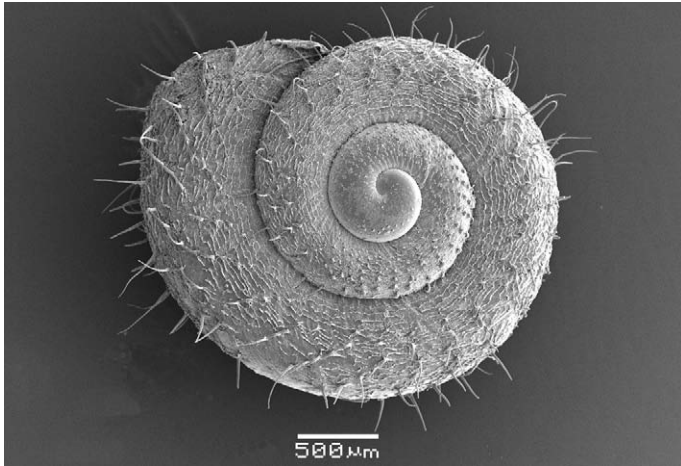


Fig. 7. *Henkia antoni* spec. nov., juvenile paratype RMNH 260566 with $2\frac{3}{4}$ whorls, El Chorro [UF48], 38 km NW Malaga, 500-700 m alt., limestone, A.J. de Winter leg. 28.xii.1982, actual width 2.6 mm.

Derivatio nominis. – Named to honour Marian C. Slooff, the indispensable companion of Henk P.M.G. Menkhorst during many collecting trips.

Henkia antoni spec. nov. (Figs 2, 4, 7)

Material, shells (holotype and paratypes). – Spain, province of Malaga: Aozaina [UTM UF36], near Coin, among humus on igneous rocks, H.P.M.G. Menkhorst leg. 8.iv.1980, 1 (holotype, RMNH 260565; HM/3); El Chorro [UF48], 38 km NW Malaga, 500-700 m alt., limestone, A.J. de Winter leg. 28.xii.1982 (RMNH 260566/11).

Shell. – Shell yellowish brown, with up to $3\frac{1}{2}$ whorls, most of which are coiled in the same plane since only the final half of the last whorl turns down; with a broadly rounded shoulder. Umbilicus wide, measuring c. $\frac{1}{4}$ of the shell width. Protoconch with many prominent ‘scales’, without clear spiral striae. Teleoconch with periostracal hairs, measuring 0.3-0.4 mm. Height up to 1.6 mm; width up to 3.6 mm.

Anatomy. – Unknown.

Differentiation. – *Henkia antoni* differs from *H. mariannae* most clearly by its smaller, nearly entirely flattened shells, with a more widely open umbilicus. On average, the teleoconch hairs are slightly longer, the spirally arranged crests are even

more irregular, and the protoconch lacks clear spiral striae.

Derivatio nominis. – Named after my colleague Dr Anton J. de Winter, one of the discoverers of this species.

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