

Notes on land slugs, 25¹
On two little known species of the genus *Milax*

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The two species discussed in this paper, *Milax baldensis* (Simroth, 1910) and *M. cf. adensameri* H. Wagner, 1931, were collected by A. and E. Gittenberger in 1971; the specimens are kept in the Rijksmuseum van Natuurlijke Historie, Leiden (RMNH), and are preserved in alcohol 70%.

Milax baldensis (Simroth)

(fig. 1)

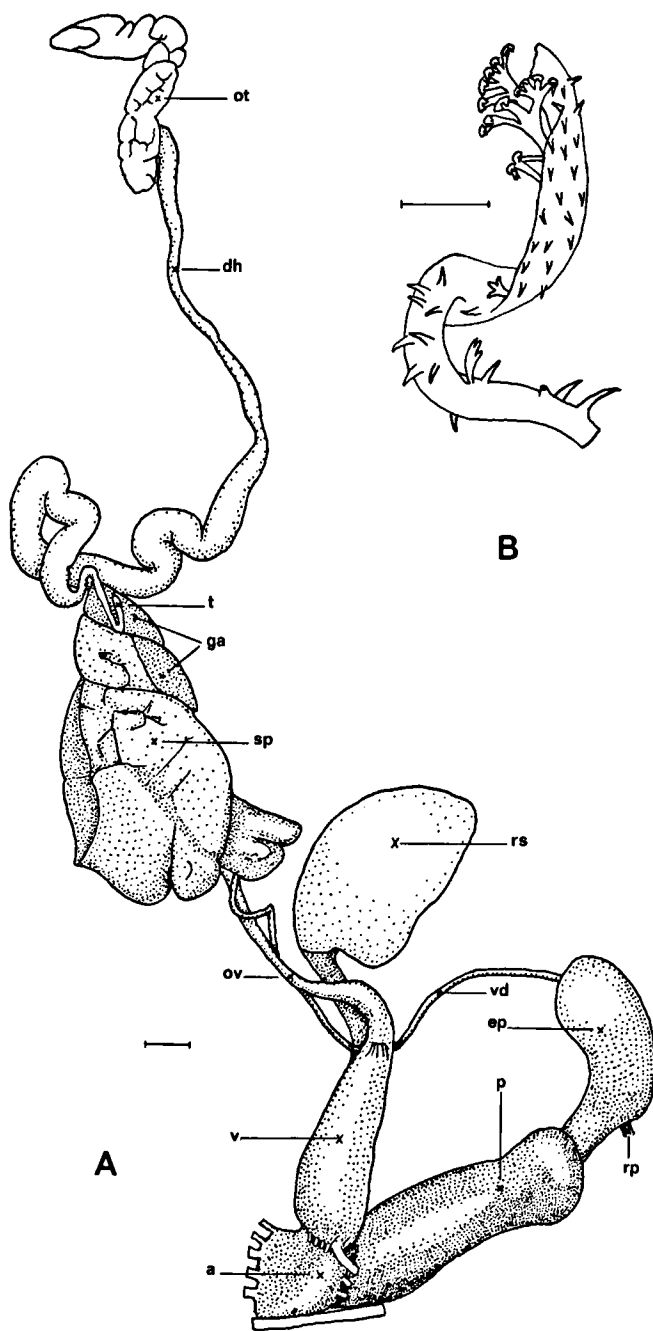
Simroth, 1910: 334 (*Amalia baldensis*), text-fig. 11 (*Amalia hessei*).

Material. — Italy, Brescia, Valle Toscolano (W. of Gargnano at the Lago di Garda), 450 m, 26.V.1971, A. & E. Gittenberger leg., three specimens, RMNH no. 9025.

Description. — I dissected two of the three specimens, one adult and one semi-adult; the figure depicts the reproductive system of the first snail (fig. 1). There are differences as compared to the figure of Simroth: the hermaphrodite duct is twisted and becomes wider near the albumen gland, but towards the end it is very narrow and is supplied with a talon. The albumen gland has a shape different from that in Simroth's specimen. The spermoviduct is more swollen and the prostate is not distinguishable as such. There are muscles at the beginning and at the end of the vagina and a retractor muscle near the anterior end of the epiphallus (fig. 1A). The folds in the vagina are about as in Simroth's figure. In the receptaculum seminis I found part of the spermatophore (fig. 1B).

The semi-adult specimen has a much larger ovotestis; the hermaphrodite duct is nearly straight and hardly widened before the albumen gland. The albumen gland has about the

¹ Notes on land slugs, 24, see Basteria 39: 15-22, 1975, and Erratum, ibidem: 60, 1975.



same form as in the figure of Simroth, but the hermaphrodite duct is attached to it at a third of the length of the gland and becomes so thin that I cannot follow it; I have not seen a talon. The spermoviduct and the receptaculum seminis, which was empty, are much less developed, but the epiphallus and especially its retractor are at least as well developed as in the adult specimen.

Discussion. — I think that Simroth's specimen represents a stage in between my semi-adult and adult specimens and that there is very little difference between my specimens and the specimen figured by Simroth when one considers the degree of maturity. Only the retractor on the epiphallus is a variable character which Simroth may have overlooked.

As far as I know no other specimens have been described since Simroth published his original description. He mentioned two localities at which it had been found, but one (Ágordoschlucht) with a question-mark; the Monte Baldo obviously is the type-locality. The Ágordoschlucht lies at about 125 km NE. of the type-locality (about 20 km NW. of Belluno), and the Valle Toscolano is about 20 km distant as the crow flies, but on the other side of the LÁgo di Garda. This lake acts as a barrier for several species of snails, but evidently not for *M. baldensis*.

Milax cf. *adensameri* H. Wagner
(figs. 2-3)

H. Wagner, 1931: 62, figs. 6, 7 [*Milax (Milax) Adensameri*]; H. Wagner, 1935: 199, fig. 28 [*Milax (Milax) Adensameri*].

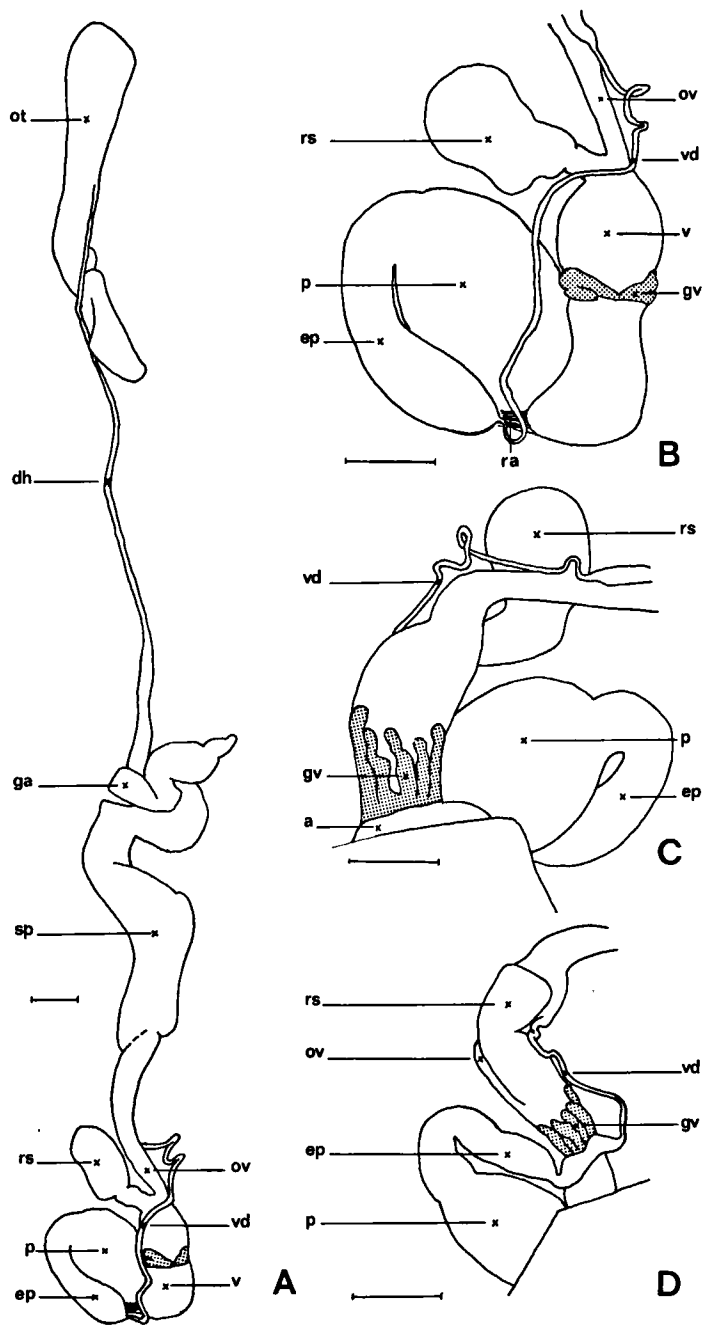
Material. — Jugoslavia, Slovenia, Kamniške Alpe, northern slope along the path eastward of Cojzova Koča (Zoishütte) to Kamniška Bistrica, 1550 m, 29.VIII.1971, A & E. Gittenberger leg., four specimens, RMNH no. 9024.

Description. — We will designate the specimens nos. 1-4. Specimen no. 1 is 28 mm, the others are 21-22 mm long. In no. 1 the dorsum is black except for the mouth and the area from around the genital orifice to about the widest part of the mantle, which area is yellowish white; the three zones of the sole are also of this colour, save the margins which are grey extending to the whole outer zones at both ends. Keel not very prominent, the anterior part is hardly noticeable.

There is little variation in external characters. In specimen no. 3 the yellowish white colour on the right side extends from about the genital orifice to halfway the dorsum. The sole shows the same colour as in the other specimens.

In figs. 2A-C the reproductive system of specimen no. 1 is shown. The ovotestis is hidden by the lobes of the digestive gland at about half the distance between the mantle and the end of the body cavity; hermaphrodite duct twisting between the lobes of the digestive gland, slender at the beginning, becoming gradually wider at about two thirds of its length; a talon is not visible. Albumen gland S-shaped; the female part of the spermoviduct and the prostate are at first not distinctly seen, but near the end they become more distinct and are about equally thick. Oviduct a trifle shorter than the vagina; receptaculum seminis debouching into the vagina with a short duct, at the middle

Fig. 1. *Milax baldensis* (Simroth). A, genitalia; B, part of spermatophore found in receptaculum seminis. Scales 1 mm.



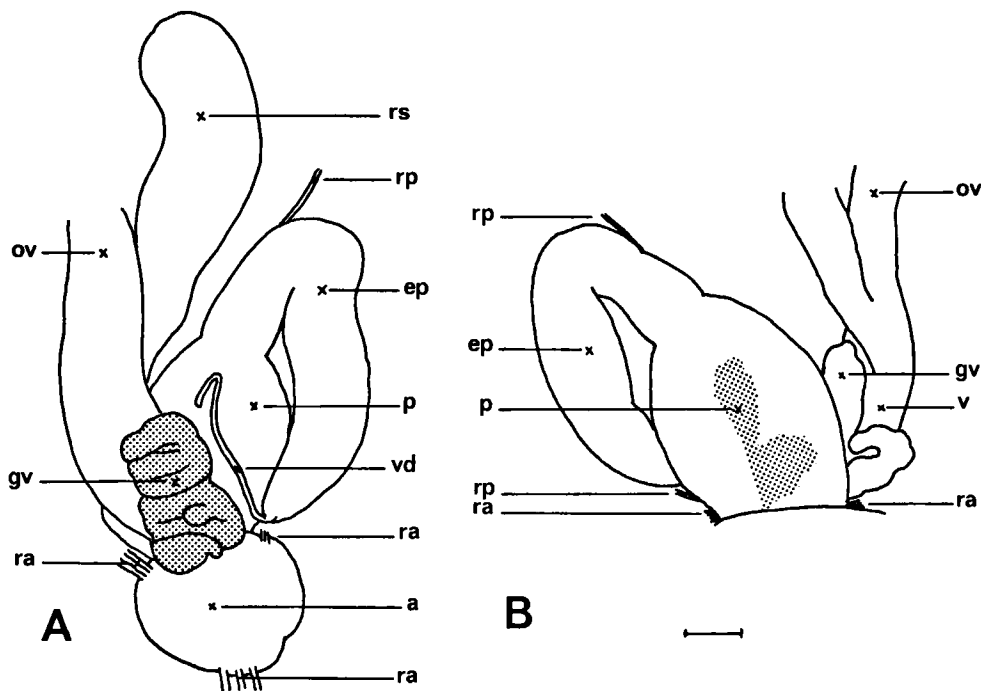


Fig. 3. *Milax* cf. *adensameri* H. Wagner. A-B, anterior part of genitalia of specimen no. 3. Scale 1 mm.

of the sides of which finger-like glands appear, which are difficult to see. Vas deferens debouching into the epiphallus which at its widest part is less than half as wide as the penis at its widest. The genital atrium is short.

The three other specimens show some variation; in all three the duct of the receptaculum seminis is not clearly separated from the receptaculum itself. In specimen no. 3, although being only about 21 mm long, the genitalia are more developed than in specimen no. 1. The glands around the atrium are more swollen, the epiphallus has a long retractor at about one quarter of its length (reckoned from the apex of the penis), and the retractor muscles at the atrium are more distinct (figs. 3A-B). Specimen no. 2 is not in such an advanced stage as specimen no. 3 (fig. 2D), but also has a retractor at the

Fig. 2. *Milax* cf. *adensameri* H. Wagner. A, genitalia of specimen no. 1; B-C, anterior part of genitalia of specimen no. 1 seen from different angles; D, anterior part of genitalia of specimen no. 2. Scales 1 mm.

epiphallus. This retractor in both cases is very thin and probably was overlooked when dissecting nos. 1 and 4. The genitalia of no. 2 are more or less the same as those in the other specimens, except for the epiphallus which is a little longer and slightly twisted near the end. This part of the epiphallus in the other specimens, however, is enclosed by a thin sheet of tissue.

Discussion. — There are differences between my specimens and those of *M. adensameri*. The epiphallus is longer, the penis narrower and there is no retractor at the epiphallus of *M. adensameri*. Perhaps the retractor was overlooked and the other characters are at most of subspecific value only.

The two localities, Obrovazzo (type-locality of *M. adensameri*; now Obrovac, province Hrvatska, Yugoslavia) and the Kamniške Alpe are about 250 km distant; Obrovazzo is situated SSE. of the Kamniške Alpe. As long as only six specimens from only two different localities have been studied I suggest that the four present specimens be called *Milax* cf. *adensameri* H. Wagner. The nearest related species seems to be *M. ehrmanni* (Simroth, 1910: 334, text-fig. 12, s.n. *Amalia Ehrmanni*), but this is quite a different species.

Abbreviations used in the figures

a	— genital atrium	ra	— atrium retractor
dh	— hermaphrodite duct	rp	— penial retractor
ep	— epiphallus	rs	— receptaculum seminis
ga	— albumen gland	sp	— spermoviduct
gv	— vaginal glands	t	— talon
ot	— ovotestis	v	— vagina
ov	— oviduct	vd	— vas deferens
p	— penis		

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