

Notes on land slugs, 23¹
A new species of *Milax* from Tunisia

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Milax gasulli nov. spec. (figs. 1-3)

Holotype: "Zaghuah. Templo de las aguas. 14.2.72 Gasull leg. TUNIS"; RMNH no. 9007. — Paratype: same locality, date and collector; RMNH no. 9006.

Description. — Length (in alcohol) of holotype 49 mm, length of mantle 15 mm, respiratory orifice about 10 mm from anterior border of mantle. Keel over the whole length of the dorsum as an extremely narrow whitish line and only clearly prominent near the end. The mantle and dorsum grey, merging into beige on the sides to become at the sole almost white; in the paratype the colour is somewhat lighter.

Anatomy in general like *M. nigricans* (Schultz in Philippi, 1836); of the genitalia (fig. 1) the anterior part only (fig. 2) will be described, as the differences are to be found here. Oviduct at the beginning narrow, later widening; receptaculum seminis passing without duct into the short vagina, which is surrounded by glands. These glands go up to about 4/5 of the length of the receptaculum at the back side. Atrium at the left side with a massive fold which continues as a stimulator. Stimulator fairly long and ending in a recurved apex, having a line of papillae which at the beginning and near the end forms two rows of papillae closely together. The stimulator in both specimens protrudes from the

¹ Notes on land slugs, 22: Nautilus 89 (1), 1975.

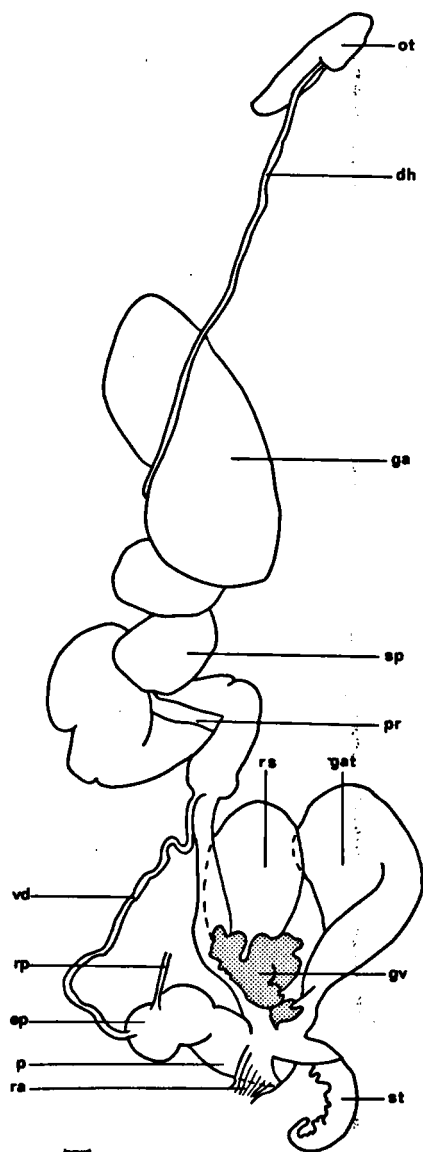


Fig. 1. Genitalia of *Milax gasulli* nov. spec. Scale 1 mm.

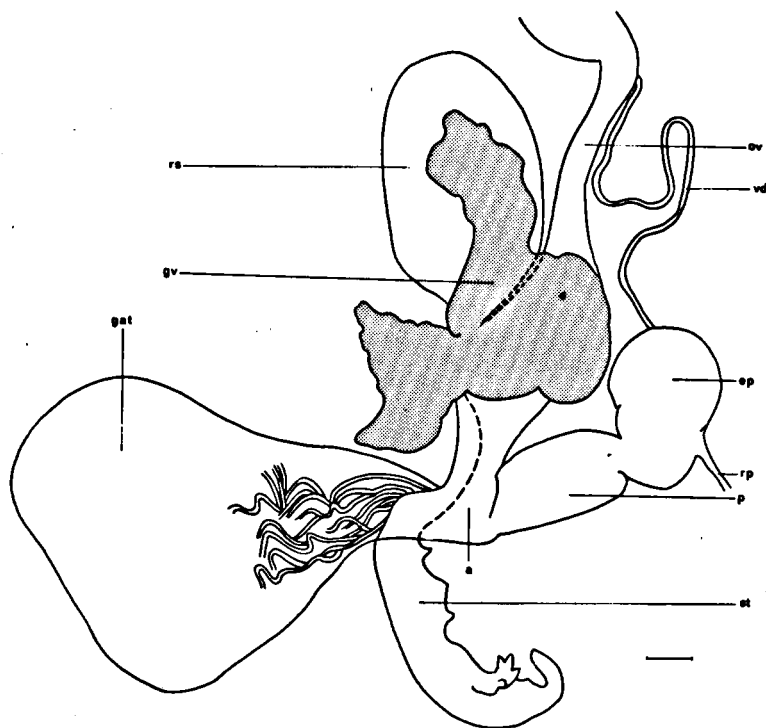


Fig. 2. Anterior part of the genitalia of *Milax gasulli* nov. spec. Scale 1 mm.

atrium. The first part of the penis is rather long and strongly indented before the second, short, part begins; between this part and the epiphallus, which is subglobular, the retractor muscle is inserted. The gland debouching into the atrium is larger than the receptaculum seminis and consists of tubes and connective tissue. There is connective tissue between the oviduct, the vaginal glands, the receptaculum seminis and the first part of the gland of the atrium. The posterior part of a spermatophore has been found in the receptaculum seminis of the holotype (fig. 3).

In the paratype the gland of the atrium is much larger, reaches even as far as the albumen gland and is three times as long as the receptaculum seminis. There is, moreover, less connective tissue than in the holotype.

Derivatio nominis. — This species is named in honour of Mr. L. Gasull (Palma de Mallorca) who has contributed much to the know-



Fig. 3. Posterior part of the spermatophore of *Milax gasulli* nov. spec. Scale 1 mm.

ledge of the molluscan fauna of the Balears and southern Spain, and who has procured me slugs of various localities for the Rijksmuseum van Natuurlijke Historie (RMNH), Leiden.

Discussion. — The main differences between this species and *M. nigricans* (see Quick, 1960, p. 156: *Milax* cf. *insularis*), which it resembles more than *M. gagates* (Draparnaud), are the shape of the penis and especially that of the epiphallus, the absence of a duct of the receptaculum seminis, the glands which debouch in the vagina, and the differently shaped stimulator. The spermatophore of *M. nigricans* is unknown as far as I know. Therefore I can not judge if the posterior part of it is different from that of this species. It differs in any case from the spermatophore of *M. gagates* as figured by Quick (1960, fig. 8E).

Only one species of *Milax* has been mentioned for Tunisia, s.n. *M. gagates* (Draparnaud) (Germain, 1908). But the stimulator is figured and proves that it is *M. nigricans* (Schultz in Philippi, 1836). From Algeria the following species were recorded by Bourguignat (1863): *M. gagates* (Draparnaud), *M. eremiophilus* (Bourguignat), *M. scaptobius* (Bourguignat), and by Pollonera (1891) in addition *Amalia insularis* Lessona & Pollonera and *A. cabiliana* Pollonera. Of these species the genitalia of *M. gagates* and of *M. (= Amalia) insularis* only were studied and figured, for instance by Quick (1960, the second as *M. cf. insularis*). *M. (cf.) insularis* I consider to be a synonym of *M. nigricans* (Schultz in Philippi, 1836), as Dr. L. Forcart did already earlier. The genitalia of *M. (= Amalia) cabiliana* are reported to be the same as in *M. gagates*, but there is no figure. The types of the others are lost and it is only possible to check on these when specimens of the type locality are studied anatomically. The same holds true probably for the variety or subspecies which Cockerell described in 1891 as "*Amalia (gagates* var. or subsp.) *mediterranea*, nov." from Algeria and Sicily. He also mentioned only some external characters and the type or syntypes of this form are not in the British Museum (Natural History), as Mr. Kenneth Thomas of the Mollusca Section has kindly informed me.

Dr. A. Zilch of the Senckenberg Museum, Frankfurt am Main, sent me 30 specimens from East Algeria and three from Cairo identified as *Milax gagates* (Draparnaud). Having opened two specimens of the first locality of which one appeared to be too young and one too brittle to study the stimulator, a third specimen proved to be *M. nigricans*. Then I stopped opening specimens, because the material was not in a condition to make anatomical research always remunerative. The specimens, however, include both young and adult slugs, the external appearance varying from almost black to light grey, and they might be from different localities. So it is by no means sure that they all belong to

M. nigricans. From the three specimens of Cairo one was opened and this slug had a stimulator as in *M. nigricans*. The outer appearance of these three was nearly the same. From Mr. W.H. Neuteboom I received ten specimens from South Tunisia, oase Gabès, between Menzel and Chemini, which he had collected on 25.XII.1973. They all proved to be *M. nigricans*.

Because there are several characters (form of stimulator, penis, epiphallus, and receptaculum seminis, and the glands on the vagina) which separate this form from *M. nigricans* and because up to now no intermediates have been found, I have considered it a new species and not a new subspecies. The future, however, will decide whether this is right or not.

Abbreviations used in the figures

a: genital atrium
dh: hermaphrodite duct
ep: epiphallus
ga: albumen gland
gat: atrium gland
gv: vaginal gland
ot: ovotestis
ov: oviduct

p: penis
pr: prostate
ra: retractor of atrium
rp: retractor of penis
rs: receptaculum seminis
sp: female part of spermovi-
duct
st: stimulator
vd: vas deferens

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