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***ANISOSPIRA VELASCORUM*, A NEW LAND SNAIL FROM MEXICO, WITH NOTES ON THE ANATOMY AND HISTOLOGY (MOLLUSCA, GASTROPODA, UROCOPTIDAE)**

by

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With 11 text-figures and one plate

During a collecting trip through southern and central Mexico (Breure, 1974) special attention has been paid to Bulimulidae and Urocoptidae. Among the material of urocoptids a new species has been found.

***Anisospira velascorum* sp. n. (figs. 1-10, pl. 1)**

Description. — Shell up to 30.5 mm, 2.39 times as long as wide, rimate, with rather convex sides; cylindrical; solid. Colour reddish-brown. Surface slightly shining, with numerous fine riblets, which are slightly recurved and equally spaced over the surface of the shell. Riblets about (half) as broad as the intervals, with 5-6 riblets/mm on the antepenultimate whorl. Decollate; adult shell with 7 whorls, moderately convex; first three whorls of adult shell rapidly increasing in width, other whorls nearly cylindrical, but last whorl usually more slender. Suture well impressed. Aperture broadly ovate, usually adnate, as long as wide, 0.23 times the total length. Peristome moderately thickened, narrowly reflexed, whitish. Axis with two smooth spiral lamellae, confined to the last 1½ whorl. One lamella just above floor of whorl, blade- to cord-like; the second lamella, which is less developed and absent in some specimens, is located near the middle of the axis (fig. 2).

Genitalia. — The genitalia of this species correspond to the general description for those of *Anisospira* given by Thompson (1968: 149), but the epiphallus originates below the apex of the penis (fig. 10) and is ca. 7 times as long as the penis.

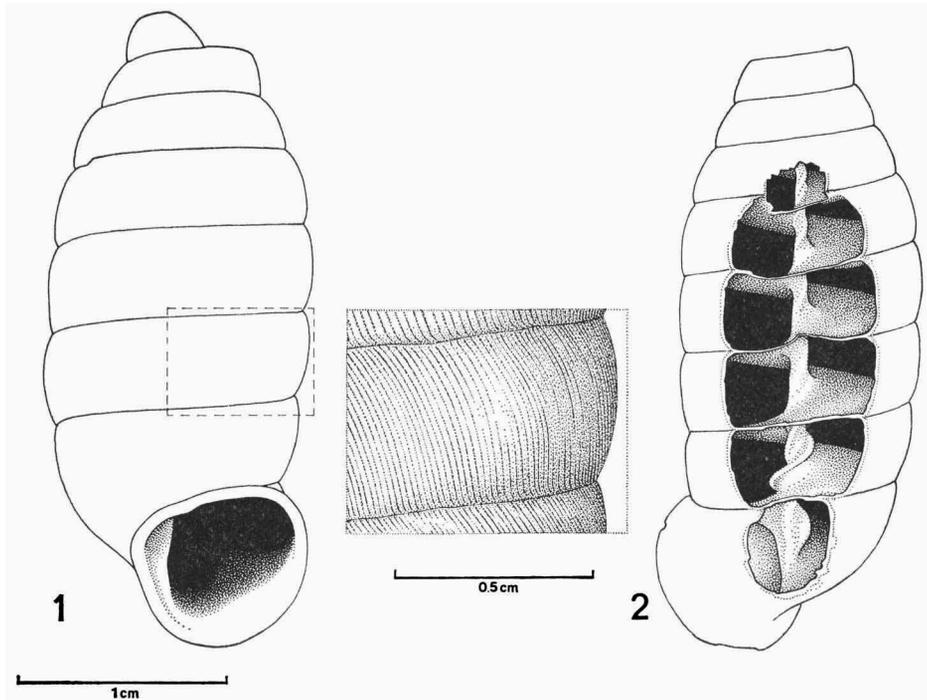
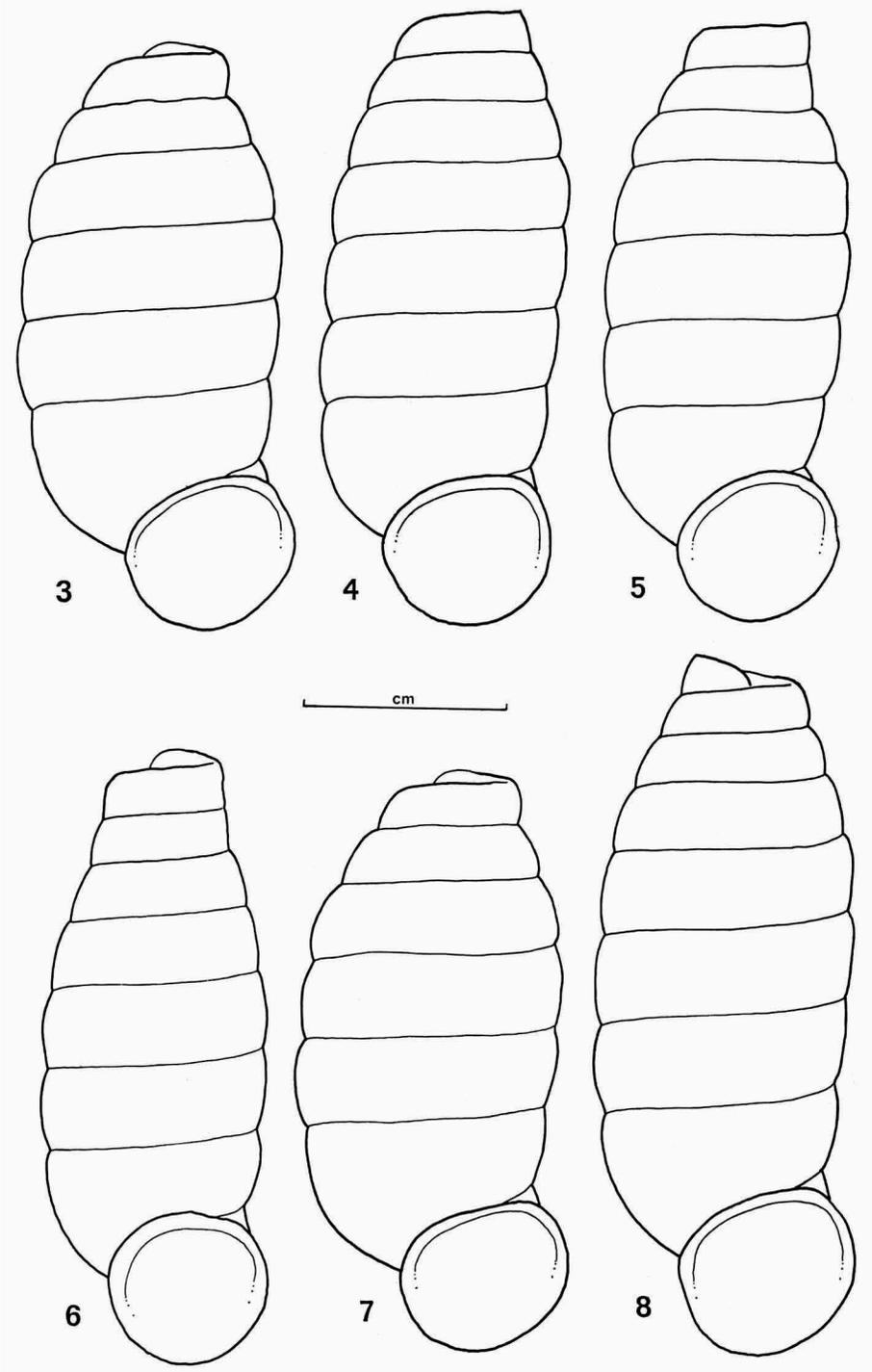


Fig. 1. Holotype of *Anisospira velascorum* sp. n., with detail of sculpture on penultimate whorl. (H. Heijn del.). Fig. 2. Paratype of *Anisospira velascorum* sp. n., showing the structure of the axis. (H. Heijn del.).

Genital atrium. The lumen is elongate with infoldings, and lined with a cubic epithelium (cell height $5\ \mu\text{m}$). The subepithelial tissue is made up by loose connective tissue in which some light blue (with Alcian Blue; hereafter indicated as AB) staining cells are dispersed. At the periphery longitudinal smooth muscle fibers are predominantly present, as well as some circular ones.

Penis. The penis is characterized by cubic epithelium (cell height $17\ \mu\text{m}$), of which the nuclei are staining pink with Phloxine. This epithelium is surrounded by muscular tissue (circular and longitudinal muscle fibers) in which vacuoles are observed. The lumen of the penis is partially filled with secretion, staining light blue with AB. No distinct glandular cells have been found in the penis and the secretion thus probably originates in the epiphallus. Considering its histological structure the "caecum" forms part of the penis.

Epiphallus. The epiphallus is a highly plicated tube with slightly irregular cubic epithelium (cell height $5\text{--}8\ \mu\text{m}$), which is shortly ciliated and which



Figs. 3-8. Paratypes of *Anisospira velascorum* sp. n., showing variation in shell shape.

Table 1. Measurements in *Anisospira velascorum* sp.n. (in mm).

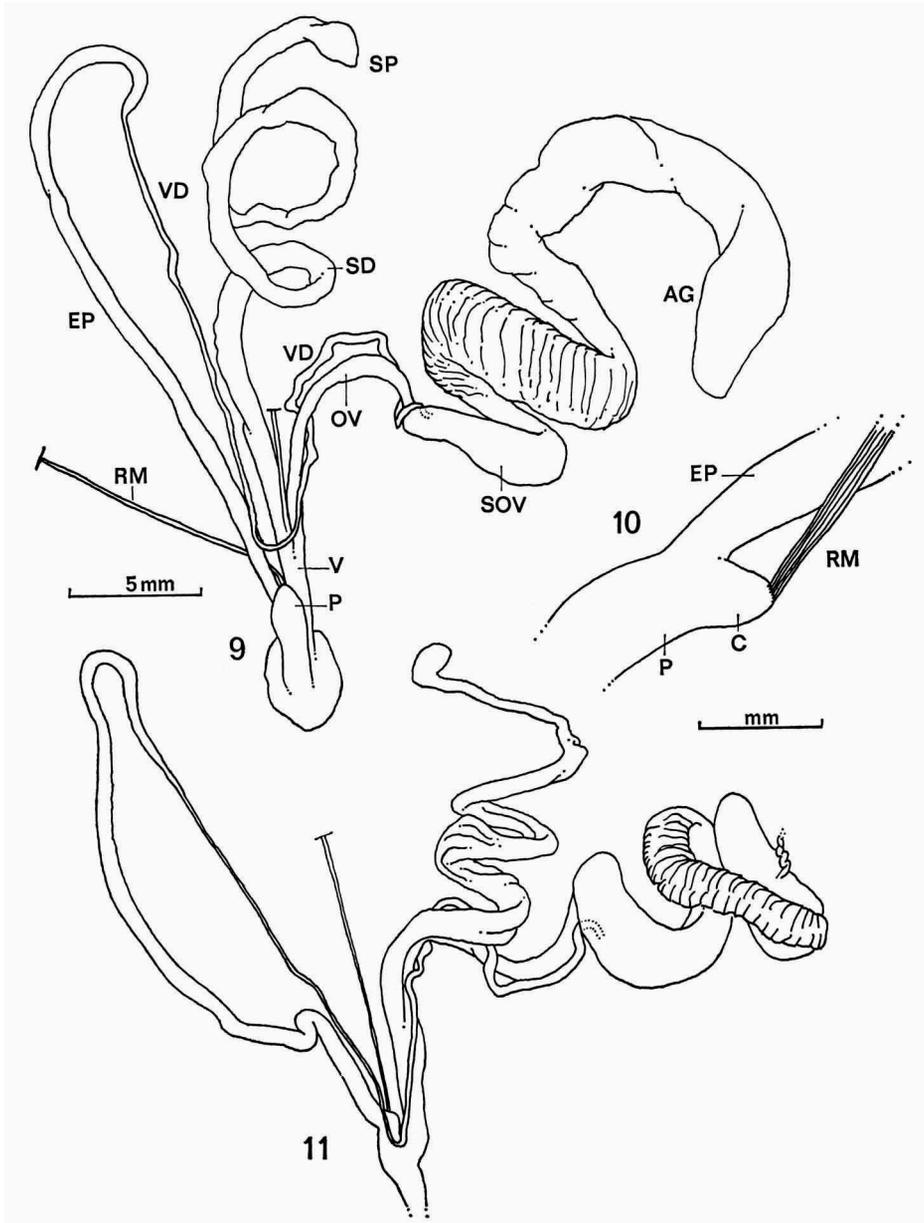
shell		aperture		number of	
height	diam. ante- penult. whorl	height	width	whorls	
30.5	12.9	7.1	7.3	6.8	holotype
26.0	11.4	5.8	6.5	7.0	paratype RMNH
29.5	12.3	7.0	6.4	6.8	do.
29.5	11.7	6.8	6.5	7.0	do.
30.5	12.4	6.3	6.6	7.5	do.
29.0	12.1	6.4	6.6	7.0	do.
24.0	11.7	6.8	5.6	5.5	do.
30.0	13.0	6.8	6.8	7.2	do.
27.5	10.5	6.0	6.1	7.2	do.
30.0	12.0	6.5	6.9	7.8	do.

is surrounded by a thick muscular layer. More distally the cells are taller (up to 10 μm) and with longer cilia. The subepithelial tissue consists of cells with a more or less truncated pyramidal shape and a small nucleus. These cells are staining light blue with AB and probably produce the secretion found in the penis.

Vagina. The proximal part of the vagina has an irregular, elongate lumen and low, cubic epithelium (cell height 4 μm). The latter is surrounded by loose connecting tissue and a muscle layer. The central part has a more vacuolized muscle layer, but is otherwise identical. More distally the epithelium is low cylindrical (cell height 10 μm), with large nuclei. The subepithelial tissue is very loose and with more or less pycnotic nuclei. The lumen is partially filled with an AB-positive secretion.

Spermathecal duct. The proximal part of this duct is histologically identical to the vagina. The cell height of the epithelium is 9-12 μm . More distally the nucleus is subbasal and the epithelium is pseudo-stratified. The height of the epithelium cells is very irregular (up to ca. 40 μm) and in some places the lumen penetrates the epithelium by means of small canals. In that part of the spermathecal duct where spermatophores are present the epithelium is highly cylindrical (cell height 60 μm); the elongate nucleus is subbasal and surrounded by Phloxine-positive cytoplasm. The distal part of the cells is filled with granulae.

Spermatheca. The histological structure of the spermatheca is identical to that of the distal part of the spermathecal duct.



Figs. 9-10. Genitalia of *Anisospira velascorum* sp. n. AG, albumen gland; C, caecum; EP, epiphallus; OV, oviduct; P, penis; RM, retractor muscle; SD, spermathecal duct; SOV, spermoviduct; SP, spermatheca; V, vagina; VD, vas deferens.

Fig. 11. Genitalia of *Anisospira strebeli* (Pfeffer). Mexico, Oaxaca, ca. 25 km N Pochutla.

Oviduct. The lumen is rather large, with infoldings, and lined with cubic epithelium (cell height 5 μm); surrounded by a thick layer of mainly circular muscle fibers. More distally the nuclei of the epithelium are Phloxine-positive and the cells are low cylindrical in shape.

Oöthecal gland. A large and highly plicated tube. The lumen is lined with ciliated cubic epithelium (cell height 5 μm). The subepithelial glandular cells are irregular in shape but have always a large nucleus. The cytoplasm is staining light blue with AB, but in the distal part glandular cells have been observed which stain intense dark blue.

Prostate. A branched tubular gland, mainly consisting of acini. The cells are more or less truncated pyramidal in shape, containing a large nucleus and secretion granules (diameter ca. 1 μm), staining griseous with AB.

Radula. Thompson (1968) has given a general description of the radula for *Anisospira*. The characters observed in the present species correspond to this general description.

Type material. Rijksmuseum van Natuurlijke Historie, Leiden, Moll. 55195: holotype. Mexico, State of Oaxaca, km 151 road Pochutla-Puerto Escondido (= ca. 10 km E Pto. Escondido), 25 m (A. S. H. Breure leg., 14-vii-1974, sta. 58). Paratypes, same data, RMNH 55196/44, RMNH 9026/many (alcohol material), Natur-Museum Senckenberg, Frankfurt a.M./2, Florida State Museum UF 22742/8, UF 22743/4 (alcohol material).

Comparisons. This species resembles *Anisospira strebeli* (Pfeffer) but differs in: (1) being less cylindrical; (2) the more convex sides; (3) having two axial lamellae; (4) the finer riblets (5-6/mm instead of 3-4/mm). *Anisospira velascorum* also resembles *A. hadromylla* Thompson, differing in: (1) having two axial lamellae; (2) the less thickened peristome; (3) the finer riblets; (4) being smaller (length 24.0-30.5 vs. 31.5-42.0 mm). Finally the new species may be compared with *Anisospira recticosta* (Pfeiffer), from which it may be distinguished by (1) the more convex sides; (2) having two axial lamellae, which are confined to 1½ whorl; (3) the finer riblets.

Remarks. *Anisospira velascorum* was found in leaf litter on the forest floor of medium evergreen selva. Several specimens were found in copulation.

The terminology of the genitalia has been adapted from previous authors. It is interesting to note, however, that the epiphallus of urocoptids is apparently analogous to the bulimulid flagellum.

The data described here for *Anisospira* correspond to those observed for other species of the subfamily Eucolodiinae, e.g. *Coelocentrum* sp. (Breure, unpublished) and *Epirobia* spp. (Thompson, 1976). There is a marked difference with species of the Urocoptinae (Breure, unpublished).

The histological data for *Anisospira velascorum* correspond closely to

those given by Jaenicke (1933) for *Cerion uva* (L.) and *C. glans* (Küster). As *Cerion* belongs to the Mesurethra and the Urocoptidae to the Sigmurethra the strong resemblance in anatomy is perhaps best understood as a convergence. A detailed discussion about the relationships of the Urocoptidae is urgently needed, but is beyond the scope of this paper.

Etymology. I have much pleasure dedicating this species to my Mexican friends Biol. Roberto and Narda Velasco (Tuxtla Gutiérrez, Chiapas) for their kind cooperation during my trip.

Anisospira strebeli (Pfeffer, 1887) (fig. 11)

This species was collected in two localities near the type locality: (1) Oaxaca, 3 km N Puerto Angel, 25 m; in leaf litter in secondary low evergreen selva (sta. 57: Breure, 1974; RMNH). (2) Oaxaca, 0.1 km N Puente de Chacalapilla, ca. 25 km N Pochutla, 350 m; in leaf litter (sta. 55: Breure, 1974; RMNH).

Genitalia. In this species the epiphallus originates from the apex of the penis. The data observed correspond in all other aspects with the general description given by Thompson (1968). See fig. 11.

Radula. The radula is essentially identical to that of *Anisospira velascorum* sp. n.

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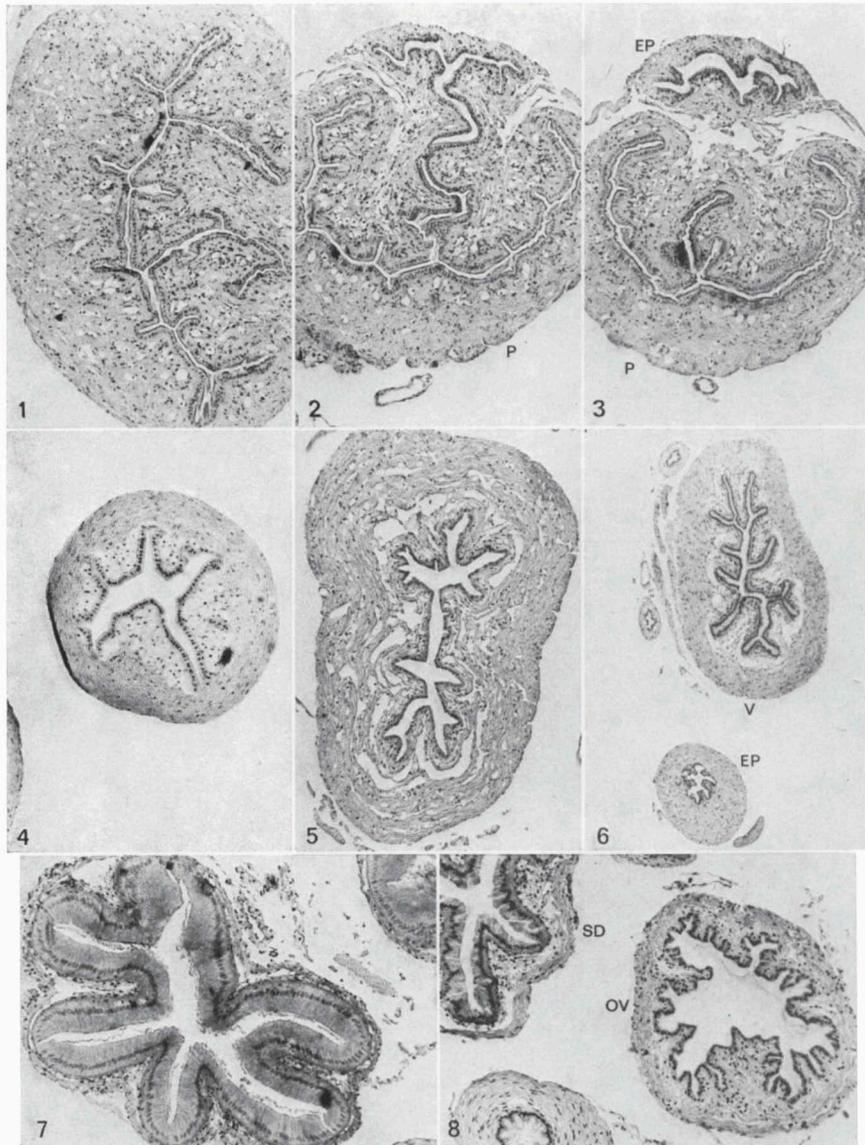


Fig. 1. Proximal part of penis (Alcian Blue; slide H 904) $\times 127$. Fig. 2. Transition from penis to epiphallus (Alcian Blue; slide H 905) $\times 127$. Fig. 3. Distal part of penis and most proximal part of epiphallus (Alcian Blue; slide H 905) $\times 127$. Fig. 4. Distal part of epiphallus (Alcian Blue; slide H 943) $\times 127$. Fig. 5. Proximal part of vagina (Alcian Blue; slide H 905) $\times 127$. Fig. 6. Distal part of vagina (Haemalum-Eosin; slide H 908) $\times 53$. Fig. 7. Spermathecal duct (Alcian Blue; slide H 943) $\times 127$. Fig. 8. Oviduct and spermathecal duct (Haemalum-Eosin; slide H 951) $\times 127$.