



Zilchogyra franzi Weyrauch, 1965 (Gastropoda: Charopidae), a minute landsnail rediscovered in Sierra de la Ventana (Southern Pampas, Argentina)

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Zilchogyra franzi was described on the basis of a single specimen (holotype in Fundación Miguel Lillo: FML 1217, Fig. 1) from the Ventania mountain system (Weyrauch 1965b) and this was so far the only publication on this species. Weyrauch (1965b) described the shell and gave a brief account of the habitat, based on the information provided by the collector Dr. Herbert Franz. Franz had found *Z. franzi* in a ravine in Sierra de la Ventana, in a humid hollow in the rock, lined with dark soil with ferns and “bromeliads” (probably *Eryngium* spp., Apiaceae).

The mountain system of Ventania (highest altitude: 1200 m a.s.l.) lies in Argentina’s southern Pampas (from 37°39’ to 38°17’S, 62°W). The climate is temperate, with a mean annual temperature of 14°C. Annual rainfall is around 800 mm (Paoloni *et al.* 1988), spring being the wet season. Vegetation physiognomy corresponds to pampas grasslands, but the diversity of ecological conditions allows floral components belonging to different biogeographical regions to flourish (Frangi and Bottino 1995).

Extensive searching between 2002 and 2006 over a wide range of microhabitats located live and dead specimens of *Z. franzi* in two ravines and on two slopes in mountains within the “Ernesto Tornquist” Provincial Park in Sierra de la Ventana (Fig. 2). We obtained the following material: **Ravine 1**: 4 living snails, leg. VKD and CHF Pérez, 10 April 2003; 2 shells, leg. VKD, 24 August 2003; 7 living snails and 17 shells, leg. VKD, JP and SB, 2 May 2006. **Ravine 2**: 2 living snails and 1 shell, leg. VKD and CHF Pérez, 3 November 2003. **Slope 1**: 1 shell, leg. VKD, 25 April 2003. **Slope 2**: 6 shells, leg. VKD, 25 April 2003. Material was deposited in Museo Argentino de Ciencias Naturales “Bernardino Rivadavia,” Buenos Aires (MACN-In 37712, two specimens), Museo de La Plata, La Plata (MLP 13114, two specimens) and Fundación Miguel Lillo (FML 15342, two specimens).

Ravine 1 (530–580 m a.s.l., 32–40° inclination) (Fig. 3) and ravine 2 (780 m a.s.l., 36° inclination) are characterised by steep slopes cut by massive rock walls forming crags of 8–10 m height with hollows and caves at their base. Snails were found in organic soils of shady hollows with hygrophilous and shade-loving vegetation such as mosses and ferns. In slope 1 and slope 2, which also have high rock walls, we only found old, damaged shells, downhill from crags, probably carried downslope by drainage water. *Zilchogyra franzi* seems to be a rare species since after intensive searches it was found on only a few occasions and in low numbers. It is probably a habitat-specialist species, restricted to humid microhabitats.

Zilchogyra franzi was found in the company of the exotic Punctidae *Paralaoma servilis* (Shuttleworth, 1852). In contrast with *Z. franzi*, *P. servilis* is common in Sierra de la Ventana; we found it in the soil, in litter, under rocks and under the bark of *Eucalyptus* trees. *Paralaoma servilis* has been described several times under different names in Argentina and different parts of the world (Hausdorf 2002). There is an early record of *Radiodiscus pilsbryi* Hylton-Scott, 1957 (a junior synonym of *P. servilis*) for Sierra de la Ventana (Fernández 1973).

Using the method of Solem (1976) (Figs. 4–6), we measured 32 shells, ranging from 2.2 to 5.4 mm in major diameter. Below we provide a redescription of *Z. franzi* that is based on adult specimens, documents conchological variability and provides novel information on shell microsculpture derived from SEM micrographs (SEM Evo 40 Leo 2003).

Family Charopidae Hutton, 1884

Genus *Zilchogyra* Weyrauch, 1965a

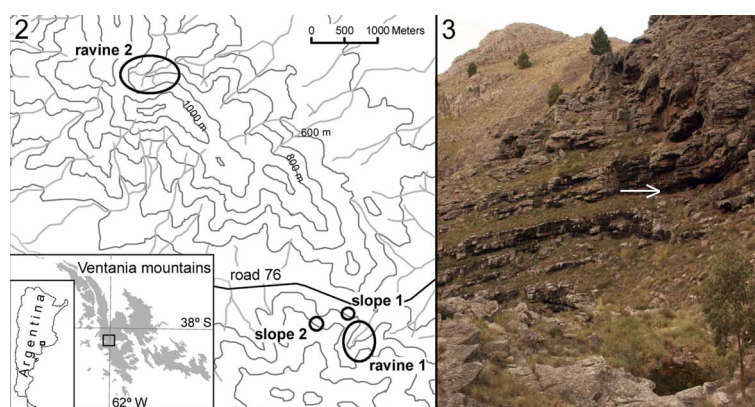
Type species: *Helix costellata* d’Orbigny, 1835, by original designation

Zilchogyra franzi Weyrauch, 1965b

Type locality: Sierra de la Ventana, Buenos Aires province, by original designation (Weyrauch, 1965b).



FIGURE 1. *Zilchogyra franzi*. Holotype (FML 1217).



FIGURES 2–3. 2, Sites inhabited by *Zilchogyra franzi*; 3, General view of ravine 1. Arrow indicates cave with *Z. franzi*.

Diagnosis: Large *Zilchogyra* species with a discoidal, almost flat shell with 4.3–4.9 whorls. Major diameter 4.3–5.4 mm. Spire low, slightly protruded. Ribs widely spaced, 45–56 ribs on the last whorl. Umbilicus broad, 36–50% of shell width.

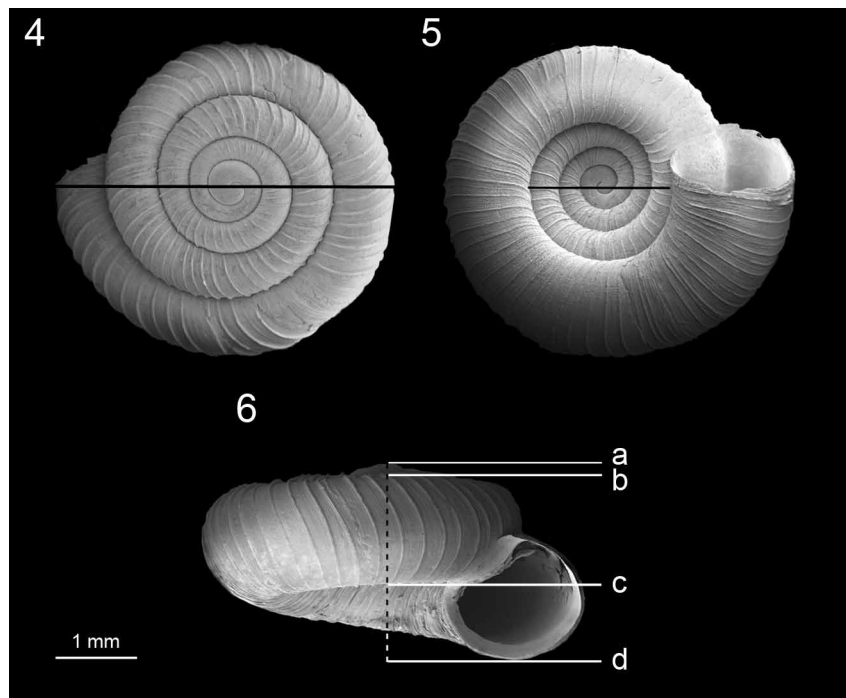
Redescription: Shell depressed, discoidal flat with 4.3 to 4.9 markedly convex, gradually expanding whorls with deeply channelled sutures; semitranslucent, thin and fragile, with glossy, brownish periostracum. Major diameter ranging from 4.3 to 5.4 mm, shell height from 1.6 to 2.6 mm. Spire almost flat, slightly protruded (5–20% of shell height); most shells with only the first whorls visible in lateral view. Degree of descent of last whorl (Figure 4: bd/cd in %) ranging from 20 to 40%. Protoconch with 1.4 to 1.8 whorls, smooth, sometimes with rudimentary axial ribs in its distal portion (Fig. 7). Teleoconch with axial ribs and intercostal microsculpture consisting of regularly spaced axial striae and weaker spiral lines, visible only under strong magnification (Fig. 8). Axial ribs curved and retractive, distally with translucent periostracal projections, observable only in well preserved shells. Last whorl with 45 to 56 ribs (3.1 to 4.4 ribs per mm) and 6 to 14 axial striae in each intercostal space. Aperture subcircular, little excised by the last whorl. Peristome sharp, not expanded. Umbilicus wide, extending over about 36–50% of the shell width. Animal: Body colour greyish and dotted.

Discussion: *Zilchogyra* contains about ten species with broad South American distributions, inhabiting ecologically distinct regions, from Brazilian subtropical rainforests to the Patagonian Andes and Isla de los Estados (State Island). There are only two extant species of native Charopidae in the Pampas, *Zilchogyra costellata* (d'Orbigny, 1835) and *Z. franzi*. The classification of *Zilchogyra* and allied genera was recently discussed by Hausdorf (2005) and Miquel *et al.* (2007). Hausdorf tentatively defined *Zilchogyra* on the basis of anatomical and radula characters described by Hylton-Scott (1964) for the type species *Z. costellata*. However, anatomical data are lacking or insufficiently known for most

South American punctoids. According to Miquel *et al.* (2007), *Zilchogyra* includes those charopids with smooth or almost smooth protoconchs, and differs from *Lilloiconcha* Weyrauch, 1965 in the structure of the axial ribs, being thick and almost straight in dorsal view in *Lilloiconcha*, and comparatively thin and curved in *Zilchogyra*.

The holotype of *Z. franzi* is smaller than 84% of our specimens (holotype measurements: major diameter 3.7 mm; minor diameter 3.2 mm; height 1.7 mm; whorl number 4.2). It also lacks characteristics of adult shells, such as a markedly descending last whorl. Thus the original description was probably based on a juvenile. However, the holotype is similar to specimens of comparable size in our material, both in shell shape and sculpture.

Zilchogyra franzi is conchologically close to *Z. costellata*, the type species. Weyrauch (1965b) noted that *Z. franzi* was smaller, with a wider umbilicus, a flatter spire, a more descending last whorl, a more circular aperture, and a higher number of ribs per mm. The size ranges of both species are similar. The other differences mentioned by Weyrauch agree with our data, the main character separating both species being the degree of protrusion of the spire.



FIGURES 4–6. Scanning electron micrographs of *Zilchogyra franzi* showing shell measurements. 4, dorsal view, black line: major diameter; 5, ventral view, black line: umbilicus width; 6, frontal view. ab, spire protrusion; bc, body whorl width; ad, shell height.

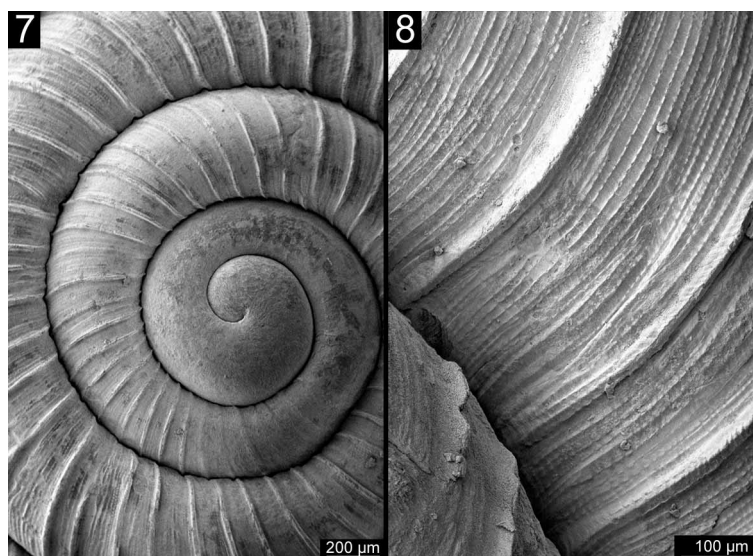


FIGURE 7, 8. Scanning electron micrographs of *Zilchogyra franzi*. 7, protoconch; 8, the axial ribs and the intercostal microsculpture.

Acknowledgments

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References

- Fernández, D. (1973) *Catálogo de la malacofauna terrestre argentina*. Comisión de Investigaciones Científicas, Monografías, 4, La Plata, 197 pp.
- Frangi, J. & Bottino, O. (1995) Comunidades vegetales de la Sierra de la Ventana, provincia de Buenos Aires, Argentina. *Revista de la Facultad de Agronomía de La Plata*, 71, 93–133.
- Hausdorf, B. (2002) Introduced land snails and slugs in Colombia. *Journal of Molluscan Studies*, 68, 127–131.
- Hausdorf, B. (2005) The Genus *Lilloiconcha* in Colombia (Gastropoda: Charopidae). *Journal of Natural History*, 39, 2795–2808.
- Hylton-Scott, M.I. (1964) *Helix costellata* d’Orbigny, a la luz de su anatomía (Gastrop. Endodontidae). *Neotropica*, 10, 15–19.
- Miquel, S.E., Ramírez, R. & Thomé, J.W. (2007) Biodiversidad y taxonomía de micromoluscos Punctoidea del sur de Brasil, con la descripción de una nueva especie de *Radiodiscus* de la Mata Atlántica (Mollusca, Gastropoda, Pulmonata). *Revista del Museo Argentino de Ciencias Naturales*, 2, 205–230.
- Paoloni, D.J., Vázquez, R. & Fiorentino, C. (1988) La topografía y la variación de las precipitaciones y los escurrimientos en el Sistema de Ventania. *Actas de las Segundas Jornadas Geológicas Bonaerenses*, 651–661.
- Solem, A. (1976) *Endodontoid Land Snails from Pacific Islands (Mollusca: Pulmonata: Sigmurethra), Part I. Family Endodontidae*. Field Museum of Natural History, Chicago, 508 pp.
- Weyrauch, W.K. (1965a) Neue und verkannte Endodontiden aus Südamerika. *Archiv für Molluskenkunde*, 94, 121–134.
- Weyrauch, W.K. (1965b) Cinco nuevos Endodóntidos de Argentina y Perú. *Neotropica*, 11, 105–115.