

# A new species of the operculate land snail genus *Maizaniella* from Liberia (Gastropoda, Caenogastropoda)

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*Maizaniella sapoensis* spec. nov. from Liberia is described. The species is provisionally attributed to the subgenus *Spirulozania*. It is by far the smallest known member of the genus, with an adult shell diameter of just over 2 mm.

## Introduction

Since the 1980s A.C. van Bruggen has published a series of papers on Afrotropical terrestrial “prosobranchs” (mainly Cyclophoridae and Maizaniidae), thereby raising new interest in a group that was earlier considered to embrace but a negligible number of poorly known taxa, and thus to be of marginal importance. The known diversity of terrestrial caenogastropods in continental Africa is still rather limited in comparison to other tropical areas, but since 1982 the number of species described has been more than doubled. Among others, Van Bruggen revised the genus *Maizaniella* Bequaert & Clench, 1936, a group confined to the Afrotropical forest belt west of the Ruwenzori range (van Bruggen, 1982). The genus is presently known by 11 species (six of which were described since 1982) from Sierra Leone, Liberia, Guinée, Ghana, Cameroon, Bioko (formerly Fernando Po, Equatorial Guinea), Gabon, the Democratic Republic of Congo (probably also Congo Brazzaville) and Angola (van Bruggen, 1982a-b, 1990, 1991; de Winter, 1996, 2002). Van Bruggen (1982a) recognized four subgenera, of which *Spirulozania* van Bruggen, 1982, is by far the most speciose, presently comprising eight species.

A new study of this interesting group is necessary to cope satisfactorily with material from various areas which became available in recent years. In spite of the fact that most described species differ clearly in characters like size, shape and sculpture, the specific and even (sub)generic classification of specimens from new localities is sometimes problematic. Most species descriptions were based on a rather limited material, and the variability of shell characters of some species is not negligible (see *e.g.* van Bruggen, 1990; de Winter, 1996). Moreover, the shell characters that are traditionally used for defining species of *Maizaniella* are felt to be too few in number and not accurate enough to describe the potentially new taxa satisfactorily. Additional conchological features, but especially data on the morphology of the soft parts and molecular markers, are needed. Study of soft part characters is hampered by the poor availability of well-preserved material. Live specimens are often overlooked in the field due to their small size; specimens are generally obtained as shells from leaf-litter samples with the animal

withdrawn and dried-in.

This contribution is a prodromus to a more comprehensive treatment of *Maizaniella* s.l., and formally describes a characteristic new species from Liberia. This species significantly enlarges the size range of the genus, to include members with adult shells barely exceeding 2 mm in width (at three whorls), whereas the shell size of known *Maizaniella* species ranges from about 3.2-6.5 mm.

This paper is dedicated to Dr A.C. (Dolf) van Bruggen on the occasion of his 80th birthday, in recognition of his important work on African land operculates and various other groups of terrestrial snails.

### Methods

Shell measurements (see fig. 1) were taken by means of a Leica M165c stereo microscope with a Leica DFC420 digital camera plus software (LAS 2.8.1). Each specimen was mounted and measured twice, and slightly different results of the two sessions were

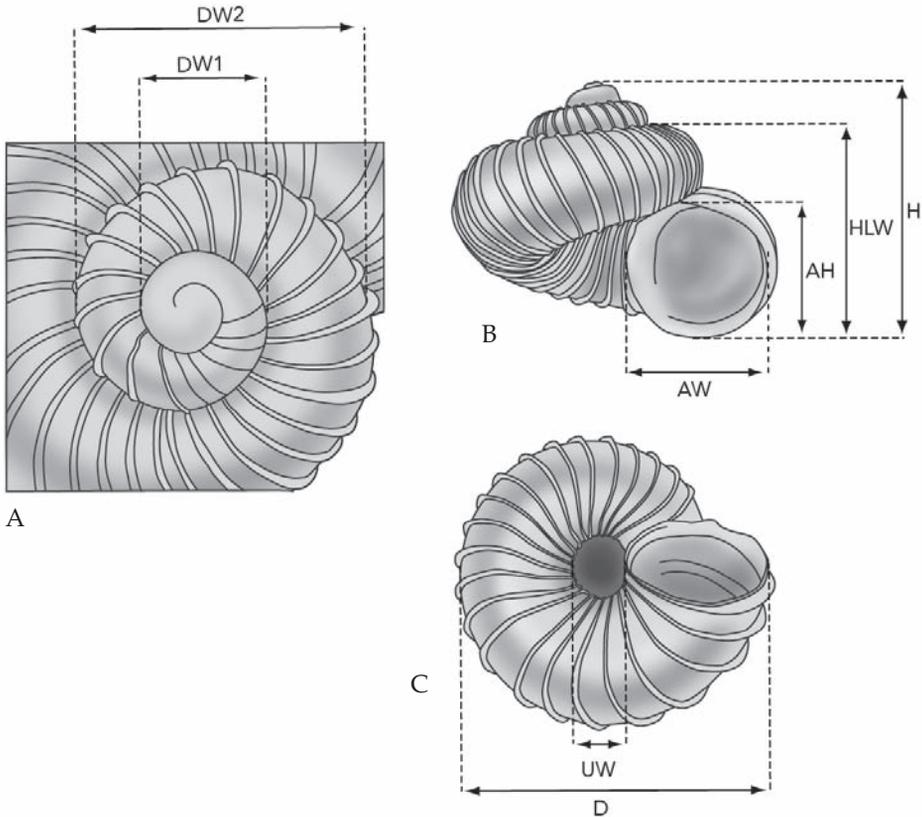


Fig. 1. Characters measured shown on a *Maizaniella* shell in top view (A), frontal (B) and umbilical view (C). Abbreviations: AH, height of aperture parallel to long shell axis (columella); AW, width of aperture perpendicular to AH; D, major shell diameter; DW1, diameter of first whorl; DW2, diameter at two whorls; H, shell height; HLW, height of last whorl; UW, width of umbilicus.

averaged. Whorls were counted as described in Kerney & Cameron (1979: 13).

Most abbreviations used in the text are explained in fig. 1, except H/D, height:diameter ratio; RMNH, collection of the National Museum of Natural History, formerly Rijksmuseum van Natuurlijke Historie, Leiden.

### Systematics

Class Gastropoda Cuvier, 1797

Clade Caenogastropoda

Family Maizaniidae Tielecke, 1940

Genus *Maizaniella* Bequaert & Clench, 1936

Subgenus *Spirulozania* van Bruggen, 1982

*Maizaniella* (*Spirulozania*) *sapoensis* spec. nov.

(figs. 2-7)

Material.— Liberia (south-central part), Sapo National Park, core area; 5°20'N 8°47'W, alt. 140 m; undisturbed lowland rainforest; C.C.H. Jongkind leg., 2.xii.2002; dry holotype shell (RMNH 113993) and dry paratype shell (RMNH 113994).

Diagnosis.— An extremely small (about 2.1 mm wide at three whorls), comparatively high-spired and narrowly umbilicate species of *Maizaniella* with a sculpture of regularly curved, thin axial ribs (about 20 on the third whorl) and fine spiral threads.

Description.— Holotype shell (specimen contains operculum and was probably alive when collected): Periostacum colour pale yellow-brown. Shell unusually small for the genus (H 1.88 mm; D 2.05 mm) and comparatively high-spired (H/D 0.91). Spire angle 102°. Whorls 3. Diameter of first whorl 0.56 mm, diameter at two whorls 1.12 mm. Umbilicus narrow, 13% of D. Height of last whorl 81% of H. Aperture large and circular, about 1 mm in diameter, taking up 52% of H and 48% of D. Free upper margin of aperture not or hardly projecting. Number of axial ribs on the third whorl 22, mean distance between ribs ca. 0.20 mm. Spacing between consecutive ribs rather irregular, distance between the ribs tending to decrease towards the aperture, but not significantly. Apical whorls with ca. 10 spiral cords. The first axial rib seems to appear after about the first whorl (apex is somewhat worn). Axial ribs thin, regularly curved over body whorl (not sinuous) and not very high (but ribs appear to be eroded). Spiral threads on later whorls conspicuous in the interstices, probably crossing over the axial ribs.

The paratype shell (with operculum) is larger than the holotype, but the apex is damaged (D 2.3 mm; estimated H 2.1 mm, H/D 0.92; UW 10% of D; HLW 1.70 mm (81% of estimated H); AH 1.1 mm (52% of estimated H); AW 1.1 mm (48% of D). Number of axial ribs on last whorl 18, mean rib distance 0.28 mm.

Distribution.— Liberia, only known from the type locality.

Etymology.— Named after the area of origin, Sapo National Park, the largest protected rainforest area in Liberia (ca. 100,000 ha), which has been recognized as an important refuge for a diverse fauna of conspicuous vertebrates, many of which are endangered or even globally threatened; mammals such as the Diana Monkey (*Cercoptes diana*), Red Colobus (*Procolobus badius*), Pigmy Hippopotamus (*Hexaprotodon liberiensis*), Liberian Mongoose (*Liberiictis kuhni*), and birds such as Gola Malimbe (*Ma-*



Figs 2-4. Different views of holotype shell of *Maizaniella sapoensis* spec. nov. (RMNH 113993). Scale bar 1 mm.

*limbus ballmanni*) (see Anonymous, 2008).

Ecology.— The holotype and a paratype are the only specimens found in a carefully searched sample (> 10 l) of floor litter from higher spots in a swampy area in wet evergreen forest.

Remarks.— This species is easily distinguished from all other members of *Maizaniella* s.l. It is by far the smallest species known in the genus, and has a higher-spired shell than other known congeners. The shell of the only other Liberian *Maizaniella* species known, *M. erroris* van Bruggen, 1982, is much more depressed with numerous close-set axial ribs and a diameter twice that of *M. sapoensis* at the same number of whorls. The shell of *M. poensis* van Bruggen, 1982, from the isle of Bioko (Equatorial Guinea) is superficially similar in shape and umbilical width, but is distinctly larger ( $D = 3.1\text{--}3.3$  mm). Moreover, it has far fewer axial ribs, larger apical dimensions, a wider umbilicus, and indistinct spiral sculpture, on the basis of which Van Bruggen erected the monotypic subgenus *Pteromaizaniella* van Bruggen, 1982.

The new species is tentatively included in the subgenus *Spirulozania* on account of the conspicuous spiral sculpture.



Figs 5-7. Different views of paratype shell of *Maizaniella saopensis* spec. nov. (RMNH 113994). Scale bar 1 mm.

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