



## Taxonomic review of the *Spixia pyriformis* species complex (Gastropoda: Pulmonata: Odontostominae)

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### Abstract

The genus *Spixia* (Pilsbry & Vanatta, 1898) is endemic from southern South America. Information about this group is scarce, particularly referring to its anatomy and shell ultrastructure. According to current classification the *Spixia pyriformis* complex includes the following species, *S. doellojuradoi* (Parodiz 1941), *S. martensii* (Doering 1874), *S. pyriformis* (Pilsbry 1901) and *S. tucumanensis* (Parodiz 1941). In the present study a complete redescription of the species component of this complex, as well as new information on shell ultrastructure and anatomy of the different organ systems is provided. The *Spixia pyriformis* complex has a pyriform-subpyriform shell shape that distinguishes it from the rest of the species of the genus. Three of the four species studied have a similar periostracum structure consisting of spiral striae and triangular lamellae. Radular morphology is similar in all species. Jaw structure is diagnostic for each species. The inner morphology of the penis is divided into five areas marked by differential pattern of sculpture. Four new anatomical characters, the presence of a pallial gland in the distal portion of the pulmonary roof, the presence of a penial gland in the penial complex, the position of the insertion of the penial retractor muscle in either penial area I or area II and the sculpture of penis inner wall, are identified as the most informative for species diagnosis.

**Key words:** Systematics, morphology, Stylommatophora, Bulimulidae, *Spixia*, Argentina

### Introduction

The genus *Spixia* was established by Pilsbry & Vanatta in 1898. It is endemic to South America with a distribution comprising Argentina, Bolivia, Brazil, Paraguay and Uruguay. Most of the twenty-three nominal species of *Spixia* are distributed in Argentina, inhabiting the northern and central portions of the country (Salta, Tucumán, Catamarca, Santiago del Estero, Córdoba, La Rioja and San Luis Provinces). According to different authors (d'Orbigny 1835; Doering 1874; Parodiz 1942a, b; Hylton Scott 1948, 1951; Klappenbach & Olazarri 1973; Breure 1974), the species currently classified in *Spixia* were formerly allocated among the genera *Odontostomus* Beck 1837, *Cyclodontina* Beck 1837, and *Scalarinella* Döhrn 1874. Pilsbry (1901), in his Manual of Conchology grouped together all the species described until then in *Spixia* as one subgenus of *Odontostomus*. According to him, *Spixia* comprised four species groups, *Odontostomus (Spixia) spixi*, *Odontostomus (S.) charpentieri*, *Odontostomus (S.) neglectus* and *Odontostomus (S.) avellanadae*. Parodiz (1939, 1942a), when reviewing the Argentinean Odontostominae, provided a new diagnosis of *Spixia*. He maintained it as a subgenus of *Odontostomus*, but made some taxonomical changes in the species composition. Based on the study of radular and shell morphology, he redescribed the species and subspecies of *Spixia*. Parodiz (1942a, b) organized the genus into four species groups, *Odontostomus (S.) spixi*, *Odontostomus (S.) charpentieri*, *Odontostomus (S.) tumulorum* and *Odontostomus (S.) pyriformis* by their morphological affinities and distribution. The species groups given by Parodiz (1942a, b) partly differed to the ones established by