Lymnaea cousini Jousseaume, 1887 (Gastropoda: Lymnaeidae): First Record for Venezuela

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Lymnaea cousini *Jousseaume, 1887 was collected in Mucubaji, Merida State, Venezuela, from a permanent pond located at a very high altitude (3760 m). Identification of the collected specimens was made by comparison with the original description of the shell by Jousseaume and the description of the renal organ and reproductive system of topotypic specimens by Paraense.*

Key words: *Lymnaea cousini* - first record - Venezuela

Several recent works reported the discovery of an invasive lymnaeid snail, *Lymnaea truncatula*, at very high altitude in the Bolivian Altiplano (Jabbour-Zahab et al. 1997, Mas-Coma et al. 1999). However, little is known on local lymnaeid occurring in the andean range. Three species have been described from this region. The first one, *L. cousini*, was described by Jousseaume (1887) on the basis of shells collected by Auguste Cousin in Chanchu-Yacu, near Chillogallo, Ecuador, at an altitude of 2950 m. According to Jousseaume (1887) this species has large shells ranging from 10 to 14 mm in height and 6 to 10 mm in diameter with a large aperture 7 to 10 mm long. A morphologic description of the renal organ and the reproductive system was made by Paraense (1995) on topotypic specimens collected in 1965. The second species, *L. ubaquensis*, was described by Piaget (1912) from lake Ubaque, Cundinamarca Province, Colombia but was considered identical with *L. cousini* by Hubendick (1951). The third species, *L. bogotensis* described by Pilsbry (1935) from Bogotá, Colombia was also considered identical with *L. cousini* by Hubendick (1951). In October, 2003, a malacological survey was carried out in the Venezuelan Andes that revealed the presence of an unknown lymnaeid species. This paper presents the conchologic and anatomic characteristics of that species and a comparison made with the description of topotypic specimens of *L. cousini* (Paraense 1995).

MATERIALS AND METHODS

The Venezuelan material was collected in October, 2003 from a permanent pond in Mucubaji, Merida State, located at an altitude of 3760 m (71°16'W, 8°47'N). Thirty snails were hand-collected, and allowed to relax overnight using menthol. They were then immersed for 40 sec in water heated at 70°C, from which they were transferred to water at room temperature. The soft parts were drawn from the shell with a small forceps and fixed in slightly modified Railliet-Henry solution (distilled water 930 ml, sodium choride 6 g, formalin 50 ml, glacial acetic acid 20 ml). Voucher specimens were deposited in the Museum National d'Histoire Naturelle de Paris, (MNHN), in the Ecole Pratique des Hautes Etudes of Perpignan (EPHE) and in the Museo de Ciencias Naturales de Caracas (MCNC).

RESULTS

All the collected specimens fit well, in shell (Fig. 1) and anatomic (Fig. 2) characteristics, with the description given by Jousseaume (1887) and Paraense (1995). Shells varied between 6.6 mm and 9.3 mm (mean 8.05; S.D. 0.78) in height and 3.7 mm and 6 mm (mean 5.24; S.D. 0.58) in width. These sizes are lower than those published by Jousseaume (1887) but the qualitative shell characters agree perfectly with those described by this author. The aperture is large, the body whorls are inflated, separated by deep sutures. Mean ratio (± S.D.) of width to height calculated from 16 adult specimens (0.64 ± 0.03) are similar to data given by Paraense (1995) for topotypic specimens of *L. cousini* (mean 0.59; S.D. 0.03).

Fig. 1: shell of *Lymnaea cousini* from Mucubaji pond, Merida State, Venezuela. Height of shells: 8.8 mm

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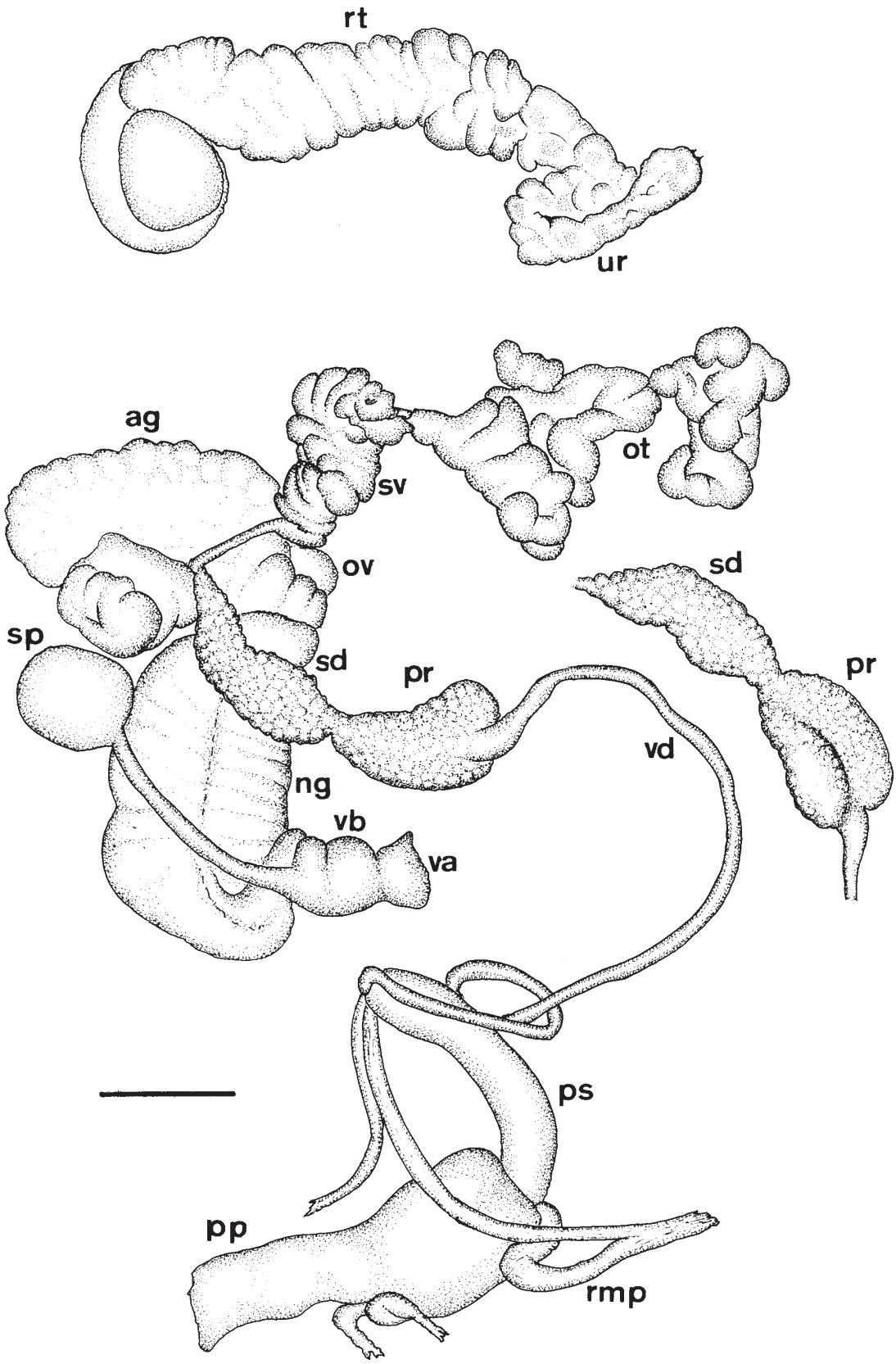

Fig. 2: anatomy of the reproductive system of *Lymnaea cousini* from Mucubaji Pond, Merida State, Venezuela. Ag = Albumen gland; ng = nidamental gland; ot = ovotestis; ov = oviduct; pp = preputium; ps = penis sheath; pr = prostate; rmp = retractor muscles of preputium; rt = renal tube; sd = spermiduct; sp = spermathecal body; sv = seminal vesicle ; ur = ureter; va = vagina; vb = vaginal bulb ; vd = vas deferens. Bar = 1 mm

The renal tube is similar to that described by Paraense (1995) and shows two distinct flexures of the ureter (Fig. 2). The reproductive system (Fig. 2) also includes several reliable characteristics which have been clearly described by Paraense (1995): the vagina has a bulbous appearance due to a local thickening; the spermiduct is flat as a ribbon of granular surface; the prostate has the same granular appearance and shows a fissure formed by the folding of its left margin; the penis sheath is a little longer than the prepuce (ratio 0.93 to 1.38; mean 1.18 SD 0.18).

DISCUSSION

Little is known on the biology and the current distribution of *L. cousini*. It seems however that this species is restricted to high altitude habitats in the Andean chain such as ponds in the type locality in Ecuador (2950 m; Jousseaume 1887), or in Ubaque and Bogotá, Colombia (2066 m and 2650 m respectively; Piaget 1912, Pilsbry 1935). Consequently, its first record in Mucubaji Pond, Venezuela, is not surprising in spite of the very high altitude of this small lake (3760 m). More surprising is the report of its presence, under the name of *ubaquensis* in Valdivia, Chile (Hubendick 1951). The brief description of the shell and the male copulatory organ of this species made by this author is insufficient to draw clear conclusions on the true identity of this species. However, the climate of Valdivia is of temperate type and perhaps not so different from the environmental characteristics which can be observed at high or very high altitude in the tropical and equatorial andean chain. Moreover, another lymnaeid species, the European *L. truncatula*, has recently invaded many habitats at very high altitude of the same region such as the Bolivian Altiplano (Jabbour-Zahab et al. 1997, Mas-Coma et al. 1999, Mas-Coma et al. 2001) and has also colonized several other types of habitats in the region of Valdivia, Chile, which are located at the sea-level (Yahia 1997). A more systematic survey of the andean region of Venezuela remains to be done as well as the potential of *L. cousini* in the transmission of the liver fluke *Fasciola hepatica* to cattle and humans.

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