

Presence of *Radix lagotis* (Schrank, 1803) (Gastropoda: Lymnaeidae) in the NE Iberian Peninsula

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Radix lagotis (Schrank, 1803) is a lymnaeid species that inhabits ponds, rivers and lakes in the Palaearctic region. It has been reported from many European countries, particularly in the Danube basin (Germany, Austria, Bulgaria, Czech Republic, Romania and Slovakia; Bank *et al.*, 2006 in von Proschwitz, 2011; Cioboiu, 2006), and also far in the east (Russia and Kyrgyzstan; Vinarski *et al.*, 2007; Glöer *et al.*, 2014). However, it had never been found in the Iberian Peninsula. It has a small (about 15–25 mm), thin, shiny shell with 4–5 whorls, deep sutures, and a moderately inflated last whorl; the columella is usually curved and weakly folded, and the umbilicus is very narrow (Glöer, 2002). Here we report the first citation of this species for the Iberian malacofauna, based on several finds from some tributaries of the Ebro River (Figures 1–3):

- Algars River at Arnes (la Terra Alta, Tarragona) [31T BF6933], 452 m; 16/4/2016 JLS & SQS *leg.* Alive specimens collected in shallow water among vegetation. This river marks the border between Catalonia and Aragon at this locality, so the species should be considered present in both autonomous communities.
- La Canaleta River at Horta de Sant Joan (la Terra Alta, Tarragona) [31T BF7432], 518 m; 16/4/2016 JLS & SQS *leg.* Alive specimens collected in shallow water among vegetation.
- Els Estrets River at Horta de Sant Joan (la Terra Alta, Tarragona) [31T BF7328], 551 m; 16/4/2016 JLS & SQS *leg.* Alive specimens taken in shallow water among vegetation.

Radix lagotis can only be confused with two other species present in the Iberian Peninsula: *Radix balthica* (Linnaeus, 1758) and *Radix labiata* (Rossmäessler, 1835). The former is present in Catalonia, including the Ebro River and Delta (Alba *et al.*, 2011; Quiñonero Salgado & López Soriano, 2014). *Radix labiata*, in turn, has been reported from high mountain habitats at Santa Marina de Valdeón (León), in the Picos de Europa lakes and marshes (Schniebs *et al.*, 2013), and recently also from mountain rivers in Aragon, after anatomical revision of some specimens (Quiñonero Salgado *et al.*, 2016). Shell morphology does not seem to be a definitive diagnostic criterion for the differentiation of the three species mentioned above (given their overall similarity and high degree of shape plasticity), but DNA analyses have confirmed their status as different species (Bargues *et al.*, 2001; Schniebs *et al.*, 2013). Moreover, a comparison of the bursa duct of *R. lagotis* with that of its closest relatives, *R. balthica* and *R. labiata*, enables a reliable distinction of these taxa (Schniebs *et al.*, 2011, 2013; Glöer, 2015). This has been considered as the best anatomical distinguishing character between these closely-related species (Schniebs *et al.*, 2013). The bursa duct of *R. lagotis* is longer than that of *R. labiata* (reaching about two-thirds of the bursa length), whereas it is much shorter in *R. balthica*. The anatomy of the

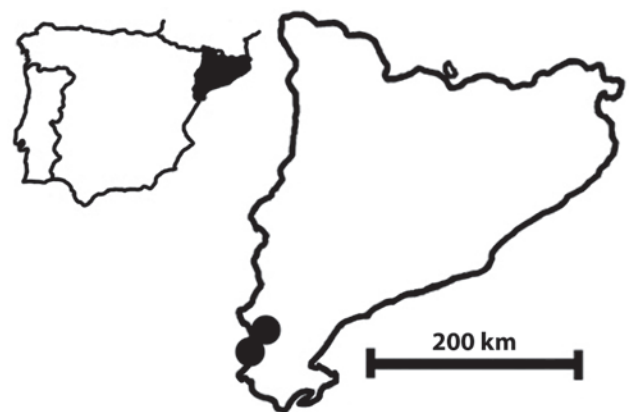


Figure 1. Map of Catalonia (within the Iberian Peninsula) showing the location of the new finds of *Radix lagotis* reported herein.

specimens studied by us from Catalonia (Figure 3) perfectly matches that reported for *R. lagotis* by Schniebs *et al.* (2013).

All our finds of *R. lagotis* in Catalonia are located in tributaries of the Ebro River within the natural park of Els Ports, a protected area with pristine waters and calcareous soils. Therefore, it is conceivable that this species may be common and widespread in the water courses of these mountains, although extensive searches would be necessary to verify this point. This species has been described as an intermediate host for the nasal bird schistosome *Trichobilharzia regenti*, a parasite which is also responsible of some cercarial dermatitis in humans (Skála *et al.*, 2014), although we are not aware of such cases in this part of the territory.

After the finds reported here, three species of *Radix* are known in Catalonia: *Radix auricularia* (Linnaeus, 1758), *R. balthica*, and *R. lagotis*. Two other species of the genus are also present in Spain (Glöer & Beckmann, 2007; Schniebs *et al.*, 2013): *R. labiata*, at least in N and NW Spain; and *Radix lilli* Glöer & Beckmann, 2007, endemic of the Balearic Islands. The results reported herein, added to the report (based on anatomical data) of *R. labiata* and *Stagnicola fuscus* (Pfeiffer, 1821) in Spain (Quiñonero Salgado *et al.*, 2016; López Soriano *et al.*, 2016), suggest that a revision of the previous reports of lymnaeid species in Spain is urgently needed, as most of their citations were only based on conchological traits—which are not quite reliable for members of this family without an anatomic confirmation.

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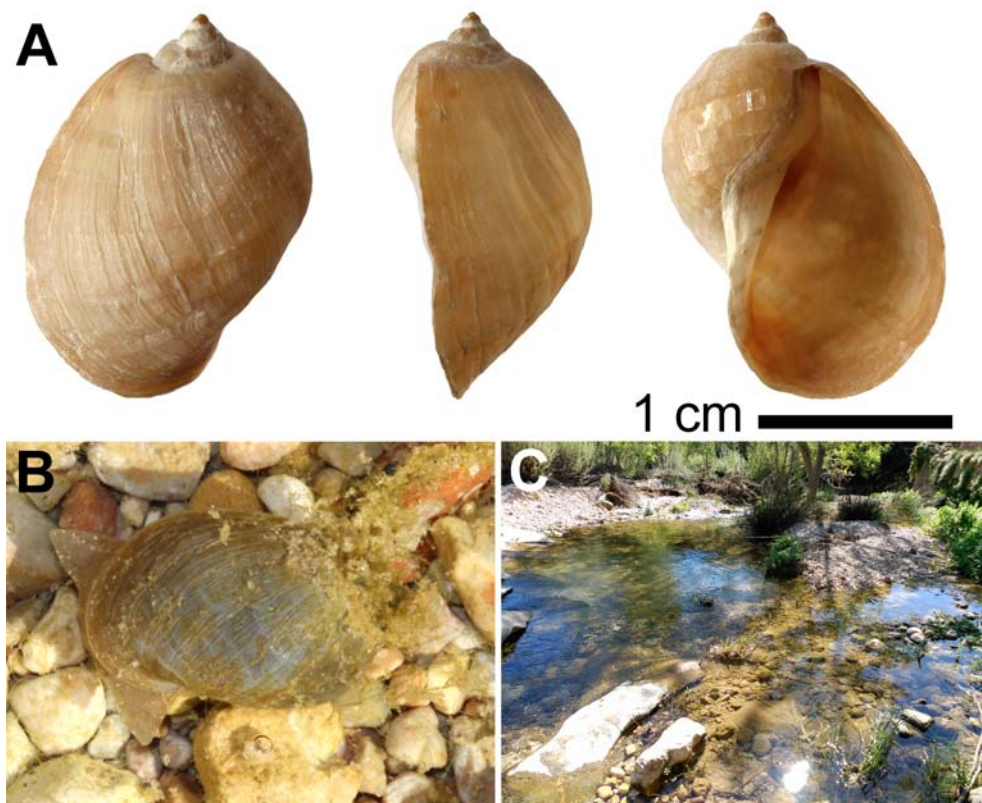


Figure 2. A, Several views of the shell of a representative specimen of *Radix lagotis* from Horta de Sant Joan (Tarragona); from left to right: dorsal, lateral, and ventral views. B, Alive specimen of *R. lagotis* in its shallow-water habitat at Algars River (Arnes, Tarragona). C, Habitat of *R. lagotis* at Algars Rivers, where many specimens were found.

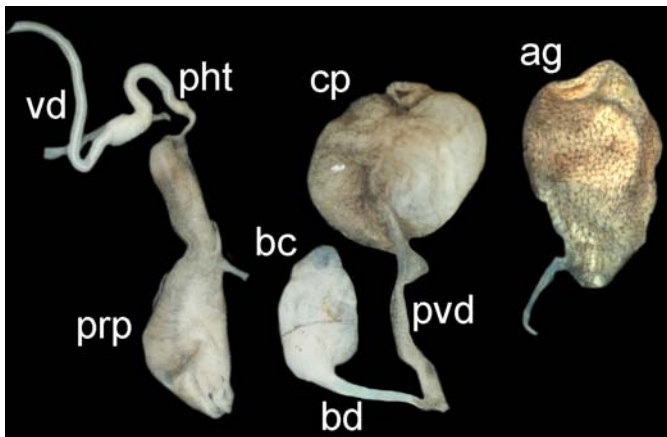


Figure 3. Gonad morphology of *Radix lagotis* from Horta de Sant Joan (Tarragona). Abbreviations: bc = bursa copulatrix; bd = bursa duct; cp = corpus pyriforme; pvd = provaginal duct; prp = praeputium; pht = phalotheca; vd = vas deferens; pg = prostate gland.

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