

## First report of *Radix labiata* (Rossmässler, 1835) (Gastropoda: Lymnaeidae) in Aragon (NE Spain)

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Rebut el 28 d'abril de 2016

Acceptat el 17 de setembre de 2016

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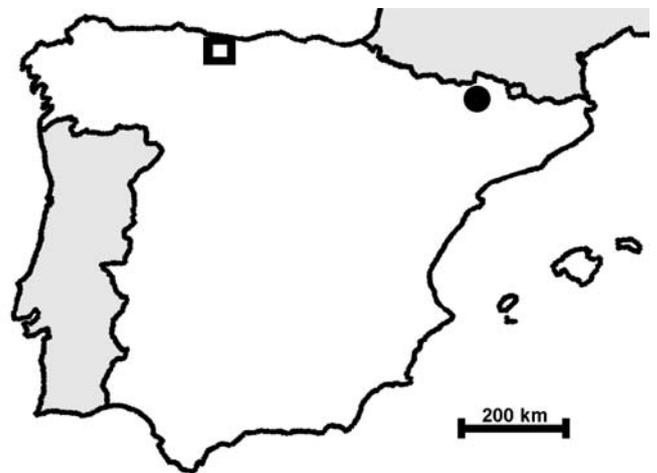
*Radix labiata* (Rossmässler, 1835) is a widely distributed Palearctic freshwater snail of the family Lymnaeidae (Falkner *et al.*, 2001; Welter-Schultes, 2012). It is found in different habitats, including still or slow-running freshwater bodies, bogs, springs or water bodies supplied by ground water, mountain floodplains, marshes and ponds, and shallow waters of high-mountain lakes (Glöer, 2002; Glöer & Diercking, 2010; Sturm, 2013). It is very common in some parts of the Alps, where it can occur at altitudes of up to 2,700 m in small ponds that are free of ice for only three to four months per year (Schniebs *et al.*, 2013; Sturm, 2013). This species behaves rather as a generalist, with a high colonization capability for some habitats. However, some parameters seem to limit its distribution, particularly water depth and high current velocities (Sturm, 2013). It may act as intermediate host for *Fasciola hepatica* and *Fascioloides magna* (Schniebs *et al.*, 2013; Leontovyč *et al.*, 2014), so its reliable identification may be important for parasitologists and veterinarians.

As for many species of this family, its identification is not always easy only by shell morphological criteria, so anatomical (genitalia) and molecular analyses seem the best tools for its right determination (Jackiewicz, 1998; Bargues *et al.*, 2001). Schniebs *et al.* (2013) found considerable variation in shell morphology for the species, even among specimens collected at the same locality, and claimed that the shell of this species can be confused with that of *Radix auricularia* (Linnaeus, 1758), *Radix ampla* (W. Hartmann, 1821), *Radix balthica* (Linnaeus, 1758), and *Radix lagotis* Schrank, 1803. In the past, some confusion was also generated by the use by many authors of the nominal species *Radix peregra* (O.F. Müller, 1774) to refer to *R. labiata*, when the former is a junior synonym of *R. balthica* (Falkner *et al.*, 2001; Alba *et al.*, 2011; Welter-Schultes, 2012).

The presence of *R. labiata* in Spain is not well documented, and to our knowledge there is only a single reliable citation, based on both anatomical and molecular criteria, at Santa Marina de Valdeón (province of León), in the area of the Picos de Europa National Park (Schniebs *et al.*, 2013). There are for example no confirmed citations in Catalonia (Alba *et al.*, 2011), and although there are many suitable habitats for the species in the Iberian Peninsula, particularly in the north, its presence has not been reported from other areas. Here we report *R. labiata* from the Autonomous Community of Aragon, in a river near the Pyrenees and very close to the Catalan border (Figure 1):

• Noguera Ribagorzana River, downstream of Sopeira (province of Huesca, Aragon) [31T CG18], 676 m; 7/2013 SQS leg. Alive specimens were collected from a shallow mud bottom in an area with slow water flow.

The assignment of the specimens to *R. labiata* is based on the



**Figure 1.** Map of the Iberian Peninsula showing the citations for *Radix labiata*. Square: previous citation from Santa Marina de Valdeón (León); circle: the citation provided here from Sopeira (Huesca).

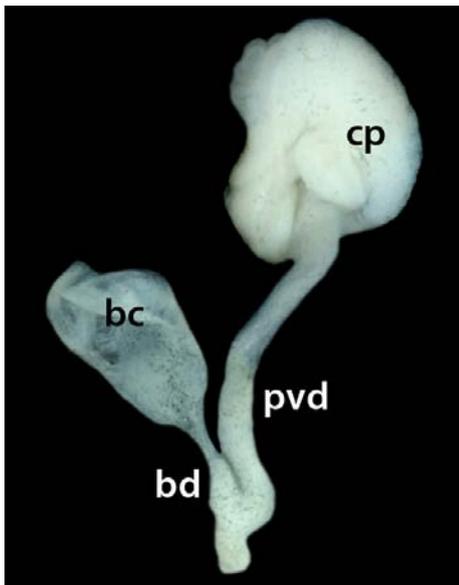
anatomy of the female genitalia, which is characteristic of the species, because of the short length of the bursa duct in comparison with other species of the genus, and particularly its position ventral to the provaginal duct (Figure 2). Our results match with those published by Schniebs *et al.* (2011, 2013), including the high variability in shell morphology (Figure 3). This represents the first reliable identification of *R. labiata* in Aragon and the Spanish Pyrenees, and the second one for the whole Iberian Peninsula, where the species had been previously identified in the province of León inhabiting mountain marshes at a much higher altitude (1,940 m; Schniebs *et al.*, 2013).

Welter-Schultes (2012) pictured the whole Iberian Peninsula as a likely distribution area for *R. labiata*, and considered this species “frequent”. However, he did not provide any reference to justify this assertion, but merely remarked that this species was cited before 2001 as *R. peregra*. Even though this is generally right for elsewhere in Europe, according to Alba *et al.* (2011), the citations of *R. peregra* in Catalonia, like those of *Radix ovata* (Draparnaud, 1805), refer instead to *R. balthica* and its several ecophenotypic variants.

*Radix labiata* is uncommon in Western Europe, where it mainly inhabits slow-running waterbodies in mountainous regions and is very rare in the lowlands (Schniebs *et al.*, 2013). Therefore, it is not possible to attribute most of the previous Iberian citations of *R. peregra* to *R. labiata*, since these populations are mainly located in fast-flowing rivers and other habitats not well tolerated by the latter species. Given the long distance (460 km) between the two confirmed Spanish populations of *R. labiata*, and its presence both

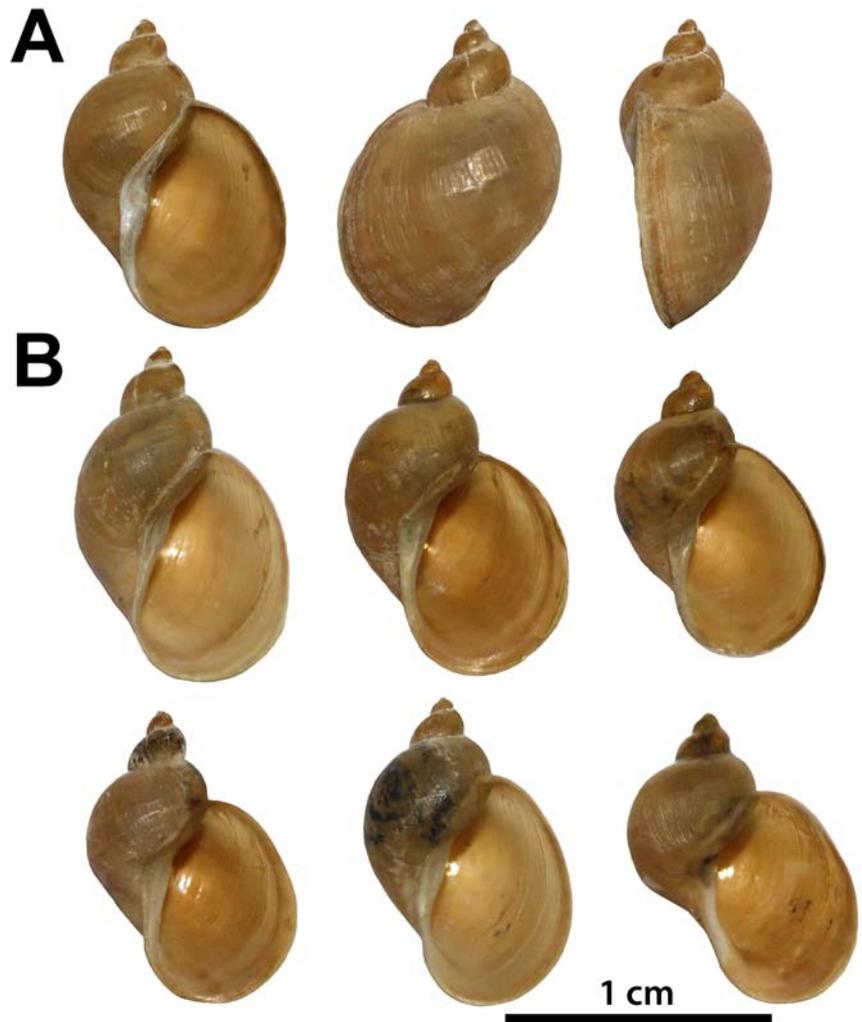
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**Figure 2.** Female genitalia of *Radix labiata* from Sopeira. Abbreviations: bc = bursa copulatrix; bd = bursa duct; cp = corpus pyriforme; pvd = provaginal duct.

**Figure 3.** Variability of the shells of *Radix labiata* from Sopeira (Huesca). **A**, Different views of a single specimen. **B**, Ventral view of six different specimens.



in high montane habitats and in lower-altitude slow-flow mountain rivers, this species might be widespread all over the north of the Iberian Peninsula, particularly in and near the Pyrenees and Cantabric Mountains, in scattered populations, mainly in medium to high altitudes or slow running rivers and waterbodies close to these mountains. The species might be present even in Catalonia, since the Aragonese locality reported here is indeed very close to the Catalan border, which is defined by the Noguera Ribagorzana River for many kilometers, although additional exploration in this area would be needed to confirm this. We are at present studying different populations of *Radix* to test this hypothesis and further delimit the distribution of *R. labiata* in northern Iberian Peninsula.

#### Acknowledgements

We thank Jordi Corbella for helpful comments on *R. labiata*, and David M. Alba for a critical review of the manuscript.

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