

# A NEW GENUS FOR A NEW VALVATIFORM HYDROBIID FROM NORTHWESTERN SPAIN (GASTROPODA: CAENOGASTROPODA: HYDROBIIDAE)

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**ABSTRACT:** Based on a survey of valvatiform hydrobiids inhabiting northwestern Spain, a new genus is described, *Salaeniella* n. gen. As monotype of the new genus a new valvatiform species is described, *Salaeniella valdaligaensis* n. sp. It inhabits Cantabria. Characters of a male of the new species are given.

**KEY WORDS:** valvatiform hydrobiids, Hydrobiidae, *Salaeniella* n. gen., *S. valdaligaensis* n. sp., northwestern Spain

## INTRODUCTION

Valvatiform hydrobiids inhabiting Spain belong to the genera *Islamia* Radoman, 1973, *Arganiella* Giusti et Pezzoli, 1980, *Tarraconia* Ramos, Arconada, Rolán et Moreno, 2000, *Boetersiella* Arconada et Ramos, 2001, *Chondrobasis* Arconada et Ramos, 2001, *Spathogyna* Arconada et Ramos, 2002, *Milesiana* Arconada et Ramos, 2006, *Josefus* Arconada et Ramos, 2006, *Iberohoratia* Arconada, Delicado et Ramos, 2007, *Corbellaria* Callot-Girardi et Boeters, 2012, *Navalis* Quiñonero-Salgado et Rolán, 2017 and *Deganta* Delicado et Ramos, 2019. A survey of valvatiform hydrobiids inhabiting Spain was given by [CALLOT-GIRARDI & BOETERS \(2012: 156–159\)](#).

In north-western Spain only three valvatiform species are known, *Deganta azarum* (Boeters et Rolan, 1988), *Islamia ayalga* Ruiz-Cobo, Alonso, Quiñonero-Salgado et Rolán, 2018 and *Islamia pistrini* Ruiz-Cobo, Alonso, Quiñonero-Salgado et Rolán, 2018. With the exception of the first mentioned species, inhabiting different localities in Asturias and Cantabria, the two others are known from their type localities only, stygobiotic habitats ([RUIZ-COBO et al. 2018](#))

This publication deals with a new valvatiform hydrobiid from north-western Spain, i.e. the autonomous community of Cantabria.

## MATERIAL AND METHODS

Shells and animals were separated from their substrates by fractionating sieving through sieves with mesh diameters of 2.60 and 0.56 mm. Animals were preserved in 75% by weight ethanol for dissection.

As regards shell morphology, the counting of whorls was done in accordance with [GITTEBERGER et al. \(1970\)](#). Anatomical investigations were done in

accordance with [BOETERS \(1999\)](#). Drawings of shells, animals and parts thereof were done with LEICA M80 Drawing Device. Length and diameter of shells were measured with a 5 mm measure plate (0.05 mm grading) at 20× magnification; measurements were rounded to the nearest 0.05 mm. Photographs of shells were taken with a Leica R8 digital system.

## COLLECTIONS

BOE – Collection Boeters, Staatliches Museum für Naturkunde, Stuttgart, Germany  
 CRC – Collection Ruiz Cobo, Cantabria, Spain  
 CSQ – Collection Quiñonero, Barcelona, Spain

MZB – Museu de Ciències Naturals de Barcelona, Spain  
 UPV/EHU-FC – Colección de Fauna cavernicola (Departamento de Zoología) de la Universidad del País – Vasco-Euskal Herriko Unibertsitatea, Bilbao, Spain

## SYSTEMATIC PART

*Salaeniella* n. gen.

Type species: *Salaeniella valdaligaensis* n. sp.

**Diagnosis.** Shell valvatiform; operculum brownish; animal with marked loop of intestine in roof of mantle cavity; basal section of penis broad, final section fork-like accompanied by finger-like appendix of nearly same length as final section of penis.

**Discriminating characters.** Whereas the monotype of the new genus shows a bifurcated penis with a finger-like appendix, this character is unknown in other valvatiform species of genera present in Spain.

The penis of species of *Islamia*, *Milesiana* and *Josefus* is bifurcated, provided with a lobe, the final sections of the penis and its lobe are separated by a notch, not a long slit (ARCONADA & RAMOS 2006: *I. globulus* p. 91, figs 46–47; *M. schuelei* p.117, figs 170–171; *J. aitanica* p. 123, fig. 197).

In *Deganta azarum*, the monotype of this genus, the penis is not only bifurcated by a lobe, but is additionally provided with a basal papilla (DELICADO et al. 2019: p. 17, figs 6G–H)

The penis of species of *Boetersiella* and of *Arganiella* is simple (ARCONADA & RAMOS 2001: *B. sturmi* p. 961, figs 8A–B; ARCONADA & RAMOS 2007: *A. tartessica* p. 67, fig. 4H).

In *Chondrobasis levantina*, the monotype of this genus, the elongated penis shows a slender distal part and a wider basal part with a papilla on the concave side of the base (ARCONADA & RAMOS 2001: 974, figs 16A–B).

In *Tarraconia*, *Spathogyna*, *Iberhoratia* and *Corbellaria* the middle inner edge of the slender penis is provided with a droplike appendix (RAMOS et al. 2000: *T. gasulli* p. 89, figs 8C–D; ARCONADA & RAMOS 2002: *S. fezi* p. 325, figs 7A–B; ARCONADA et al. 2007: *I. morenoi* p. 2018, fig. 4F; CALLOT-GIRARDI & BOETERS 2012: *C. celtiberica*, p. 155, fig. 10D).

Animals of *Navalis perforatus*, the monotype of its genus, have not yet been described, but the shell is characterised by a unique periumbilical keel (QUIÑONERO-SALGADO & ROLÁN 2017).

**Etymology.** The name *Salaeniella* refers to the Cantabrian tribe of the Salaeni, who occupied the middle area of the Saja river basin.



Fig. 1. *Salaeniella valdaligaensis* n. gen. n. sp. (MZB/holotype). Scale bar 1 mm

***Salaeniella valdaligaensis* n. sp.**

**Material** (type locality): Spain, Cantabria, Valdáliga, Roiz, Fuente de Casa Caviña, 374 m a.s.l. [30TUN8696], 43°18'38"N, 04°23'57"W; QUIÑONERO-SALGADO leg. 22.VII.2016; (i) MZB 20190004/shell holotype and MZB 20190005/6 shells paratypes; (ii) UPV/EHU-FC 5401/2 shells paratypes; (iii) BOE 3499/1 male, 1 juv. animal and BOE 3500/2 shells, altogether paratypes; (iv) CSQ/10 shells paratypes; (v) CRC/10 shells paratypes.

**Shell.** Shell very small (Figs 1–3, Table 1); diameter 1.21–1.63 mm, most shells with a diameter of 1.3–1.5 mm, average 1.4 mm; height 0.89–1.24 mm,

on average slightly more than 1 mm; shell valvatiform, opaque, smooth with some growth lines; spire less raised, formed by rather rapidly growing 3.0 rounded whorls; last whorl gradually dilated, near aperture neither ascending nor descending on shell wall; aperture prosocline, ovate, however, palatal and parietal border forming a rounded angle, margin of aperture not thickened; aperture proportionally large, as its diameter of on average 0.62 mm is often only slightly less than half of the total shell diameter; with a diameter of around 0.52–0.71 mm and a height 0.49–0.83 mm, the aperture is usually wider than high; ratio aperture : diameter of umbilicus about 1.7–1.9 : 1.



Fig. 2. *Salaeniella valdaligaensis* n. gen. n. sp. (CSQ and CRC/paratypes). Scale bar 1 mm

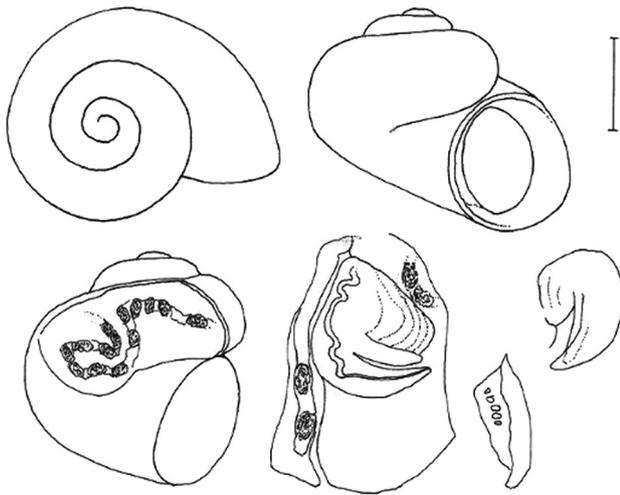


Fig. 3. *Salaeniella valdaligaensis* n. gen. n. sp. (paratype; male; BOE 3499): upper line from left to right – top view of shell; frontal view with retracted animal with operculum on foot; lower line from left to right – side view of shell (partially removed to show loop of intestine in roof of mantle cavity); mantle seen from top with penis exposed through slit in mantle; fragment of mantle with gill lamellae; penis lifted. Scale for top, frontal and side view of shell 0.5 mm. Scale for mantle with penis, mantle fragment and lifted penis 0.25 mm

Table 1. Shell measurements of *Salaeniella valdaligaensis* n. gen. n. sp. [mm]

	SH	SD	PH	PD
Holotype	1.06	1.49	0.71	0.63
Paratypes (N = 21)				
Maximum	1.24	1.63	0.83	0.71
Minimum	0.89	1.21	0.49	0.52
Mean	1.07	1.42	0.69	0.62
S.D.	0.09	0.10	0.07	0.05

SH – height, SD – shell diameter, PH – peristome height, PD – peristome diameter, S.D. – standard deviation

**Operculum** slightly brownish with reddish-brownish nucleus without outgrowth at inner face.

**Male.** Dissected male (Fig. 3) inclusive ommatophores pigmentless; shape of intestine in roof of mantle cavity looks like a musical minim with double shaft; gill with 5 small drop-like lamellae.

Penis of dissected male in inactive state hook-like, duct slightly meandering up to the tip of the penis; basal section of penis broad, with some transversal folds, final section of penis fork-like accompanied by finger-like appendix of nearly same length as final section of penis.



Fig. 4. Type locality of *Salaeniella valdaligaensis* n. sp.; Spain, Cantabria, Valdáliga, Roiz, Fuente de Casa Caviña, 374 m a.s.l. [30TUN8696]



**Female** unknown.

**Habitat.** Fuente de Casa Caviña (Fig. 4) comprises two springs with very clean water of 10.8 °C and pH 7.55. It is located in a hill at Sierra de Arnero, in the municipality of Valdáliga. This mountain system is part of the Sierra del Escudo de Cabuérniga, characterised by strong reliefs, situated between the Cantabrian

littoral platform and the Cantabric Mountains. The geological substrate of the fountain is formed by nodulose bioclastic calcarenites with glauconite particles from the Altimiran facies, which is assigned to the Cenomanian (Late Cretaceous Period).

**Etymology.** The name “valdaligaensis” refers to the site of the type locality.

## DISCUSSION

The new genus with its new species broadens the small knowledge of valvatiform hydrobiids in north-western Spain. As regards *Deganta azarum* (Boeters et Rolán, 1988), characters of its softbody have been published by BOETERS & ROLÁN (1988) and by DELICADO et al. (2019). However, *Islamia ayalga* and *Islamia pistrini* have been described by conchological characters only (RUIZ-COBO et al. 2018). The knowledge of the recently described genus *Deganta* and of *Salaeniella* n. gen. leads to the question whether the mentioned two species really belong to *Islamia* or perhaps to one of the two other genera.

The strict stygobiotic habitat and its very difficult access make it hard to collect living specimens. Indeed, only 2 living specimens were found in sedi-

ment, presumably dragged off their stygobiotic habitat because of a heavy rainfall. Further samplings have yielded empty shells only.

Regarding the conservation status of the new species, special care should be taken for type locality, as it is the only known habitat of the species. Any potential damage of the spring should be avoided, such as water extraction or contamination, especially by farming activities.

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## REFERENCES

- ARCONADA B., DELICADO D., RAMOS M. A. 2007. A new genus and two new species of Hydrobiidae (Mollusca, Caenogastropoda) from the Iberian Peninsula. *Journal of Natural History* 41: 2007–2035. <https://doi.org/10.1080/00222930701529273>
- ARCONADA B., RAMOS M. A. 2001. New data in Hydrobiidae systematics: two new genera from the Iberian Peninsula. *Journal of Natural History* 35: 949–984. <https://doi.org/10.1080/002229301300323884>
- ARCONADA B., RAMOS M. A. 2002. *Spathogyna*, a new genus for *Valvata* (?*Tropidina*) *fezi* Altimira, 1960 from eastern Spain: another case of pseudohermaphroditism in the Hydrobiidae (Gastropoda). *Journal of Molluscan Studies* 68: 319–327. <https://doi.org/10.1093/mollus/68.4.319>
- ARCONADA B., RAMOS M. A. 2006. Revision of the genus *Islamia* Radoman, 1973 (Gastropoda, Caenogastropoda, Hydrobiidae), on the Iberian Peninsula and description of two new genera and three new species. *Malacologia* 48: 77–132.
- ARCONADA B., RAMOS M. A. 2007. Description of a new species of the genus *Arganiella* Giusti & Pezzoli, 1980 (Mollusca, Gastropoda, Hydrobiidae) from the Iberian Peninsula. *Graellsia* 63: 61–70. <https://doi.org/10.3989/graelisia.2007.v63.i1.81>
- BOETERS H. D. 1999. Präparation von Kleinprosobranchiern. *Heldia* 2 (Sonderheft 3): 9–15.
- BOETERS H. D., ROLÁN E. 1988. Unknown West European prosobranchs, 9. Some new Spanish freshwater prosobranchs. *Basteria*. 52: 197–202. <http://natuurtijdschriften.nl/download?type=document&docid=596898>
- CALLOT-GIRARDI H., BOETERS H. D. 2012. *Corbellaria celtiberica* gen. et sp. nov. (Gastropoda: Hydrobiidae), mollusque valvatiforme stygobie de la province de Soria (Péninsule Ibérique). *Spira* 4: 149–160.
- DELICADO D., ARCONADA B., AGUADO A., RAMOS M. A. 2019. Multilocus phylogeny, species delimitation and biogeography of Iberian valvatiform springsnails (Caenogastropoda: Hydrobiidae), with the description of a new genus. *Zoological Journal of the Linnean Society* (in print). <https://doi.org/10.1093/zoolinnean/zly093>
- GITTENBERGER E., BACKHUYS W., RIPKEN TH. E. J. 1970. De Landslakken van Nederland. Koninklijke Nederlandse Natuurhistorische Vereniging, Amsterdam.
- QUIÑONERO-SALGADO S., ROLÁN E. 2017. *Navalis perforatus* a new genus and new species (Gastropoda, Hydrobiidae) from Spain. *Nemus* 7: 7–11.
- RAMOS M. A., ARCONADA B., ROLÁN E., MORENO D. 2000. A new genus and a new species of hydrobiid snail (Mollusca: Gastropoda: Hydrobiidae) from eastern Spain. *Malacologia* 42: 75–101.
- RUIZ-COBO J., ALONSO A., QUIÑONERO-SALGADO S., ROLÁN E. 2018. Two new species of the genus *Islamia* Radoman, 1973 (Gastropoda: Hydrobiidae) from the north of Spain. *Nemus* 8: 85–93.

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