

Insulivitrina lamarckii (A. Férussac, 1821) (Gastropoda, Pulmonata, Vitrinidae) on the Canary Island of La Palma

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As part of a broader investigation, multiple plots on the island of La Palma were investigated for the presence of Vitrinidae species. Three species were identified out of 87 shells and 19 live specimens. Next to *Canarivitrina taburientensis* and *Insulivitrina solemi*, *Insulivitrina lamarckii* was found as well. *Guerrina cuticula* was not recorded. This is the first record for *Insulivitrina lamarckii* on La Palma.

Key words: Vitrinidae, *Plutonia*, *Insulivitrina*, La Palma, Canary Islands, Spain.

INTRODUCTION

The Macaronesian islands Madeira, the Azores and the Canaries are well known for their biodiversity in Vitrinidae. A total number of 35 recent species was described since 1821. These species have often been classified in the genus *Plutonia* Stabile, 1864 (Hesse, 1923, 1924; Odhner, 1937; Backhuys, 1975; Groh & Hemmen, 1986; Ibáñez et al., 1987; Alonso et al., 1987; Morales et al., 1988; Valido et al., 1990, 1993; Alonso et al., 2000; Valido et al., 2000; Mordan & Martins, 2001; Ibáñez et al., 2001; Hausdorf, 2002; Giusti et al., 2011; Valido et al., 2014).

Within the scope of a more general investigation regarding Vitrinidae (Margry, 2013), the island of La Palma (the Canary Islands) was visited in the spring of 2014. On the island three vitrinid species are currently recognized. According to Giusti et al. (2011) these species belong into different genera, viz. *Guerrina cuticula* (Shuttleworth, 1852), *Canarivitrina taburientensis*

(Groh & Valido, 2000), and *Insulivitrina solemi* (Ibáñez & Alonso, 2001). In earlier papers the last-mentioned species was wrongly listed as *Vitrina latebasis* Mousson, 1872, which name turned out to be a junior synonym of *Insulivitrina blauneri* (Shuttleworth, 1852), a species endemic to Tenerife (Ibáñez et al., 2001: 156).

On 6.v.2014, several vitrinid snails were found at two spots in the Barranco de La Zarza, along the short distance footpath PR LP 9.2 between La Mata and Don Pedro (28°48'39 N – 17°54'27 W). Some of these specimens could not be identified as one of the three vitrinid species mentioned above. In this paper, the animals that were not readily identified are compared with the other collected Vitrinidae specimens and with data in the literature.

METHODS

Several localities on La Palma were sampled for Vitrinidae from 25.iv.2014 until 8.v.2014. Table 1 and Fig. 1 show where the empty shells and live specimens of Vitrinidae were collected. The sampling plots were chosen at random. Living animals were photographed and conserved in 70% alcohol. Three specimens were dissected. Measurements were taken with a calliper to the nearest 0.1 mm. Defective shells were only counted when they could be identified. Genitals were compared with descriptions and drawings in Hesse (1923), Groh & Hemmen (1986), Ibáñez et al. (1987), Alonso et al. (1987), Morales et al. (1988), Valido et al. (1990; 1993), Alonso et al. (2000), Mordan & Martins (2001), Ibáñez et al. (2001) and Giusti et al. (2011). The terminology of the genital anatomy is that used by Giusti et al. (2011). All specimens are kept in the collection of the author.

No.	number of sample including date	locality on La Palma	altitude (m)	coordinates
1	20140426.2	El Paso	842	28°39'19 N-17°51'10 W
2	20140428.2	El Paso	830	28°39'35 N-17°51'00 W
3	20140429.1	El Cubo de la Galga	460	28°45'42 N-17°46'31 W
4	20140429.2	El Cubo de la Galga	660	28°45'20 N-17°46'54 W
5	20140429.3	El Cubo de la Galga	724	28°45'24 N-17°46'46 W
6	20140501.2	Cumbre Nueva	1124	28°37'51 N-17°49'51 W
7	20140502.2	Barranco de las Angustias	320	28°37'51 N-17°49'51 W
8	20140504.2	Los Tilos	526	28°47'20 N-17°48'06 W
9	20140504.3	Los Tilos	687	28°47'18 N-17°48'12 W
10	20140504.4	Los Tilos	703	28°46'50 N-17°48'34 W
11	20140504.5	Los Tilos	774	28°46'54 N-17°48'40 W
12	20140506.1	Barranco de La Zarza	919	28°48'39 N-17°54'27 W
13	20140506.2	Barranco de La Zarza	831	28°49'01 N-17°54'17 W
14	20140506.3	Barranco de La Zarza	910	28°48'53 N-17°53'52 W

Table 1. Localities on the island of La Palma with sampling plots.



Fig. 1. Map of the island of La Palma with localities of the sampling plots.

RESULTS

In Table 2 the number, measurements and the identification of the glass snails are given. In total, 87 shells and 19 live specimens were collected. Three species were identified. Of *C. taburientensis* only empty shells were found. Of *Insulivitrina solemi* and *I. lamarckii* (A. Férussac, 1821) shells and living specimens were collected (Figs 2, 3). *Insulivitrina lamarckii* was identified on the basis of the large size of the shells, the

strophostyl columella and the genitals. A detailed study of the genitals showed (i) the large gladula amatoria comprising two-thirds of the length of the vagina, (ii) its pad bordering the opening into the atrium, (iii) the typical shape of the penis, and (iv) the presence of a penial sheath (Figs 4, 5) (Hesse, 1923: 134-135; Ibáñez et al., 1987: 127-130; Giusti et al., 2011: 312-315). The shell and the jaw of the largest dissected specimen measured 16.1 and 2.4 mm, respectively. The body of this largest specimen measured about 50 mm (alcohol material), whereas the other four specimens measured 25 – 30 mm. *Insulivitrina solemi* was identified on the basis of the genitals and shell characters, viz. the presence of the typical radiating ribs, and wide and deep pits on the protoconch as shown by Ibáñez et al. (2001). Shells of *C. taburientensis* lacked both the strophostyl columella and the ribs on the protoconch.

Insulivitrina lamarckii was found only in the Laurel forest (Perseo-Lauretum Azoricae) in the gorge of La Zarza.

DISCUSSION AND CONCLUSIONS

The presence of *Insulivitrina lamarckii* on the island of la Palma has not been mentioned before. Odhner (1937) reported *Vitrina lamarckii* from Tenerife, La Palma and two other Canary Islands. Ibáñez et al. (1987) showed, however, that the specimens that Odhner studied from the island of La Palma and other Canary Islands belong to different species, whereas *Insulivitrina lamarckii* has to be considered endemic on Tenerife (Ibáñez et al., 1987).

The measurements of the shells of the three species correspond with those given by Ibáñez et al. (1987), Alonso et al. (1987) and Ibáñez et al. (2001). The dimensions of both the shell and the jaw of the largest



Fig. 2. (Above) *Insulivitrina lamarckii* (20140506.1.2a) from La Zarza, La Palma (photo: Ingrid Margry).

Fig. 3. (Below) *Insulivitrina solemi* (20140504.2.1b) from Los Tilos, La Palma (photo: Ingrid Margry).



number		<i>Canarivitrina taburientensis</i>		<i>Insulivitrina solemi</i>		<i>Insulivitrina lamarckii</i>	
		shells	living glass snails	shells	living glass snails (+ number of dissected animals)	shells	living glass snails (+ number of dissected animals)
1	20140426.2	15 2.1-8.7, 6.2 (15)		2 7.7-8.6, 8.2 (2)			
2	20140428.2	3 5.7 (1)					
3	20140429.1			3 8.9-10.5, 9.7 (2)	5		
4	20140429.2			22 3.5-9.6, 6.9 (21)	3		
5	20140429.3			3 7.3-11.0, 8.4 (3)			
6	20140501.2	1 (0)		1 (0)			
7	20140502.2	3 4.3-7.4, 5.9 (3)					
8	20140504.2			12 7.3-9.5, 8.4 (12)	2 (1)		
9	20140504.3			2 8.5-10.0, 9.2 (2)	1		
10	20140504.4				1		
11	20140504.5			3 5.8-6.8, 6.3 (2)	1		
12	20140506.1			6 3.3-8.0, 6.4 (4)		4 13.9-15.2, 14.5 (3)	5 (2)
13	20140506.2					7 14.9-17.3, 16.2 (4)	
14	20140506.3				1		
Total number		22 2.1-8.7, 6.1 (19)	0	54 3.3-11.0, 7.6 (48)	14	11 13.9-17.3, 15.5 (7)	5

Table 2. Overview of the shells and living specimens included in the current research. For each sample the numbers of live specimens and shells are given. Measurements of the shells are in mm [min-max, the mean and (number) measured].

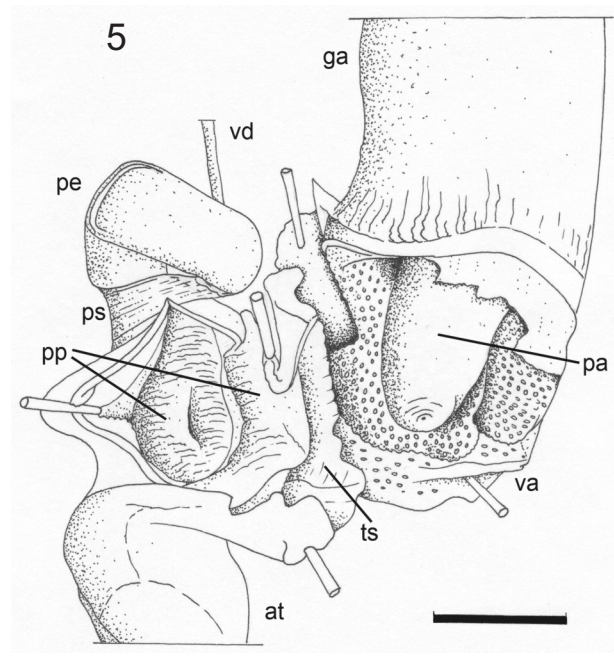
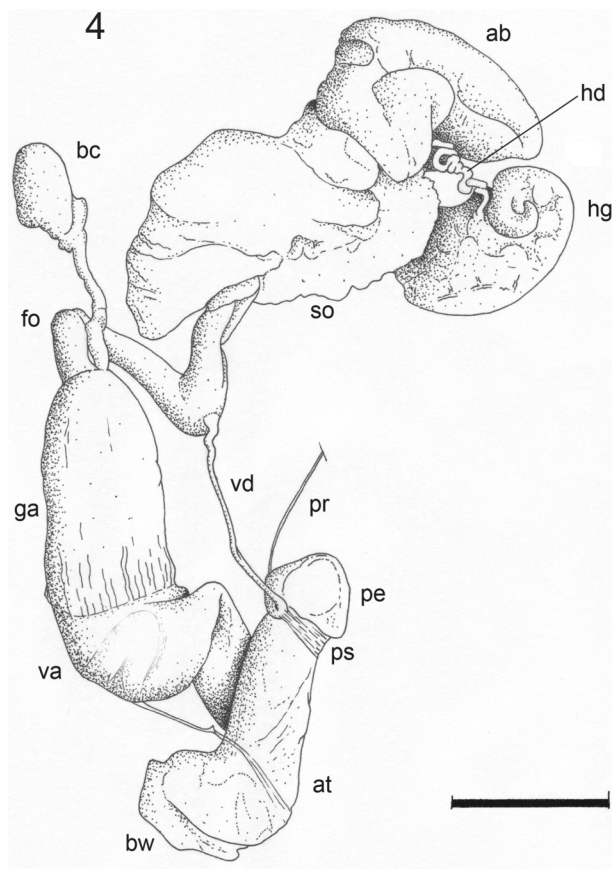
I. lamarckii (20140506.1.2a, Fig. 2) were compared to the data provided by Ibáñez et al. (1987) and Hesse (1923: 134), respectively. This comparison indicated that the specimen can be considered fully-grown. Although *I. lamarckii* is supposed to show a great variability in body colour (Ibáñez et al., 1987), all five specimens from La Zarza were rather uniformly yellowish brown with dark spots on the tail and mantle and a dark stripe above the pneumostome.

The presence of *I. lamarckii* on La Palma is difficult to explain. This large and easily recognizable species is absent from earlier studies. A recent introduction into the Laurel forest is rather unlikely. Probably this species was not found earlier because of the dense vegetation in the northern gorges, which makes some of the La Palma terrain hard to explore. For the first record of a number of other species, a recent introduction seems to be more obvious (Topley, 2005; Margry, 2015).

So far, *Guerrina cuticula* was considered the only vitrinid snail living on two Canary Islands, viz. both Tenerife and La Palma. *Guerrina cuticula* has critical demands in relation to its environment and will disappear when this environment is affected, whereas *I. lamarckii* is more tolerant and has less problems with the impairment of the environment (Valido et al., 2000). More studies on Vitrinidae will clarify to what extent *I. lamarckii* is a more common species on the Canary Island of La Palma.

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Figs 4-5. Genitals from *Insulivitrina lamarckii* (nr 20140506.1.2a). 4, complete genital system; 5, internal structure of atrium, penis and vagina. ab = albumen gland; at = atrium; bc = bursa copulatrix; bw = body wall; fo = free oviduct; ga = glandula amatoria; hd = hermaphrodite duct; hg = hermaphroditic gland; pa = pad genital atrium; pe = penis; pp = pilasters in penis; pr = penial retractor; ps = penial sheath; so = spermoviduct; ts = tongue-like structure; va = vagina; vd = vas deferens. Scale bars 5 mm (Fig. 4), 2 mm (Fig. 5).

REFERENCES

- ALONSO, M.R., IBÁÑEZ, M. & MORALES, P., 1987. La familia Vitrinidae en Canarias. II. Revisión de las especies de La Palma y El Hierro, con descripción de una especie nueva (Gastropoda: Pulmonata). – *Archiv für Molluskenkunde* 118: 63-76.
- ALONSO, M.R., VALIDO, M.J., GROH, K. & IBÁÑEZ, M., 2000. *Plutonia* (*Canarivitrina*), new subgenus, from the Canary Islands, and the phylogenetic relationships of the subfamily Plutoniinae (Gastropoda: Limacoidea: Vitrinidae). – *Malacologia* 42: 39-62.
- BACKHUYS, W., 1975. Zoogeography and taxonomy of the land and freshwater molluscs of the Azores: i-xii, 1-350, maps 1-97, pls i-xxxii. Backhuys and Meesters, Amsterdam.
- GIUSTI, F., FIORENTINO, V., BENOCCI, A. & MANGANELLI, G., 2011. A survey of vitrinid land snails (Gastropoda: Pulmonata: Limacoidea). – *Malacologia* 53: 279-363.
- GROH, K. & HEMMEN, J., 1986. Zur Kenntnis der Vitriniden des Madeira-Archipels (Pulmonata: Vitrinidae). – *Archiv für Molluskenkunde* 116: 183-217.
- HAUSDORF, B., 2002. Phylogeny and biogeography of the Vitrinidae (Gastropoda: Stylommatophora). – *Zoological Journal of the Linnean Society of London* 134: 347-358.
- HESSE, P., 1923. Beiträge zur näheren Kenntnis der Familie Vitrinidae. – *Archiv für Molluskenkunde* 55 (1/2): 1-25; (3): 81-115; (4): 129-145.
- HESSE, P., 1924. Kritische Fragmente. – *Archiv für Molluskenkunde* 56: 226-230.
- IBÁÑEZ, M., MORALES, P. & ALONSO, M.R., 1987. La familia Vitrinidae en Canarias. I. Revisión de las especies de Tenerife, con descripción de 2 especies nuevas (Gastropoda: Pulmonata). – *Archiv für Molluskenkunde* 117: 117-149.
- IBÁÑEZ, M., ALONSO, M.R. & VALIDO, M.J., 2001. *Plutonia solemi* new species (Gastropoda: Vitrinidae: Plutoniinae) from La Palma (Canary Islands). – *Journal of Conchology* 37: 149-157.
- MARGRY, C.J.P.J., 2013. Changes in radula and jaw during life stages of *Eucobresia diaphana* (Draparnaud, 1805) (Gastropoda, Pulmonata, Vitrinidae). – *Basteria* 77: 3-12.
- MARGRY, C.J.P.J., 2015. First record of *Boettgerilla pallens* Simroth, 1912 (Gastropoda, Pulmonata, Boettgerillidae) on the Canary Islands. – *Basteria* 78: 57.
- MORALES, P., IBÁÑEZ, M. & ALONSO, M.R., 1988. La familia Vitrinidae en Canarias. III. 3 nuevas especies de La Gomera (Gastropoda: Pulmonata). – *Archiv für Molluskenkunde* 118: 153-166.

- MORDAN, P.B. & MARTINS, A.M.F., 2001. A Systematic revision of the vitrinid semislugs of the Azores (Gastropoda: Pulmonata). – *Journal of Molluscan Studies* 67: 343-368.
- ODHNER, N., 1937. Little-known land Mollusca from Madeira and La Palma (Canary Islands). – *Proceedings of the Malacological Society* 22: 353-364, pls 18-20.
- TOPLEY, P., 2005. Strange and familiar: Some notes on molluscs from La Palma, Canary Islands. – *Mollusc World* 9: 8-9.
- VALIDO, M.J., ALONSO, M.R. & IBÁÑEZ, M., 1990. La familia Vitrinidae en Canarias. IV. Revisión de las especies de Gran Canaria, con descripción de tres especies nuevas (Gastropoda: Pulmonata). – *Archiv für Molluskenkunde* 120: 95-114.
- VALIDO, M., GROH, K., IBÁÑEZ, M. & ALONSO, M.R., 1993. La familia Vitrinidae en Canarias. V. El género *Guerrina* (Gastropoda: Pulmonata). – *Archiv für Molluskenkunde* 121: 117-124.
- VALIDO, M.J., IBÁÑEZ, M. & ALONSO, M.R., 2000. Estado de conservación de los vitrinidos canarios (Gastropoda, Pulmonata: Vitrinidae). – *Revista de la Academia Canaria de Ciencias* 11 [1999]: 245-264.
- VALIDO, M.J., YANES, Y., ALONSO, M.R. & IBÁÑEZ, M., 2014. *Insulivitrina raquelae*, a new species of Vitrinidae from La Gomera (Canary Islands) (Gastropoda: Pulmonata: Limacoidea). – *Journal of Conchology* 41: 701-705.