

On the taxonomical identity of some taxa of the Iberian endemic genus *Iberus* Montfort, 1810 (Gastropoda, Helicidae)

A. Martínez–Ortí & F. Robles

Martínez–Ortí, A. & Robles, F., 2012. On the taxonomical identity of some taxa of the Iberian endemic genus *Iberus* Montfort, 1810 (Gastropoda, Helicidae). *Animal Biodiversity and Conservation*, 35.1: 99–106.

Abstract

On the taxonomical identity of some taxa of the Iberian endemic genus Iberus Montfort, 1810 (Gastropoda, Helicidae).— To determine the taxonomic identity of some of the species included in the genus *Iberus*, we reviewed the type series described by Rossmässler (1854) and deposited at the Senckenberg Forschungsinstitut und Naturmuseum of Frankfurt (Germany). We concluded that *Helix alcarazana* (currently *Iberus alcarazanus*) is a junior synonym of *Iberus alonensis* (Férussac, 1821). The type localities of *Helix guiraoana* and *Helix alcarazana* were discussed and modified and the lectotypes of *Helix guiraoana*, *Helix guiraoana* var. *angustata*, *Helix alcarazana* and *Helix loxana* were designated. In addition, we reviewed the type series of *Helix alonensis* Férussac, 1821 (currently *Iberus alonensis*) deposited at the Muséum national d'Histoire naturelle of Paris, France and we selected its lectotype. The locality of Alicante has been designated as the restricted type locality of this species.

Key words: Mollusca, Helicidae, *Iberus*, Types, Synonym, Spain.

Resumen

Identidad taxonómica de algunos taxones del género endémico ibérico Iberus Montfort, 1810 (Gastropoda, Helicidae).— Se revisan las series tipo de las especies de *Iberus* descritas por Rossmässler (1854) y depositadas en el Senckenberg Forschungsinstitut und Naturmuseum de Frankfurt, Alemania. Se concluye que *Helix alcarazana* (actualmente *Iberus alcarazanus*) es sinónimo posterior de *Iberus alonensis* (Férussac, 1821). Se discuten y modifican las localidades tipo de *Helix* y de *Helix alcarazana* y se designan lectotipos para *Helix guiraoana*, *Helix guiraoana* var. *angustata*, *Helix alcarazana* y *Helix loxana*. Además, se revisa la serie tipo de *Helix alonensis* (Férussac, 1821) (actualmente *Iberus alonensis*) depositada en el Muséum national d'Histoire naturelle de París, Francia. Se selecciona el lectotipo y se designa "Alicante" como localidad tipo restringida.

Palabras clave: Mollusca, Helicidae, *Iberus*, Tipos, Sinonimia, España.

(Received: 24 IV 12; Conditional acceptance: 24 V 12; Final acceptance: 05 VI 12)

A. Martínez–Ortí, Museu Valencià d'Història Natural. Passeig de la Petxina 15, 46008 València and Dept. de Zoologia, Fac. de Biologia, Univ. de València, Av. Dr. Moliner 50, 46100 Burjassot, València (Spain).— F. Robles, Dept. de Geologia, Fac. de Biologia, Univ. de València, Av. Dr. Moliner 50, Burjassot, València (Spain)..

Corresponding author: A. Martínez–Ortí. E–mail: amorti@uv.es

Introduction

Iberus Montfort, 1810 is an endemic genus from the Iberian peninsula whose taxonomy has been largely controversial. Recent studies on molecular phylogeny conclude that the genus currently includes at least 16 taxa of specific or subspecific character, three of which remain unnamed (Elejalde et al., 2008a, 2008b). In order to clarify the taxonomical identity of some of these taxa, we sampled intensively the type localities of *Helix alcarazana* Rossmässler, 1854, *H. guiraoana* Rossmässler, 1854 and *H. guiraoana* var. *angustata* Rossmässler, 1854 and compared the material collected with the type series of these three species which are deposited in the Senckenberg Forschungsinstitut und Naturmuseum of Frankfurt am Main (Germany, SMF) collection (Martínez–Ortí et al., 2004b). The first two taxa, *I. guiraoanus* and *I. angustatus*, present conchological features that differ from the majority of the morphs of *Iberus*, such as flattened shells, with a rounded final lap, and a well-shaped umbilicus. However, as *I. alcarazanus* has a globose shell without umbilicus, differentiation of the latter species from the two other species can be clearly established. The original material of these species was collected by the Murcian naturalist Ángel Guirao Martínez (1817–1890) (Rossmässler, 1854; López Fernández, 2002). Taking advantage of the type series of *Helix loxana* Rossmässler, 1854 is present in the same collection and we designate herein its type specimen. The identity of these species was recently confirmed as a result of molecular studies; new studies should therefore be carried out to confirm whether it should be considered a subspecies of *I. marmoratus* (Férussac, 1821) or a valid species (Elejalde et al., 2008a).

We also revised the original material of *H. alonensis* Férussac, 1821, deposited in the collection of the Muséum national d'Histoire naturelle in Paris, France (MNHN). This material is a mixture of shells from a very wide area, extending from Castellón province, in the north of Spain, to Almería province, in the south. As their morphologies are very different it has been considered necessary to designate both a lectotype and a restricted type locality to clarify which of the variants described by Férussac (1821) accurately represents *Helix alonensis* Férussac, 1821 (currently *Iberus alonensis*).

Material and methods

The taxa from the SMF are *Helix guiraoana* (SMF 7914/2) (currently *Iberus guiraoanus*) (figs. 1A–1B) which presents as *locus typicus* 'Castellon de la Plana' (Castellón, Valencian Community), *Helix guiraoana* var. *angustata* (SMF 7911 and SMF 7912) (currently *Iberus angustatus*) (figs. 1C–1F) 'La Sierra de los Dientes de la Vieja' (Granada, Andalusia), *H. alcarazana* (SMF 7915 and SMF 7916) (currently *I. alcarazanus*) (figs. 1G–1H) 'Sierra de Alcaraz (Sierra de Segura) in Alcaraz' (Albacete, Castilla–La Mancha, Spain) and *Helix loxana* (SMF 7879) (figs. 2G–2I) 'in Loja (Granada)'. We collected numerous samples

of the first three taxa in the type localities of taxa which have been compared them with specimens contained in the samples from SMF (Martínez–Ortí, 1999; Martínez–Ortí & Robles, 2003; Martínez–Ortí et al., 2004a).

The type series of *I. alonensis*, deposited in MNHN, consists of 21 specimens distributed in nine lots, five of them labelled with the locality 'Alicante', one with the label 'Castellonovo près Segorbe' (correct spelling Castellonovo, Castellón province), both localities from the Valencian Community, while the other three lots come from Almería, in Andalusia (Martínez–Ortí et al., 2005).

Results

Types and localities of the *Iberus* species described by Rossmässler (1854)

Taxonomical position of *I. angustatus*

The type series of *Helix guiraoana* var. *angustata* is composed of two syntypes. The first presents the columelar edge of the peristome reflected on the umbilicus, giving the sensation that it is narrower, a character emphasised by Rossmässler in his diagnosis. This effect would be greater because part of the reflected edge seems to have disappeared as a result of a break (SMF 7911, figs. 1C–1D). The other syntype has a similar umbilicus of the *I. guiraoanus* (SMF 7912, figs. 1E–1F). Consequently, conchological differentiation between the two species cannot be established. By studying the molecular phylogeny of the species of *Iberus*, Elejalde et al. (2008a) separated several of them into well-characterized species, one of which (clade 4 in Elejalde et al., 2008a; fig. 1) is named *I. angustatus*.

The area of distribution of this species is contiguous to that of *I. guiraoanus*, the two being separated by the course of the Guadiana Menor River. The sampling density is very low, however, and can not exclude the possibility of areas of overlap between the two species, and the possibility of hybridization.

According to Arrébola (pers. comm.: e-mail 17 V 2012) *I. angustatus sensu* Elejalde et al. (2008a) may not have an open umbilicus, but rather half-covered or almost covered by the reflection of the peristome. There are areas where the specimens of *I. angustatus* show great variability in regard to the reflection of the peristome over the umbilicus, approaching the characteristics of *I. guiraoanus*.

As noted below, the type locality of *H. guiraoana* var. *angustata* is highly problematic. Together with the small number of specimens of the type series, consisting of only two specimens, it is therefore difficult to establish the taxonomic relationship between *H. guiraoana* of Rossmässler and its variety *angustata*. Until more intensive sampling is undertaken in the area of distribution of both taxa and until further investigations on the type locality of *H. g.* var. *angustata* provide new information on this topic, it seems prudent to retain the name of *I. angustatus* as that considered by Elejalde et al. (2008a).

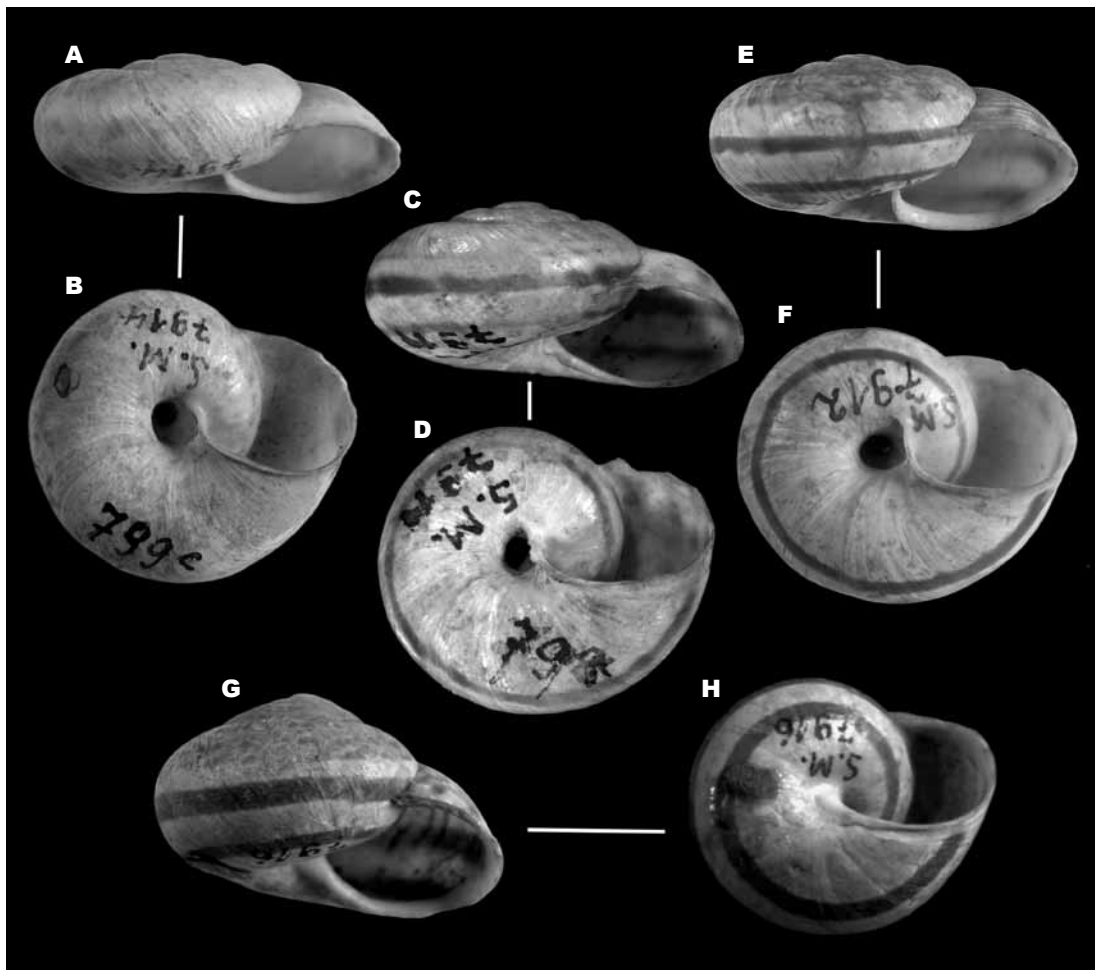


Fig. 1. A–B. Lectotype of *Iberus guiraoanus* (SMF 7914/2; 27.75 mm Ø); C–D. Lectotype of *I. angustatus* (SMF 7911; 21.8 mm Ø; phot. S. Hof, Naturmuseum Senckenberg); E–F. Paralectotype of *I. angustatus* (SMF 7912; 22.2 mm Ø); G–H. Lectotype of *I. alcarazanus* (SMF 7916/2; 22.7 mm Ø).

Fig. 1. A–B. Lectotipo de *Iberus guiraoanus* (SMF 7914/2; 27,75 mm Ø); C–D. Lectotipo de *I. angustatus* (SMF 7911; 21,8 mm Ø; phot. S. Hof, Naturmuseum Senckenberg); E–F. Paralectotipo de *I. angustatus* (SMF 7912; 22,2 mm Ø); G–H. Lectotipo de *I. alcarazanus* (SMF 7916/2; 22,7 mm Ø).

Type localities of *I. guiraoanus* and *I. alcarazanus*

The intensive sampling in both the type localities and the geographical areas close to those of *I. guiraoanus* and *I. alcarazanus* allowed us to ensure that *I. guiraoanus* does not live in 'Castellón' and that *I. alcarazanus* does not live in 'la Sierra de Alcaraz' (Albacete, Castilla–La Mancha, Spain), the two localities reported by Rossmässler (1854) in his original description (Martínez–Ortí, 1999; Martínez–Ortí & Robles, 2003; Martínez–Ortí et al., 2004b). On the contrary, *I. guiraoanus* is very abundant in 'Alcaraz' and *I. alcarazanus* lives in 'Castellón'. Therefore, in our view, it is clear that a mistake occurred. Taking into account that both samples were collected by

Guirao, prior to taxa descriptions by Rossmässler, it seems likely that this author received the samples incorrectly labelled. The other possibility is that Rossmässler mistakenly interchanged labels. In either case, according to the recommendation 76.A.2 of the International Code of Zoological Nomenclature (ICZN, 1999), we correct the declaration of the respective type localities: *I. guiraoanus* comes from the 'Sierra de Alcaraz' (Sierra de Segura) in Alcaraz (Albacete province) and *I. alcarazanus* comes from 'Castellón'.

Taxonomical position of *I. alcarazanus*

The conchological comparison of the specimens of *I. alcarazanus* from the Rossmässler collection with the

shells of numerous individuals collected by the authors in the province of Castellón, which are attributed to *I. alonensis*, indicates that there are no significant differences between them. On the other hand, all *Iberus* samples whose DNA has been analyzed, from the northern half of the Iberian peninsula, which included the province of Castellón, have been identified as *I. alonensis* (Elejalde et al., 2008b). Therefore, the authors consider *I. alcarazanus* (Rossmässler, 1854) as a junior synonym of *I. alonensis* (Férussac, 1821).

Type locality of *I. angustatus*

The typical locality of *Helix guiraoana* var. *angustata* according to Rossmässler (1854) is 'under the blocks of limestone not far from the Sierra de los Dientes de la Vieja, in the province of Granada', where it was collected by Guirao. This place is very difficult to specify, because in the province of Granada and the rest of the Autonomous Community of Andalusia, there are several landforms that receive this designation. The authors visited a place known as 'Dientes de la Vieja', located near of Diezma (Granada), which due to its proximity to the area of distribution of *I. angustatus sensu* Elejalde et al. (2008a) seems the most appropriate, but we did not find specimens of this species. However, we found two different taxa, *I. loxanus* and *I. alonensis*-like 02 *sensu* Elejalde et al. (2008b). While it is possible that *I. angustatus* lived in this area from 'Dientes de la Vieja' and has become extinct since the mid-19th century, it cannot be ruled out that the material provided by Guirao to Rossmässler comes from other localities of the same name in the province of Granada. Consequently, and until new information is available on this matter, the situation of the type locality of *I. angustatus* remains doubtful.

Designation of types

Rossmässler (1854) did not designate types for their species and, according to the information we have, they have not been designated subsequently by other authors. As a result, and so as to stabilize the nomenclature, we proceed to designate lectotypes and paralectotypes from the syntypes.

Helix guiraoana Rossmässler, 1854. The type series is composed of two syntypes numbered SMF 79142/2. We designate as lectotype the specimen figured by Rossmässler (1854), figures 799, 799a and 799b and as paralectotype the specimen figured with the number 799c (figs. 1A–1B).

Helix guiraoana var. *angustata* Rossmässler, 1854. The series type is composed of two syntypes numbered SMF 7911 and SMF 7912. We designate as lectotype the specimen figured by Rossmässler (1854) having number 798 (SMF 7911, figs. 1C–1D) and as paralectotype the specimen SMF 7912 (figs. 1E–1F).

Helix alcarazana Rossmässler, 1854. The type series is composed of two syntypes: SMF 7915 and SMF 7916. According to information provided by Dr. Janssen (SMF), the specimen SMF 7915 is labelled as 'Typus' and considered as the original Ic. 795. It matches the size of the Ic. 795 but differs somewhat

in the colour pattern. Apparently there is no other specimen better matching Ic. 795 (Janssen, pers. comm. e-mail 16 I 12). Consequently, we designate as lectotype the specimen of the sample SMF 7915, figured by Rossmässler (1854) with the numbers 795, 795a and 795b, and as paralectotype the specimen of the sample 7916, formerly labelled in the collection of the SMF as 'Paratype' (figs. 1F–1G).

Helix loxana Rossmässler, 1854. Together with the species discussed above, Rossmässler (1854) described the species *Helix loxana*, with type locality 'in some mountains in the province of Granada, especially around Loja'. After molecular studies by Elejalde et al. (2008a) this species is considered a valid taxon (*Iberus loxanus*) with its own entity. Since the type specimen of the species has been not designated formally, we designate as lectotype the specimen of the figures 793, 793a and 793b (Rossmässler, 1854), deposited in the SMF having the number 7879 (figs. 2G–I).

Revision of the original material of *Iberus alonensis* from the Férussac collection (figs. 2A–2F; table 1)

Férussac in 1821 named and figured, without a formal description, the species *Helix (Helicogena) alonensis* (currently *Iberus alonensis*). The etymology of the name derives from 'Alone', an ancient Greek colony situated in the vicinity of Alicante, although its precise location is unknown (Herrero Alonso, 1986). According to the information provided by the website www.animalbase (see reference) the first mention of this species appears on page XIV of the *Histoire Naturelle* of Férussac & Deshayes (1819–1851), published on 6 IV 1821, as a name in the figure caption of the plate 39, which was published on 13 VII 1821. According to the article 10.1.1 of the ICZN the name *Helix alonensis* Férussac, 1821 does not appear until this second date (13 VII 1821). Between the publication of the taxon name and the figures, Férussac (1821–1822), in his *Prodrome*, cited these figures and varieties of *Helix alonensis* with reference to the afore mentioned plate 39 and plate 36A. The issue is more complex because he never published a plate 36A, as indicated by Kennard (1942). Indeed, this reference refers to the plate 39B that in figure 8 shows the shell and the living animal of *H. alonensis*. This mistake was corrected by Férussac in his annotated copy of the historical Edition of the *Prodrome*, deposited at the Muséum national d'Histoire naturelle in Paris and it was also marked by Coan et al. (2011) who require that the plate 39B ('originally to have been 36A') was published on 27 IX 1823.

The name *Helix alonensis* refers to figures 1 to 9 of the plate 39 of Férussac & Deshayes (1819–1851), but these figures represent five varieties (alpha to epsilon) from various localities, without criteria, in the original publication, to select one of them as most suitable to represent the species from the other figures. As a result, we revised the original material of Férussac in order to select a specimen of one of the variants to designate it as a lectotype, and from it, to designate a restricted type locality for the species.

The explanation of the Pl. 39 Férussac & Deshayes (1819–1851) identifies five varieties of *Helix*

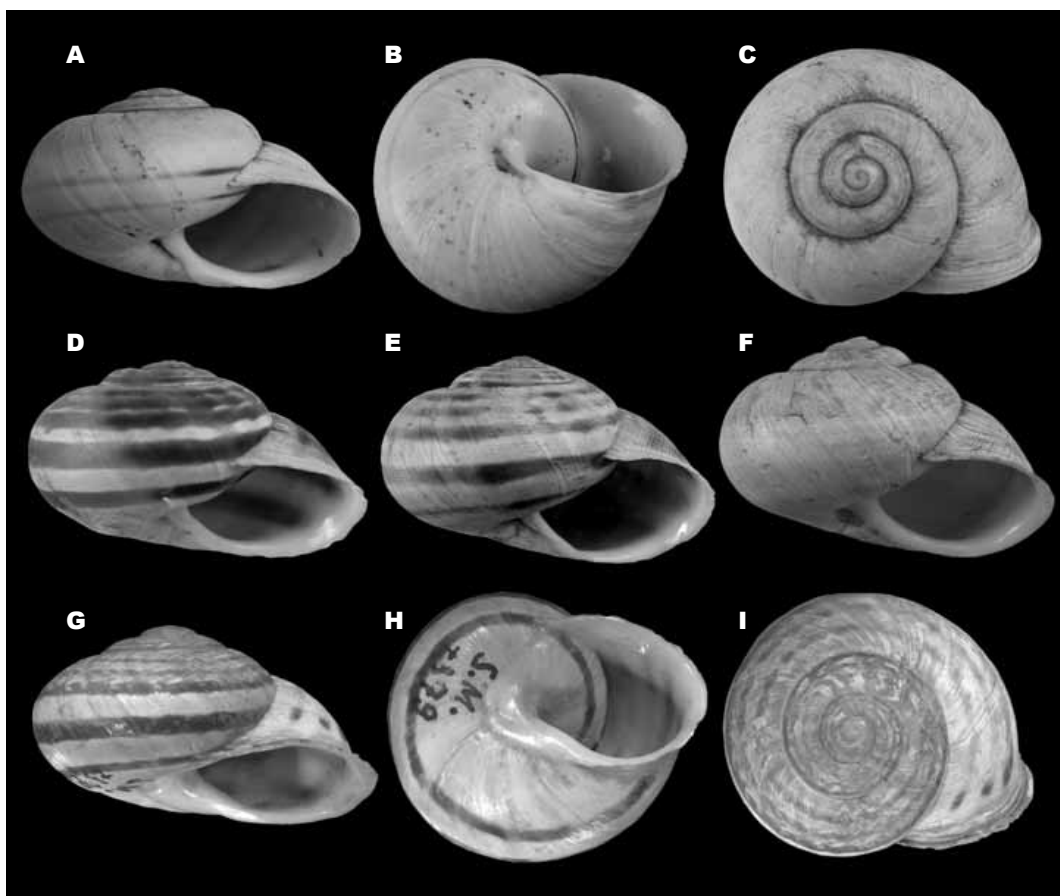


Fig. 2. A–C. Lectotype of *Iberus alonensis* (MNHN, lot 1: 29.1 mm Ø); D. Paralectotype of *I. alonensis* (MNHN, lot 4: 26.8 mm Ø); E. Paralectotype of *I. alonensis* (MNHN, lot 4; 31.2 mm Ø); F. Paralectotype of *I. alonensis* (MNHN, lot 5; 33.4 mm Ø); G–I. Lectotype of *I. loxanus* (SMF 7879; 26.3 mm Ø; phot. E. Neubert, Naturmuseum Senckenberg).

Fig. 2. A–C. Lectotipo de *Iberus alonensis* (MNHN, lote 1: 29,1 mm Ø); D. Paralectotipo de *I. alonensis* (MNHN, lote 4: 26,8 mm Ø); E. Paralectotipo of *I. alonensis* (MNHN, lote 4; 31,2 mm Ø); F. Paralectotipo of *I. alonensis* (MNHN, lote 5; 33,4 mm Ø); G–I. Lectotipo de *I. loxanus* (SMF 7879; 26,3 mm Ø; fotogr. E. Neubert, Naturmuseum Senckenberg).

alonensis, with the locality of collection: (α) fig. 1, 2; from Alicante. (β) fig. 3; from Alicante (γ) fig. 4, 5; from Valencia. (δ) fig. 6; from Alicante. and (ε) fig. 7, 8, 9; from Almeria.

The material used by Férussac to name and figurate the species *H. alonensis* is deposited in the collection of malacology of the MNHN in Paris. In total it comprises 21 full shells in a good state of conservation, gathered in nine different lots. The three lots from Almeria (var. ε) (Pl. 39, figs. 7–9) contain five specimens in total. They seem to belong to a taxon currently under study and needing name (Martínez-Ortí et al., 2005), different from the taxon *alonensis*. As the five specimens from this locality (var. ε) belong to a new taxon, included by Elejalde et al. (2008b) in the clade named OTU *I. alonensis*-like 01, they are excluded from the syntypes of *H. alonensis*.

The remaining 16 specimens (syntypes), which form the series of *H. alonensis*, are distributed in the following lots (table 1, with dimensions):

Lot 1

Three specimens of the var. α. Locality: Alicante. Specimen 1–1 corresponds to the figs. 1 and 2 of the Pl. 39 Férussac & Deshayes (1819–1851) (figs. 2A–2C).

Lot 2

Three specimens of the var. α. Locality: Alicante.

Lot 3

One specimen of the var. α. Locality: Alicante.

Lot 4

Five specimens. Specimen 4–1 seems to correspond

Table 1. Conchological data of the type series of *Helix alonensis* deposited in the Muséum national d'Histoire naturelle of Paris (France): acr. Acronym; Hap. Aperture height; Hll. Height of the last lap; Ln°. Lap number; Øap. Aperture diameter; Of. Original figuration.

Tabla 1. Datos conquiológicos de la serie tipo de *Helix alonensis* depositada en el Muséum national d'Histoire naturelle de París (Francia): acr. Sigla; Hap. Altura de la abertura; Hll. Altura de la última vuelta; Ln°. Número de vueltas; Øap. Diámetro de la abertura; Of. Figuración original.

Lots									
Acr	Var	Ømx	Hmx	Hll	Hap	Øap	Ln°	Locality	Of
Lot 1 (3 spec.)									
1–1	α	29.1	19.2	17.6	15.2	17.0	4½	Alicante	Figs. 1&2 (lectotype)
1–2	α	28.4	18.4	17.6	13.8	16.5	4⅝	Alicante	–
1–3	α	28.8	19.4	18.2	15.9	17.8	4½	Alicante	–
Lot 2 (3 spec.)									
2–1	α	31.2	19.3	17.4	15.0	18.5	4⅞	Alicante	–
2–2	α	29.7	19.6	17.9	15.1	17.8	4¼	Alicante	–
2–3	α	33.4	21.0	19.9	16.8	19.5	4⅜	Alicante	–
Lot 3									
3–1	α	30.2	19.3	18.0	15.5	17.3	4¼	Alicante	–
Lot 4 (5 spec.)									
4–1	ζβ?	26.8	16.6	15.6	13.4	15.7	4¼	Alicante	ζFig. 3?
4–2	δ	31.2	21.0	18.1	15.4	17.2	4⅜	Alicante	Fig. 6
4–3	ζβ?	32.0	20.5	18.3	15.8	19.1	4¼	Alicante	–
4–4	ζβ?	32.0	20.4	19.3	16.0	18.2	4¼	Alicante	–
4–5	ζβ?	33.4	22.5	21.0	16.4	19.0	4½	Alicante	–
Lot 5									
5–1	γ	33.4	23.9	21.1	17.2	20.0	4⅝	Castellново	Figs. 4&5
Lot 6 (3 spec.)									
3–1	?	27.7	17.5	16.5	15.0	15.1	4	Alicante	–
3–2	?	27.7	20.0	17.7	15.0	15.7	4½	Alicante	–
3–3	?	immature specimen not measured						Alicante	–

to the var. β, represented in fig. 3 of the Pl. 39 (fig. 2D). The specimen 4–2 presents the Greek letter δ recorded on the shell and it seems to be represented in fig. 6 of the Pl. 39 (fig. 2E).

Lot 5

One specimen of the var. γ represented in figures 4 and 5 of the Pl. 39 (fig. 2F). Although the figure caption of this plate indicates that its locality is Valencia, the label of the lot indicates 'dans les montagnes of Castellново (Castellново) près Segorbe', village located in the province of Castellón.

Lot 6

Three specimens without assignment of variety, one of them is immature. Locality: Alicante.

Designation of the lectotype of *H. alonensis*

All but one of the syntypes of *H. alonensis* proceed from Alicante. In fact, Férussac named this species in reference to its precedence because 'Alone' (gr. *als*, *alos*: salt) was a Greek colony situated in the vicinity of the current Alicante. The common name that Deshayes in Férussac & Deshayes (1819–1851) assigns to this species is, in fact, 'Hélice d'Alicante'. For these reasons, we designate a lectotype from this locality instead of Castellново.

Within the 15 revised syntypes of Alicante, we selected the first specimen cited by Férussac as lectotype (figs. 2A–2C), corresponding to the var. α and figured in the Pl. 39 figs. 1 and 2. This specimen has been identified in lot 1 and subsequently separated from

the other syntypes, which should to be considered as paralectotypes. Therefore, the restricted type locality becomes 'Alicante' (Art. 76.2 ICZN; Recommendation 74E).

Conclusions

For an unknown reason, the labels of original samples of *I. guiraoanus* and *I. alcarazanus*, both collected by Guirao, were swapped. This likely occurred prior to the description made by Rossmässler (1854), and he probably received the samples with erroneous data. According to recommendation 76.A.2 of the ICZN, we corrected the designation of the respective type localities for each species: *I. guiraoanus* (Rossmässler, 1854), type locality: 'Sierra de Alcaraz, in Alcaraz' and *I. alcarazanus* (Rossmässler, 1854), type locality: 'Castellón'. Consequently, we considered *I. alcarazanus* as a junior synonym of *I. alonensis* (Férussac, 1821). As for the original sample of *I. alonensis*, deposited in the Férussac collection of the MNHN, we designated the specimen of the var. α figured in the Pl. 39, figs. 1 and 2 (Férussac & Deshayes, 1819–1851) as lectotype and, in consequence, we establish 'Alicante' as its restricted type locality.

Lastly, we designated as lectotype of *I. loxanus* the only syntype studied by Rossmässler (1854), which is deposited in the SMF.

Acknowledgements

This work is part of the project REN2002–00716 from the Ministry of Science and Innovation, and the Ministry of Science and Technology (Ref. CGL2008–01131) of Spain. We thank Dr. José Ramón Arrébola for his helpful comments, and also Virginie Héros, assistant curator of molluscs at the Muséum national d'Histoire naturelle de Paris, Dr. Ronald Janssen, curator of the Senckenberg Forschungsinstitut und Naturmuseum of Frankfurt am Main (SMF) for the transfer of the material type, and Dr. E. Neubert and S. Hof (both of the SMF) for providing photographs of specimens from the type series deposited in the SMF.

References

- AnimalBase, *Helix alonensis* species taxon homepage: <http://www.animalbase.uni-goettingen.de/zooweb/servlet/AnimalBase/home/> [Accessed 24 IV 2012].
- Coan, E. V., Kabat, A. R. & Petit, R. E., 2011. 2,400 years of malacology, 8th ed., February 15, 2011, 936 pp. + 42 pp. [Annex of Collations]. *American Malacological Society*: http://www.malacological.org/publications/2400_malacology.php
- Elejalde, M. A., Madeira, M^a J., Arrébola, J. R., Muñoz, B. & Gómez-Moliner, B. J., 2008a. Molecular phylogeny, taxonomy and evolution of the land snail genus *Iberus* (Pulmonata: Helicidae). *Journal of Zoological Systematics and Evolution Research*, 46(3): 193–202.
- Elejalde, M. A., Madeira, M^a J., Muñoz, B., Arrébola, J. R. & Gómez-Moliner, J., 2008b. Mitochondrial DNA diversity and taxa delineation in the land snails of the *Iberus gualtieranus* (Pulmonata, Helicidae) complex. *Zoological Journal of the Linnean Society*, 154: 722–737.
- Férussac, A. É. J. P. J. F. d'Audebard de, 1821–1822. *Tableaux systématique des animaux mollusques suivis d'un Prodrôme général pour tous les mollusques terrestres ou fluviatiles vivantes ou fossiles*. J.–B. Baillière, Paris.
- Férussac, A. É. J. P. J. F. d'Audebard de & Deshayes, G. P., 1819–1851. *Histoire naturelle générale et particulière des mollusques terrestres et fluviatiles, tant des espèces que l'on trouve aujourd'hui vivantes, que des dépouilles fossiles de celles qui n'existent plus; classés d'après les caractères essentiels que présentent ces animaux et leurs coquilles*, 1: 8+184 pp.; 2(1): 402 pp.; 2(2) 260+22+16 pp.; Atlas 1: 70 pl.; 2: 166 + 5 pl. Paris, J.–B. Baillière.
- Herrero Alonso, A., 1986. Toponimia premusulmana de Alicante a través de la documentación medieval (II). *Anales de la Universidad de Alicante. Historia Medieval*, 4–5: 9–48.
- International Commission of Zoological Nomenclature [ICZN], 1999. *International code of zoological nomenclature [the Code]*. Fourth edition. The International Trust for Zoological Nomenclature, c/o Natural History Museum, London. [online version at <http://www.iczn.org/iczn/index.jsp>].
- Kennard, A. S., 1942. The Histoire and Prodrôme of Férussac. Part II. –*Proceedings of the Malacological Society of London*, 25(3): 105–110.
- López Fernández, C., 2002. *Ciencia y Enseñanza en algunas instituciones docentes murcianas. 1850–1936*, Ed. Univ. de Murcia.
- Martínez-Ortí, A., 1999. *Moluscos terrestres testáceos de la Comunidad Valenciana*. Ph. D. Univ. de València.
- Martínez-Ortí, A. & Robles, F., 2003. *Los Moluscos Continentales de la Comunidad Valenciana*. Conselleria de Territori i Habitatge, Colección Biodiversidad, 11. Valencia.
- Martínez-Ortí, A., Robles, F. & Elejalde, A., 2004a. The Taxonomical Identity of Three Taxa of the Genus *Iberus* Monfort 1810: *Helix guiraoanus* Rossmässler 1854, *Helix guiraoana* var. *angustata* Rossmässler 1854 and *Helix alcarazana* Rossmässler 1854 (Gastropoda, Helicidae). *Molluscan Megadiversity: Sea, Land and Freshwater. 2nd World Congress of Malacology. F. Wells, Ed., Western Australian Museum, Perth (Australia)*: 95.
- Martínez-Ortí, A., Aparicio, M^a T. & Robles, F., 2004b. La Malacofauna de la Sierra de Alcaraz (Albacete, España). *Iberus*, 22(2): 9–17.
- Martínez-Ortí, A., Robles, F. & Gómez-Moliner, B., 2005. Estudio de la Serie Tipo del endemismo ibérico *Helix alonensis* Férussac, 1821 (Gastropoda, Helicidae). IV International Congress of the European Malacological Societies. *Notiziario (SIM)*, 23(5–8): 73.
- Rossmässler, E. A., 1854. *Iconographie der Land- und Süßwasser-Mollusken Europa's, mit vorzüglicher Berücksichtigung kritischer und noch nicht abgebildeten Arten*, 3(1–2): 1–31. H. Costenoble Ed., Leipzig.