

A new subgenus and two new species of *Canariella* Hesse, 1918 (Gastropoda: Pulmonata: Hygromiidae)*

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Abstract: Two new species of *Canariella*, *Canariella ronceroi* n. sp. from La Gomera Island and *C. bimbachensis* n. sp. from El Hierro Island (Canary Islands, Atlantic Ocean), assigned to the new subgenus *Gara* are described. The new subgenus is characterized by the following synapomorphies of its species: "Penis wall with a thickened ring-shaped portion" and "penis with a toughened distal anklebone-like penial pilaster portion." The extinct species *C. pontelirae* Hutterer, 1994 also belongs to *Gara* n. subgen.

Key Words: Taxonomy, conservation, Canary Islands, new taxa

All recent species of the genus *Canariella* Hesse, 1918 are endemic to the Canary Islands, one of the Macaronesian archipelagoes. Species of *Canariella*, as well as other Canarian endemics, have generally small distribution areas restricted to one island, and only *C. plutonia* (Lowe, 1861) is found in two islands.

Ten living species (19 nominal taxa of specific and subspecific rank) of *Canariella* are recognized as valid. One of them belongs to the subgenus *Canariella*: *C. hispidula* (Lamarck, 1822), from Tenerife. Three other species belong to the subgenus *Alvaradoa* Ibáñez and Alonso, 1994 (Groh *et al.*, 1994): *C. pthonera* (Mabille, 1883), from Tenerife, *C. multigranosa* (Mousson, 1872), from La Gomera, *C. huttereri* Ponte-Lira and Groh, 1994, from El Hierro. An additional species, *C. plutonia* Lowe, 1861, from Lanzarote and Fuerteventura, belongs to the subgenus *Simplicula* Ponte-Lira and Alonso, 1996 (Ponte-Lira *et al.*, 1996), and it is the largest species of the genus (shell height: 16.5 mm; shell diameter: 27 mm).

The remaining five species: *Canariella planaria* (Lamarck, 1822), from Tenerife, *C. leprosa* (Shuttleworth, 1852), from Tenerife, *C. discobolus* (Shuttleworth, 1852), from La Gomera, *C. eutropis* (Shuttleworth in Pfeiffer, 1860), from Fuerteventura, and *C. gomerae* (Wollaston, 1878), from La Gomera, have not been arranged in subgenera (Ibáñez *et al.*, 1995), because some of them will be grouped with other not yet described species.

Additionally, one extinct species from Tenerife, *Canariella pontelirae* Hutterer, 1994, and some other fos-

sils from Lanzarote Island (Gittenberger and Ripken, 1985) and Europe (Pfeffer, 1929; Wenz, 1924; Zilch, 1960) have been assigned to *Canariella*.

In this paper we describe two additional species of *Canariella*, one of them collected from La Gomera and the other one from El Hierro, the youngest (1.1 My old), smallest (278 km²), and westernmost island of the Canarian archipelago. Both species are assigned to the new subgenus *Gara*, which also includes the extinct species *Canariella pontelirae*, whose similarity to the new species was indicated by Hutterer (1994).

METHODS

The biometric methodology used in the conchological descriptions is the same as Ibáñez *et al.* (1995). Calculation of number of shell whorls follows Kerney *et al.* (1979). The terms "shell" and "specimen" refer to empty shells and live specimens respectively, and "proximal" and "distal" refer to the position in relation to the gonad.

Abbreviations

AIT: M. Alonso and M. Ibáñez collection, Departamento de Biología Animal, Universidad de La Laguna, Tenerife, Canary Islands, Spain

CHB: R. Hutterer private collection, Bonn, Germany

CRT: W. Rähle private collection, Tübingen, Germany

MNH: Muséum National d'Histoire Naturelle, Paris, France

NHM: The Natural History Museum, London, UK

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NMW: National Museum of Wales, Cardiff, UK

NNM: Nationaal Natuurhistorisch Museum, Leiden, The Netherlands

SMF: Natur-Museum Senckenberg, Frankfurt/Main, Germany

TFMC: Museo de Ciencias Naturales de Tenerife, Canary Islands, Spain

TAXONOMIC DESCRIPTIONS

Family Hygromiidae Tryon, 1866

Genus *Canariella* Hesse, 1918

Type species *Carocolla hispidula* Lamarck, 1822, by monotypy.

Diagnosis

Mantle collar with five lobes, left lateral lobe almost indistinguishable in several species. Kidney suturethric, without secondary ureter. Central and first lateral radular teeth with small but visible ectocones. Right ommatophore retractor passing between penis and vagina. Dart-sac complex absent. One or several crown-shaped vaginal glands, each with an independent, slender initial portion present. Distal male duct, between atrium and penial retractor muscle insertion, with a sheath. Differentiation of penis and epiphallus indistinguishable externally. Penial retractor muscle with an epiphallar insertion. Penial nerve originating from right cerebral ganglion.

Subgenus *Gara* Alonso and Ibáñez, new subgenus

Type species *Canariella ronceroi* new species

Diagnosis

Penis without penial papilla, with an eccentric orifice connecting the epiphallus, and with a thick longitudinal pilaster opposite to the penis retractor muscle insertion. Penial pilaster with two portions, a soft proximal short ending in the epiphallus and an anklebone-like toughened long distal section. Penis wall with a thickened ring-shaped portion joined to the distal penial pilaster portion. Epiphallar longitudinal folds ending distally as small papillae on the orifice connecting the penis. One of the papillae situated over the proximal pilaster portion. Vagina with longitudinal folds and a digitiform vaginal gland.

Remarks

Gara n. subgen. differs from all the other *Canariella* taxa mainly by the presence of the following synapomorphies in all species described: "Penis wall with a thickened ring-shaped portion," and "penis with an anklebone-like toughened distal penial pilaster portion."

Etymology

The name of the Garajonay National Park derives from Gara and Jonay, two ancient lovers from La Gomera Island. The name of the new subgenus is dedicated to the beautiful Gara.

Canariella (Gara) ronceroi Ponte-Lira, new species

(Figs. 1A-B, 2A)

Type material

HOLOTYPE: AIT (no registration numbers used), 1 February 1989, leg. F. C. Henríquez, E. Ponte-Lira and M. J. Valido.

PARATYPES: 144 specimens and 22 shells collected between 1985 and 1994: AIT, MNHN, NMW (Z.1992.089.02/1), NHM (1993052/1), NNM (56865/1), SMF (309932/1), TFMC (MT 0284/1).

Type locality

Playa de Vallehermoso (La Gomera; UTM: 28RBS7921, 50 m altitude).

Description

Body whitish-gray, head with longitudinal lines of small darker gray spots. Shell discoidal, with a nearly flat spire of 5 - 5 1/2 strongly keeled, slightly overlapping whorls; umbilicus large (larger than 22% shell diameter), eccentric. Aperture ovate, with a small notch at the keeled periphery and a very thin parietal thickening in old specimens. Basal and collumellar peristome regions slightly reflected. Color uniform matt whitish-brown. Teleoconch with prominent and regularly-spaced radial ribs separated by 4 - 5 small ribs; ribs crossed by delicate spiral lamellae, visible under magnification. Protoconch small and only faintly striated. Periostracal hairs, abundant and long (up to 700 μ m long) on the keel, fewer and slightly shorter on the suture, and abundant and very short (< 55 μ m long) on the umbilicus.

Genital system

Six specimens dissected. Atrium short. Distal male duct similar in length to the epiphallar proximal portion; flagellum very short and slender. Distal male duct with a short sheath, joining distally to the penis halfway down. Penis distally widened with anklebone-like pilaster portion occupying 3/4 of penis length. Ring-shaped penis, wall portion narrow and joined to central zone of the distal penial pilaster portion. Epiphallus with four longitudinal folds.

Tubular vagina shorter than the penis, with numerous small longitudinal folds, the majority converging proximally into the oviduct; vaginal gland opening near the orifice connecting to the oviduct. Distal bursa copulatrix duct with numerous irregular longitudinal folds.

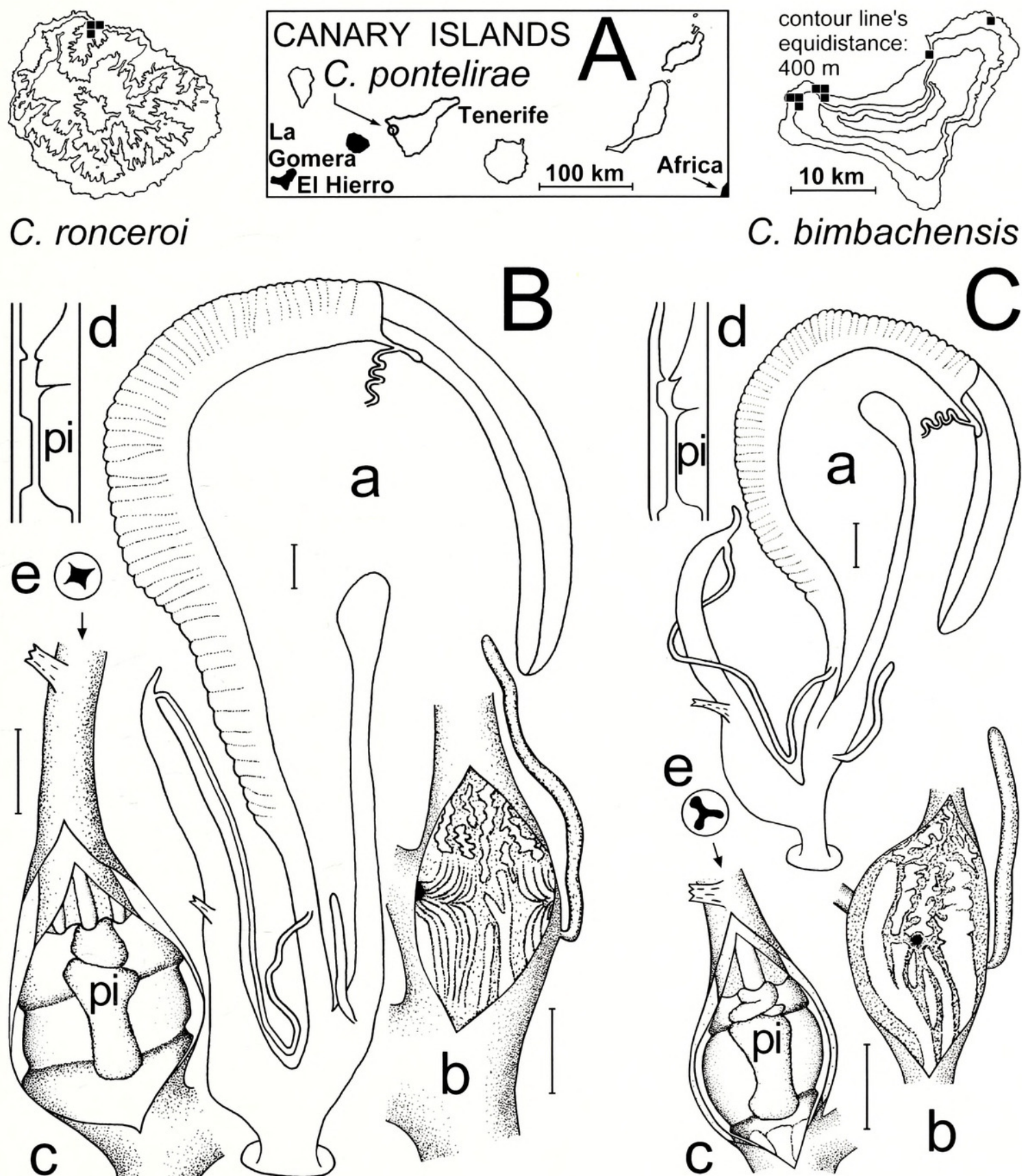


Fig. 1. A. Geographical distribution of the species of *Gara*; the symbols represent 1 x 1 km squares. B. Genital system and anatomical details of *Canariella (Gara) ronceroi* n. sp., from Playa de Vallehermoso, La Gomera. C. Genital system and anatomical details of *C. (Gara) bimbachensis* n. sp., from Las Lajas, El Hierro. Scale bar = 1 mm. Abbreviations: a, genital system; b, vagina; c, penis; d, diagram of a penial longitudinal section (without scale); e, transverse section of epiphallus; pi, pilaster.

Distribution, habitat, and conservation status

This species is endemic to north of La Gomera, occurring in a very small area of about 4 km² with lowland vegetation, at an altitude between 30 and 100 m. Conservation status proposed: "Endangered" (EN, B1, B2c), according to the IUCN (1994, 1996) Red List categories.

Etymology

The specific name is dedicated to Dr. Octavio Roncero, Madrid (C. E. Ponte-Lira's husband).

Canariella (Gara) bimbachensis Ibáñez and Alonso,
new species

(Figs. 1A,C, 2B)

Type material

HOLOTYPE: AIT (no registration numbers used),

19 January 1989, leg. F. C. Henríquez, E. Ponte-Lira and M. J. Valido.

PARATYPES: 2 specimens and 74 shells collected between 1984 and 1997: AIT, CHB, CRT, TFMC (MT 0285/1).

Type locality

Las Lajas (El Hierro; UTM: 28RBR0578, 20 m altitude).

Description

Shell discoidal, with a flattened spire, moderately domed above and rather flattened below, of 5 - 5 3/4 keeled, slightly overlapping whorls; umbilicus large (larger than 18% shell diameter). Aperture ovate, with a small notch at the keeled periphery and a wide parietal zone. Basal and

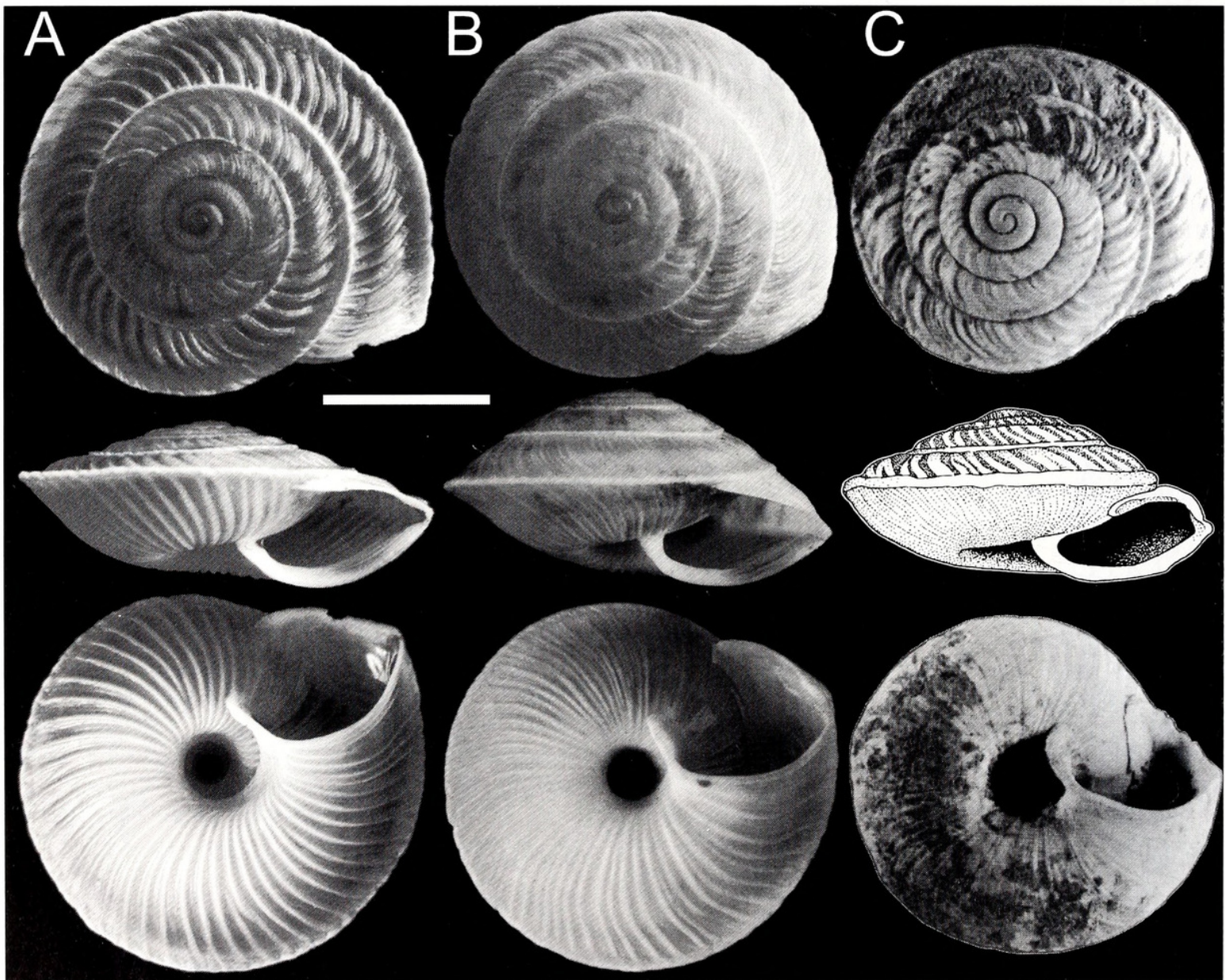


Fig. 2. Holotype shells. A. *Canariella (Gara) ronceroi* n. sp. B. C. *(Gara) bimbachensis* n. sp. C. C. *(Gara) pontelirae*. Scale bar = 5 mm.

collumellar peristome regions slightly reflected. Color uniform matt whitish-brown. Teleoconch with regularly-spaced radial ribs separated by 4 - 5 small ribs; ribs crossed by delicate spiral lamellae, visible under magnification. Protoconch small and only faintly striated. Periostracal hairs abundant and up to 600 μm long on the keel, apparently absent on the suture, and abundant and very short (< 50 μm long) on the umbilicus.

Genital system

Only 1 specimen dissected. Atrium short. Distal male duct similar in length to the epiphallar proximal portion; flagellum short and slender. Distal male duct with a sheath covering all its length. Penis widened with ankle-bone-like pilaster portion occupying nearly all the penis length. Ring-shaped penis wall portion wide and joined to almost all the distal penial pilaster portion. Epiphallus with three longitudinal folds.

Vagina proximally widened, shorter than penis, with several longitudinal folds; vaginal gland opening near the orifice connecting with oviduct. Distal bursa copulatrix duct with several irregular longitudinal folds.

Distribution, habitat, and conservation status

A species endemic to the northwest of El Hierro, occurring in an area of about 50 km^2 with partially degraded lowland vegetation, at an altitude between 20 and 350 m. Conservation status proposed: "Vulnerable" (VU, B1, B2c).

Etymology

The specific name derives from "bimbaches," the

name of the first inhabitants from El Hierro Island.

Remarks

Canariella ronceroi n. sp. differs from *C. bimbachensis* n. sp. as follows: the shell is larger, flatter, with stronger teleoconch ornamentation and an eccentric umbilicus; the penis has a narrower ring-shaped thickened wall portion and a shorter distal pilaster portion, the last occupying only 3/4 of the penis length; the sheath surrounding the distal male duct is shorter, joining distally to halfway down the penis; the epiphallus has four longitudinal folds (Table 1).

We also include in the new subgenus the extinct species *Canariella pontelirae* (Figs. 1A, 2C) due to the resemblance of the shape and ornamentation of the shell with the two new species. The shell of *C. pontelirae* has the A/B index similar to that of *C. bimbachensis* n. sp. but the upper side is flatter than that of *C. bimbachensis* n. sp., occupying an intermediate position between *C. bimbachensis* n. sp. and *C. ronceroi* n. sp. The shell aperture of *C. pontelirae* is flatter than that of the two new species, and the shell ornamentation of the upper side of *C. pontelirae* is as protuberant as that of *C. ronceroi* n. sp. whereas the lower side of *C. pontelirae* has an ornamentation as protuberant as that of *C. bimbachensis* n. sp.

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Table 1. Biometric data (dimensions in mm) and indices of the shell of the species of *Gara*. Abbreviations: A, shell height; B, shell diameter; C, shell body whorl height; CV, Pearson's variation coefficient (in %); D, shell height, ventral side; E, length of shell aperture; F, width of shell aperture; G, umbilicus diameter (without the peristome); H, shell height, dorsal side (= A-D); M, maximum value; m, minimum value; n, number of measured specimens; X, average.

	A	B	C	D	E	F	G	A/B	H/B	D/B	E/F	B/G	n
<i>Canariella ronceroi</i> n. sp.													
	5.16	12.88	4.14	3.23	4.91	5.85	3.21	(holotype)					
M	5.69	13.48	4.37	3.95	5.22	6.00	3.42						
m	4.56	11.26	2.95	3.14	4.42	5.19	2.34						
X	5.06	12.60	3.94	3.56	4.82	5.65	2.84	0.40	0.12	0.28	0.85	4.47	30
CV	4.31	3.03	6.11	4.74	3.01	2.82	6.36	4.36	15.94	5.07	3.04	6.92	
<i>Canariella bimbachensis</i> n. sp.													
	5.87	11.75	4.41	3.12	4.72	5.35	1.97	(holotype)					
M	5.87	13.05	4.50	3.59	4.98	5.67	2.55						
m	5.51	11.35	4.08	3.12	4.13	4.73	1.82						
X	5.64	12.04	4.31	3.35	4.72	5.33	2.21	0.47	0.19	0.28	0.89	5.50	7
CV	1.86	4.75	2.71	3.71	3.59	3.72	8.98	4.49	8.13	5.40	1.42	8.53	
<i>Canariella pontelirae</i> Hutterer, 1994 (data from Hutterer, 1994)													
M	5.86	11.80	-	-	-	5.79	-						
m	4.69	10.21	-	-	-	4.95	-						
X	5.21	10.82	-	-	-	5.28	-	0.48	-	-	-	-	4

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APPENDIX

Genital system comparison of the remaining *Canariella* subgenera

- Subgenus *Canariella*: Other than the characters listed in the diagnosis of the genus, two of the epiphallar longitudinal folds extend in the penial cavity and merge in their distal end to form a spoon-like, grooved penial papilla. Distal portion of penis with longitudinal folds. Vagina with several digitiform vaginal glands.
- Subgenus *Alvaradoa*: Penis without penial papilla and differentiated from the epiphallus only by a thickening of its longitudinal folds. Vagina with a large digitiform vaginal gland, simple or branched.
- Subgenus *Simplicula*: Differentiation of penis and epiphallus indistinguishable. Penial papilla absent. Vagina with several non-digitiform vaginal glands, short and branched.



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