

New species of Cerithiopsidae H. Adams & A. Adams, 1853 (Mollusca, Gastropoda, Caenogastropoda) from Ascension Island

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Abstract: Four new species of the family Cerithiopsidae from Ascension Island are described on the basis of morphological features: *Cerithiopsis annaleabeardae* sp. nov., *Cerithiopsis paglii* sp. nov., *Cerithiopsis pellegrinii* sp. nov. and *Cerithiopsis rhyshobbsi* sp. nov. The new taxa are compared with similar species in the genus from Lusitanian area and the Western Atlantic Ocean.

Introduction: Ascension Island is a small (88 km²) and remote island in the central South Atlantic Ocean (7°56' S, 14°22' W), located just west of the Mid-Atlantic Ridge. St. Helena Island is the nearest island, circa 1290 km to the southeast. Ascension is the summit of a massive strato-volcano that rises 3000 m above the oceanic crust of the South American Plate (<http://volcano.si.edu/volcano.cfm?vn=385050>). The 'Beagle' visited Ascension Island in 1836 and the 'Challenger' expedition in 1876 (Smith, 1885). The malacofauna of the island is poorly studied with the most well-known publication being an annotated list of the marine molluscs (Rosewater, 1975). Recently, Brown *et al.* (2016) identified some molluscs from Ascension and Padula *et al.* (2014) studied the heterobranch sea slugs.

According to Molluscabase (accessed on 19/06/2021), 244 recent and fossil species are actually placed in the genus *Cerithiopsis* Forbes & Hanley, 1850, distributed worldwide. Members of the family Cerithiopsidae H. Adams & A. Adams, 1853 are hard or impossible to identify without an intact protoconch. In some cases, the anatomical features are needed for a correct specific placement (Prkić & Mariottini P. 2010). Many authors used different genera such as *Joculator* Hedley, 1909, *Horologica* Laseron, 1956, *Mendax* Finlay, 1927 and

Prolixodens Marshall, 1978 to separate species with unique features in the Indo-Pacific Ocean. The distinctions among these genera were made using the key features: the shape of the shells, the number of spiral cords in the teleoconch; the number of basal cords and the protoconch type, which could be smooth or sculptured, multispiral or paucispiral. According to Marshall, 1978, classification based on protoconch types does not reflect phylogeny since there can be genera with multispiral or paucispiral protoconch, with sculpture and without.

In this paper, the authors use the genus *Cerithiopsis* Forbes & Hanley, 1850 s.l. because soft parts and radulae were unavailable and so it was impossible to determine a better genus placement.

Material and methods: The collected material was obtained by Sarah Browning-Lee, Judith Brown and Andy Richardson, via scuba diving from 10-30 m depth and also from dredgings using the fishing vessel Extractor. The sediments were examined under magnification and the shells sorted to species level, attempting to make a correct identification. In most cases, the use of Scanning Electron Microscopy (SEM) was necessary. For this study, a Motic SMZ-140-N2GG microscope was used. Sizes reported are in millimetres and given as shell height × shell width. Standard photographs were obtained with a Nikon D80. Photos were processed with Adobe Photoshop CC® (brightness/contrast and colour balance adjustments only, and applied to the entirety of the image).

Abbreviations:

BMNH: British Museum of Natural History, London

MNHM: Mainz Natural History Museum

MNHN: Muséum National de Histoire Naturelle, Paris

RBINS: Royal Belgian Institute of Natural Sciences
AN: Andrea Nappo collection (Quartu Sant'Elena, Italy)
FS: Frank Swinnen collection (Lommel, Belgium)

Systematics:

Superfamily: Triphoroidea Gray, 1847
 Family: Cerithiopsidae H. Adams & A. Adams, 1853
 Subfamily: Cerithiopsinae H. Adams & A. Adams, 1853
 Genus: *Cerithiopsis* Forbes & Hanley, 1850
 Type species: *Murex tubercularis* Montagu, 1803 by original name.

Cerithiopsis rhyshobbsi sp. nov.
 Plate 1

Type material: Holotype (Plate 1, Fig. A-F): Georgetown station 2, Ascension isl. collected by Andy Richardson 130 m. fishing vessel Extractor 21/2/2018 (RBINS I.G.34365- MT.3902). **Paratypes** (Plate 1, Fig. G-N): 2 shells: Georgetown station 2, Ascension isl. collected by Andy Richardson 130 m. fishing vessel Extractor 21/2/2018 (MNHM WL-2021/0501; MNHM WL-2021/0502); 2 shells: Georgetown station 2, Ascension isl. collected by Andy Richardson 130 m. fishing vessel Extractor 21/2/2018 (MNHM IM-2016-5335); 2 shells: Georgetown station 2, Ascension isl. collected by Andy Richardson 130 m. fishing vessel Extractor 21/2/2018 (NHMUK 20210109); 328 shells: Georgetown station 2, Ascension isl. collected by Andy Richardson 130 m. fishing vessel Extractor 21/2/2018 (FS); 1 shell: Georgetown station 1, Ascension Isl. collected by Andy Richardson 80 m. fishing vessel Extractor 21/2/2018 (FS); 23 shells: N. Ascension Isl. 25/02/2019. 150 m. collected by Andy Richardson fishing vessel Extractor (FS); 25 shells: Georgetown station 3, Ascension Isl. collected by Andy Richardson 130 m. fishing vessel Extractor 21/02/2018 (FS); 10 shells: Georgetown station 2, Ascension isl. collected by Andy Richardson 130 m. fishing vessel Extractor 21/2/2018 (AN).

Type locality: Georgetown station 2, Ascension isl. 130 m.

Distribution: Only known from Ascension Island at depths between 80 to 130 m.

Description (holotype): Shell of very small size (1.72 x 0.72 mm), conical, slightly inflated, suture deep, colour brown to yellow. Protoconch (0.41 x 0.27 mm) of 3¼ convex whorls, apex rounded; 1½ apical whorls ornated with granulated and irregular cords, next whorls smooth

with scarce granulosity on upper half with sculpture of 24-26 thin prosocline riblets split horizontally in two parts, regularly spaced, on lower half (Plate 1, Fig. C-E). Transition to teleoconch marked by a sinusigera lip. Teleoconch of 5¾ whorls, reticular sculpture of three spiral cords of which the first smaller in size, crossed by weaker axial ribs, about 16-18 on last whorl, with beads at each intersections. The base is composed of three strong cords on the upper part (Plate 1, Fig. F). Columella short, obliquely truncate; ridge bordering an oval aperture with siphonal canal and anal sulcus well defined.

Discussion: For its features, *Cerithiopsis rhyshobbsi* is compared with *Cerithiopsis prieguei* Rolán & Espinosa, 1995 from Cuba. In fact both species are characterised by their unique protoconchs, which appear very similar in shape and sculpture. The difference between the protoconchs of these two species is the sculpture and the number of whorls, in fact the protoconch of *C. prieguei* is composed of 4 whorls, while *C. rhyshobbsi* possesses a protoconch composed of 3¼ whorls. The sculpture of the protoconch of these two species is very similar, although *C. prieguei* has a smooth surface in the first 2 whorls and in the upper part of the other two protoconch whorls, while *C. rhyshobbsi* has granulated and irregular cords in the first 1½ protoconch whorls and a granulated surface in the upper part of the other protoconch whorls (Plate 1, Fig. D). The teleoconch shape differs, too, with *C. prieguei* having an inflated shape and *C. rhyshobbsi* a cylindrical shape. A single sample composed of two specimens (Plate 1, Fig. N) possesses an unusually tall spire. Without more specimens available for study, we include these two specimens in this new taxon, sharing the same key features such as the protoconch and spiral sculpture.

Etymology: Named in honour of Rhys Hobbs, Marine Conservation Officer on St Helena island, who collected sediment from St. Helena for the authors to study.

Cerithiopsis annaleabeardae sp. nov.
 Plate 2

Type material: Holotype (Plate 2, Fig. A-E): Georgetown station 2, Ascension isl. collected by Andy Richardson 130 m. Fishing vessel Extractor 21/2/2018. (RBINS I.G.34365- MT.3903). **Paratypes** (Plate 2, Fig. F-L): 2 shells: Georgetown station 2, Ascension isl. collected by Andy Richardson 130 m. Fishing vessel Extractor 21/2/2018. (FS); 1 shell: Georgetown station 2, Ascension isl. collected by Andy Richardson 130 m. Fishing vessel Extractor 21/2/2018. (AN).

Type locality: Georgetown station 2, Ascension isl. 130 m.

Distribution: Only known from Ascension Island at a depth of 130 m.

Description (holotype): Shell of small size (3.17 x 0.94 mm), cylindrical, slightly inflated, suture deep, colour brown. Protoconch (0.37 x 0.25 mm) of 3 convex whorls, apex rounded; 1 apical whorl ornated with numerous thin cords, next two whorls with sculpture of 20-21 thin prosocline riblets crossed by very thin and oblique spiral cords (Plate 2, Fig. F-G, I-J). Transition to teleoconch marked by a sinusigera lip. Teleoconch of 8½ whorls, reticular sculpture of three spiral cords of equal size, crossed by weaker axial ribs, about 20-22 on last whorl, with beads at each intersections. The base is composed of one strong cord on the upper part and 2-3 thin cords on the lower part (Plate 2, Fig. E). Columella short, obliquely truncate; ridge bordering an oval aperture with siphonal canal and anal sulcus well defined.

Discussion: For its protoconch features, *Cerithiopsis annaleabeardae* sp. nov. is compared with *Cerithiopsis capixaba* Figueira & Pimenta, 2008 from Brazil and *Cerithiopsis tarruellasi* Peñas & Rolán, 2006 from the Mediterranean Sea.

C. annaleabeardae differs from *C. capixaba* by the teleoconch shape, with *C. capixaba* having a pupoid shape and *C. annaleabeardae* a cylindrical shape. The sculpture differs in the number of spiral cords, with *C. annaleabeardae* having three spiral cords of equal size and *C. capixaba* three spiral cords on the last whorl, with the first being bigger in size than the other two cords. The base is quite different, too: *C. capixaba* has a very strong columella with three big cords and numerous thin cords, while *C. annaleabeardae* has a short siphonal canal with only one soft cord in the columella.

C. annaleabeardae differst from *C. tarruellasi* by the number of protoconch whorls: *C. tarruellasi* has a protoconch composed of four whorls and *C. annaleabeardae* a protoconch composed of three whorls. The protoconch sculptures are very similar, although *C. tarruellasi* misses the thin spiral cords on the first protoconch whorl. The shapes are slightly different with *C. annaleabeardae* having much more convex protoconch whorls compared to the ones of *C. tarruellasi*. The teleoconch differs also in spiral sculpture: *C. annaleabeardae* has three spiral cords of equal size, while *C. tarruellasi* has three spiral cords with the first one smaller in size than the other two. *C. tarruellasi* also lacks basal cords, while *C. Annaleabeardae* possesses 1 strong basal cord and 2-3 thin cords in the lower part.

Etymology: Named in honour of Annalea Beard, Marine Conservation Assistant on St Helena island who collected sediment from St Helena island for the authors to study.

Cerithiopsis paglii sp. nov.

Plate 3

Type material: Holotype (Plate 3, Fig. A-K): Georgetown station 2, Ascension isl. collected by Andy Richardson 130 m. Fishing vessel Extractor 21/2/2018. (RBINS I.G.34365- MT.3904). **Paratypes** (Plate 3, Fig. L-P): 2 shells: Georgetown station 2, Ascension Isl. collected by Andy Richardson 130 m. fishing vessel Extractor 21/2/2018 (MNHM WL-2021/0503; MNHM WL-2021/0504); 2 shells: Georgetown station 2, Ascension Isl. collected by Andy Richardson 130 m. fishing vessel Extractor 21/2/2018 (MNHN-IM-2016-5336); 2 shells: Georgetown station 2, Ascension Isl. collected by Andy Richardson 130 m. fishing vessel Extractor 21/2/2018 (NHMUK 20210110); 279 shells: Georgetown station 2, Ascension Isl. collected by Andy Richardson 130 m. Fishing vessel Extractor 21/2/2018. (FS); 1 shell: SW Ascension Isl. 25/02/2019. 150 m. collected by Andy Richardson. Fishing vessel Extractor. (FS); 8 shells: Georgetown station 1, Ascension Isl. collected by Andy Richardson 80 m. fishing vessel Extractor 21/2/2018 (FS); 19 shells: Georgetown station 3, Ascension isl. collected by Andy Richardson 130 m. fishing vessel Extractor 2/8/2018 (FS); 8 shells: English Bay, Ascension Isl., 9 m. collected by Peter Wirtz. 16/07/2015. (FS); 1 shell: Triangles Reef, Ascension Isl. 06/08/2016. Site code 20160806-26-ASI-SBL 18 m. Collected by Sarah Browning-Lee & Judith Brown (FS); 6 shells: North Point, Ascension Isl. 11/03/2017. 23 m. site code 20170311-15-ASI-SBL. Collected by Sarah Browning-Lee. (FS); 2 shells: Derby Wreck Arches, Ascension Isl. site code 20150811-21-ASI-SBL. 9 m. 08/11/2015. Collected by Judith Brown & Sarah Browning-Lee. (FS); 10 shells: Georgetown station 2, Ascension Isl. collected by Andy Richardson 130 m. Fishing vessel Extractor 21/2/2018. (AN).

Type locality: Georgetown station 2, Ascension isl. 130 m.

Distribution: Only known from Ascension Island at depths between 9 to 150 m.

Description (holotype): Shell of very small size (1.51 x 0.58 mm), conical, slightly inflated, suture deep, colour brown. Protoconch (0.42 x 0.28 mm) of ¾ convex

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Plate 1: *Cerithiopsis rhyshobbsi* sp. nov.

Georgetown station 2, Ascension isl. 130 m. fishing vessel extractor 21/2/2018.

A-F: Holotype. 1.72 x 0.72 mm.

RBINS I.G.34365- MT.3902.

G: Paratype. 1.44 x 0.52 mm.

H-I: Paratype. 1.88 x 0.6 mm.

J: Paratype. 2.16 x 0.69 mm.

K: Paratype. 1.94 x 0.62 mm.

L: Paratype. 1.6 x 0.56mm.

M: Paratype. 2.66 x 0.74 mm.

N: Paratype. 3.44 x 0.71 mm.

Plate 2: *Cerithiopsis annaleabeardae* sp. nov.

Georgetown station 2, Ascension isl. 130 m. Fishing vessel Extractor 21/2/2018.

A-G: Holotype. 3.17 x 0.94 mm.

RBINS I.G.34365- MT.3903

H-K: Paratype. 1.26 x 0.64 mm.

L: Paratype. 2.0 x 0.99 mm.

Plate 3: *Cerithiopsis paglii* sp. nov.

Georgetown station 2, Ascension isl. 130 m. fishing vessel extractor 21/2/2018.

A-K: Holotype. 1.51 x 0.58 mm.

RBINS I.G.34365- MT.3904.

L: Paratype. 1.91 x 0.62 mm.

M: Paratype. 2.16 x 0.71 mm.

N: Paratype. 1.91 x 0.64 mm.

O: Paratype. 1.8 x 0.66 mm.

P: Paratype. 1.49 x 0.55 mm.

Plate 4: *Cerithiopsis pellegrinii* sp. nov.

A-E, H, I-L: Georgetown station 2, Ascension isl.

130m. Fishing vessel Extractor 21/2/2018

A-E, I-L: Holotype. 2.04 x 0.77 mm.

RBINS I.G.34365- MT.3905.

H: Paratype. 2.1 x 0.78 mm.

F-G: Paratype. Boatswain Bird Island, Ascension Isl.

26/02/2017. site code: 20170226-14-ASI-SBL.

11m. Rock reef below seabird colony.

1.71 x 0.56 mm.







