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Revision of the cystiscid fauna (Neogastropoda Volutoidea) from Ascension and St. Helena Islands, Southern Atlantic

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ABSTRACT The cystiscid fauna from Ascension and St. Helena is studied on the ground of semi-intensive samplings worked during the years 2014–2019 by the Shallow Marine Surveys Group (Falklands, United Kingdom). The study of the shell morphology and of its variability allows to describe as new three *Gibberula* species in Ascension Island: *G. monticola* n. sp., *G. oceanica* n. sp. and *G. gemella* n. sp. The three *Volvarina* species reported from Ascension by E.A. Smith (1890b) look to result from wrong records in the literature. *Marginella* (*Volvaria*) *consanguinea* E.A. Smith, 1890 is recognized in the fauna from St. Helena and provisionally replaced in the genus *Plesiocystiscus*, together with a new species described as *P. meridionalis* and wrongly recognized by E.A. Smith (1890a) as corresponding to *Granula cinerea* Jousseaume, 1875. A lectotype is appointed among the syntypes of *Marginella consanguinea*. The species *Marginella* (*Volvaria*) *atomus* E.A.Smith, 1890 described from St. Helena was not found in the samplings under study. Due to the similarities observed between the cystiscid fauna from St. Helena and that from South Africa, the occurrence of transportation of live specimens or of empty shells in seaweeds from South Africa to St. Helena deserves to be verified. The documentation of live animals of cystiscid species of St. Helena is required for a verification of the generic status of the considered species, of the possible occurrence of sibling species, and for possible comparison with the fauna of South Africa.

KEY WORDS Cystiscidae, Plesiocystiscidae, *Gibberula*, *Plesiocystiscus*, Ascension Island, St. Helena Island, oceanic islands, South Atlantic, shell morphology, intraspecific variability, sibling species.

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INTRODUCTION

The study of the marine molluscan fauna of the isolated southern Atlantic islands of Ascension and St. Helena has been neglected for many years until recently. Only two noticeable works were issued about this topic before the years 2010's: two articles published simultaneously by E.A. Smith on the faunas from St. Helena (E.A. Smith, 1890a) and from Ascension (E.A. Smith, 1890b), and more recently a catalogue of previous records about the fauna from Ascension published by Rosewater (1975), with the addition of few new findings.

Concerning the fauna from St. Helena, E.A. Smith specified that his revision was based on a quite important set of shells (about 2,500 individuals) collected by Captain W. Turton, mostly of very small size and obtained "*by sifting the sand and shingle which is found in few places on the coast and by dredging in depths up to about 80 fathoms*" (E.A. Smith, 1890a: 247). E.A. Smith did remark also that many shells collected on the beaches of St.

Helena by W. Turton were matching well-known species from South Africa, and he suggested that some of these shells may have been detached from floating seaweeds drifted from South Africa, with the result that some of the collected species could have the status of simple drifted wrecks in St Helena and could be possibly not settling in St Helena as live population (E.A. Smith, 1890a: 248). E.A. Smith noted also deep affinities of the fauna from St. Helena with the Caribbean fauna (sensu lato, including the Brazilian coasts), with a rate of Caribbean-looking species of about 50% of the observed forms. The second rank of affinity was attributed to the Mediterranean fauna, with a rate of about 25-30% of the observed forms. The documentation used by E.A. Smith about the fauna from Ascension Island (E.A. Smith, 1890b) was much less consistent, his article dealing for the most with poorly documented reports. The article published more recently by Rosewater (1975) about the fauna from Ascension Island was also based for the most on poorly supported sources. In these conditions, the marine molluscan fauna from Ascension Island was not considered since recently as really documented, and the fauna from St Helena, even if more documented by E.A. Smith at the end of XIX° century, was questioned by possible introductions of drifted shells from South Africa.

A general re-evaluation of the marine molluscan fauna from Ascension and St. Helena Islands is undertaken for 10 years, mostly on the basis of intensive samplings operated by the Shallow Marine Surveys Group (SMSG, Falklands, United Kingdom) in Ascension Island (2014–2019) and in St. Helena (2014–2017). Specialized articles are henceforth published regularly, mostly about the fauna from Ascension: Schwabe & Tsiamis (2014) about a new Chiton from Ascension; Padula, Wirtz & Schrödl (2014) about Heterobranch seaslugs from Ascension; Poorten & Swinnen (2019) about a new cardiid from Ascension; Bakker & Swinnen (2021) about the Triphoridae from St. Helena and Ascension; Swinnen & Nappo (2022) about new species of Ceriothopsidae from Ascension; Swinnen & Nappo (2023) about new Rissoidae from Ascension; Houart & Swinnen (2023) about the muricid genus *Claremontiella* in Ascension Island; Oliver, Swinnen & Rolan (2023) about the Pyramidellidae from St. Helena and Ascension; Nappo & Swinnen (2024) about a *Pedicularia* species from Ascension.

The present article is dedicated to the study of the cystiscid fauna from Ascension and St. Helena (Cystiscidae W. Stimpson, 1865 and Plesiocystiscidae G.A. Coovert & H.K. Coovert, 1995), and based on important collections of empty shells and live collected specimens sampled at reef levels during the years 2014–2019 by British collectors in the frame of the field works of the SMSG team.

The previous data about the cystiscid fauna (and more generally about the marginelliform gastropods) from these two islands are very limited. From St. Helena, E.A. Smith (1890a) reported *Marginella* (*Volvaria*) *cinerea* Jousseaume, 1875 (defined originally as *Granula cinerea* Jousseaume, 1875, new name for *Marginella semen* Reeve, 1865, non-Lea, 1833), and he described two new species, as *Marginella* (*Volvaria*) *consanguinea* E.A. Smith, 1890 (E.A. Smith, 1890a: pl. XXIII, fig. 11) and *Marginella* (*Volvaria*) *atomus* E.A. Smith, 1890 (E.A. Smith, 1890a: pl. XXIII, fig. 12). From Ascension Island, E.A. Smith (1890b) did report three marginelliform species [*Marginella capensis* Dunker (= *Marginella capensis* Krauss, 1848), *Marginella zonata* Kiener, 1841 and *Marginella dunkeri* Krauss, 1848)], proving to be in fact *Volvarina* species belonging to the fauna of South Africa and not recognized in our material, but not a single cystiscid species.

From his side, Rosewater (1975) did record the occurrence of one cystiscid species from Ascension Island, as *Marginella* (*Gibberula*) *lavalleana* (A. d'Orbigny, 1842), a species described in fact from the Antilles and not recognized since its description, and he reported four marginelliform species found in the literature: the three South African *Volvarina* species reported by E.A. Smith (1890b) and *Marginella* (*Cryptospira*) *robusta* Sowerby, 1904, are, in fact, one big *Persicula* species well-known from the West African continental platform - from Dakar to Sierra Leone - but never reported from Ascension Island. This question of the elusive species reported from Ascension and St. Helena will be tackled in our Discussion.

MATERIAL AND METHODS

The marginelliform samples from Ascension and St. Helena entrusted by the Shallow Marine

Surveys Group are constituted only of cystiscid morphospecies. Empty shells and live collected animals were sampled in 54 stations off Ascension Island, by diving at 6–29 m in 47 stations (brushing and sieving) and by dredging at 60–150 m in 7 stations. Similar material was sampled only by diving in 31 stations off St. Helena, at 5–29 m.

The animal physiognomy and chromatism were not documented in the field, and the extraction of the radula from live collected specimens was not attempted, as well as anatomical or biochemical inquiries. So, the study is applied only on shell morphology features, on the ground of a large amount of specimens and stations for 4 of the 5 considered morphospecies.

To allow easy comparison between the sympatric species under study and to favour the understanding of the morphologic variability at work, we chose to select the types series in the same station for each of the two islands: "station 20160612-16-ASI-SBL" (18 m) for the three new cystiscid species from Ascension Island, and "station 0428/Q323" (15 m) for the new cystiscid species and for the revised species from St Helena.

As the entrusted material is very important, with dozens of specimens from dozens of station for most of the morphospecies, the number of individuals by species and by station will be not detailed. The mention of "numerous shells or specimens" in the Section "Other material" means that more of 50 individuals were examined, out of the type material.

For comparison with the cystiscid species studied from Ascension and St Helena, we consulted the works published about the same groups from the whole Atlantic field, with a special focus on the articles dealing with the Gulf of Guinea, equatorial West Africa, southwest Africa and South Africa. No records about homologous groups being published from Brazil. This documentation is cited in the References.

As explained in the Systematics Part, the generic placement of the species if proposed on the ground of the shell features only, what is somewhat subject to incertitude, especially concerning the alternative placement in *Cystiscus* W. Stimpson, 1865 or in *Plesiocystiscus* G.A Coovert et H.K. Coovert, 1995. This point is tackled in the Remarks section.

As far as the Family and Subfamily placements are concerned, we follow the conclusions drawn by Boyer (2019) on the ground of an integrative revision based on morphologic and anatomic data, with the creation of Plesiocysticidae G.A. Coovert & H.K. Coovert, 1995 as new Family among the marginelliform groups, and the conservation of Persiculinae G.A. Coovert & H.K. Coovert, 1995 as subfamily within the Family Cystiscidae W. Stimpson, 1865. The supra-specific revision of the marginelliform gastropods published two days later by Fedosov et al. (2019) and based on molecular data did not invalidate the Boyer's statements (Boyer, 2024).

ABBREVIATIONS AND ACRONYMS. MHNG: Muséum d'Histoire Naturelle de Genève, Switzerland ; NHMUK: Natural History Museum United Kingdom, London, Great-Britain; SMSG: Shallow Marine Survey Group, Falklands, United Kingdom; CFB: Franck Boyer collection (Meynes, France); CFS: Frank Swinnen collection (Lommel, Belgium); CWR: Walter Renda collection (Amantea, Italy); ad: adult; juv: juvenile; spm: live collected specimen; sh: empty shell; stn: station; L: length size.

RESULTS

Systematics

Superfamilia VOLUTOIDEA Rafisnesque, 1815
Familia CYSTISCIDAE W. Stimpson, 1865
Subfamilia PERSICULINAE G.A. Coovert & H.K. Coovert, 1995
Genus *Gibberula* Swainson, 1840
TYPE SPECIES: *Gibberula oryza* Swainson, 1840 (= *Volvaria oryza* Lamarck, 1822), by monotypy.

Gibberula monticola n. sp. (Figs. 1–14, 33–36)
https://www.zoobank.org/39087C3D-2BDD-45A4-AAF3-B0BC97557DE6

TYPE MATERIAL. Holotype. Ascension Island • 1 sh; Ladies Loo, Reef ledges, stn 20160612-16-ASI-SBL; 18 m depth; 12/06/2016; L = 2.6 mm, (Figs. 1–4); MHNG-MOLL-0159464. Paratypes. Ascension Island • 3 sh; same data as the holotype; L = 2.6 mm, 2.7 mm and 2.5 mm (Figs. 5–7); paratype 1-3 CFB • 3 sh; same data as the holotype; L = 2.6 mm, 2.4 mm and 2.2 mm (Figs. 8–10); paratype 4-6 CWR • 4 sh; same data as the holotype; L = 2.6

mm, 2.2 mm, 2.0 mm and 2.1 mm (Figs. 11–14); paratype 7–10 CFS.

TYPE LOCALITY. Ascension Island.

OTHER EXAMINED MATERIAL. Numerous specimens and shells collected in most of the stations, CFS, from 6 m to 150 m depth (Figs. 33–36).

DESCRIPTION. Shell morphology (Figs. 1, 2). Squat suboval outline, slightly subpyriform, whitish vitreous shell, smooth glassy surface, short conical spire with slightly concave sides, low lenticular protoconch, shouldered labrum, thickened in its upper part, thinner in its lower part, slightly concave outline in its middle, no outer margin, straight vertical inner edge, ten, wide, flat, and low inner denticles inside its two lower third parts, making staggered rungs on the inner labial wall but very faintly marked on the inner edge of the labrum, aperture narrow in its upper part, slightly more opened at the level of the anal canal, with quite widened anal canal, base of the columella and base of the labrum forming two strong produced keel, moderate siphonal notch, five columellar plaits, the lower one very long, thin and oblique, the second one thick and varicose, moderately produced, with a discreet flat spot at its outer part, the three upper plaits quite oblique and low, decreasing progressively in size.

DISTRIBUTION. *Gibberula monticola* n. sp. is only known from Ascension Island, and it is very probably endemic from this isolated oceanic relief.

ETYMOLOGY. Referring to Ascension Island as a high volcanic mountain.

REMARKS. The variability of the shell morphology of *G. monticola* n. sp. proves to be quite important (Figs. 1–14; 33–36), the most divergent observed form (Fig. 9) having a slightly turbiniform outline and a poorly thickened upper labrum. The flat spot of the second plait observed in the holotype is uncommon, this plait being regularly arched in most specimens. Labial denticles are ranging all along the inner lip in some specimens. In many aspects of its shell morphology, *G. monticola* n. sp. presents close affinities with the Mediterranean species *G. philippii* Monterosato, 1878, whose shell morphology variability looks to overlap partially that of *G. monticola* n. sp. The shell of *Gibberula monticola* n. sp. has generally a slimmer outline (versus squatter outline in *G. philippii*), the upper part of its labrum is less thickened, and its lenticular protoconch is slightly bigger. Similar populations were reported from the Canary Islands, matching also *G. philippii* in the different phases of their animal chromatism, so their identity remains questioned (Boyer & Renda, 2022). We note that no homologous form was documented from Senegal and from Cape Verde Islands among the *Gibberula* populations, despite intensive samplings operated along the 30 last years in these places (pers. doc.). So, the autonomous specific status of *G. monticola* n. sp. towards *G. philippii* seems to be beyond the slightest doubt. Future study of its animal chromatism would allow to verify if *G. monticola* n. sp. can be considered as a sibling species of *G. philippii* or if it reflects only a case of phenetic convergence.

Gibberula oceanica n. sp. (Figs. 15, 16, 37, 38)
https://www.zoobank.org/E3A0577A-0D59-44D4-B172-DE02F0FC63E0

TYPE MATERIAL. Holotype. Ascension Island • 1 sh; Ladies Loo, Reef ledges, stn 20160612-16-ASI-SBL; 18 m depth; 12/06/2016; L = 2.3 mm (Fig. 15); MHNG-MOLL-0159465. Paratype. Ascension Island • 1 sh; same data as the holotype; L = 2.4 mm (Fig. 16); paratype CFS.

TYPE LOCALITY. Ascension Island.

OTHER EXAMINED MATERIAL. Ascension Island • 1 ad spm; Sudan Wreck reef, stn 20151010-12-ASI-SBL; 25 m depth; 10/10/2015; L = 2.2 mm (Figs 37–38); CFS

DESCRIPTION. Shell morphology (Fig. 15). Slender oval subcylindrical outline, whitish vitreous shell, smooth glassy surface, quite produced conical spire with quite convex sides, tiny protoconch, straight vertical thin labrum, not thickened in its upper midpart, faded shoulder, tiny labial denticles on the upper part of the inner lip, becoming bigger and more spreading on the inner wall downside, no outer margin, regular narrow aperture, slightly widened in its lower part, moderate siphonal notch, narrow anal canal, five columellar plaits, the lower one long, thin and oblique, the second one thick and varicose, moderately produced, the three upper plaits quite oblique

and low, decreasing progressively in size, the two upper ones being hardly visible.

Distribution. *Gibberula oceanica* n. sp. is only known from Ascension Island, and it is very probably endemic from this isolated oceanic relief.

Etymology. Referring to the oceanic status of the isolated island of Ascension.

Remarks. *Gibberula oceanica* n. sp. is differing from *G. monticola* n. sp. principally by its narrow subcylindrical outline, its pointing conical spire and its thin regular labrum. Only three shells being collected (Figs. 15, 16, 37, 38), the variability of the shell morphology of *G. oceanica* n. sp. cannot be considered as really documented, but these three individuals coming from two different stations prove to be however very homogeneous. No intergrades are known with *G. monticola* n. sp. or with the third *Gibberula* species from Ascension studied below.

Gibberula gemella n. sp. (Figs. 17–32, 39–48)
https://www.zoobank.org/9C39A074-2300-4942-A53D-5AE775B8E1BC

Type material. Holotype. Ascension Island • 1 sh; Ladies Loo, Reef ledges, stn 20160612-16-ASI-SBL; 18 m depth; 12/06/2016; MHNG-MOLL-0159463. Paratypes. Ascension Island • 3 sh; same data as the holotype; L = 2.5 mm, 2.6 mm and 2.3 mm (Figs. 21–23); paratype 1–3 CFB • 3 sh; same data as the holotype; L = 2.4 mm, 2.6 mm and 2.6 mm (Figs. 24–26); paratype 4–6 CWR • 6 sh; same data as the holotype; L = 2.7 mm, 2.2 mm, 2.4 mm, 2.6 mm, 2.1 mm and 2.5 mm (Figs. 27–32) ; paratype 7–12 CFS.

Type locality. Ascension Island.

Other examined material. Numerous specimens and shells collected in most of the stations, from 6 m to 80 m depth (Figs. 39–48), CFS.

Description. Shell morphology (Figs. 17–20). Slender suboval outline, whitish vitreous shell, smooth glassy surface, short conical spire with quite convex sides, low lenticular protoconch, moderately shouldered labrum, faintly thickened in its upper part, quite straight and oblique outline, no outer margin, straight vertical inner edge showing fifteen subequal tiny denticles along its length, aperture narrow, faintly more opened in its lower third part, narrow anal canal, base of the columella and base of the labrum forming two strong produced keel, moderate siphonal notch, five columellar plaits, the lower one very long, thin and oblique, sticking with the lower side of the second plait, itself thick, varicose, angular, moderately produced in the aperture and forming a flat spot at its outer part, the third plait much smaller and distinctive, whereas the upper plaits are hardly suggested, better looking as weak lirations.

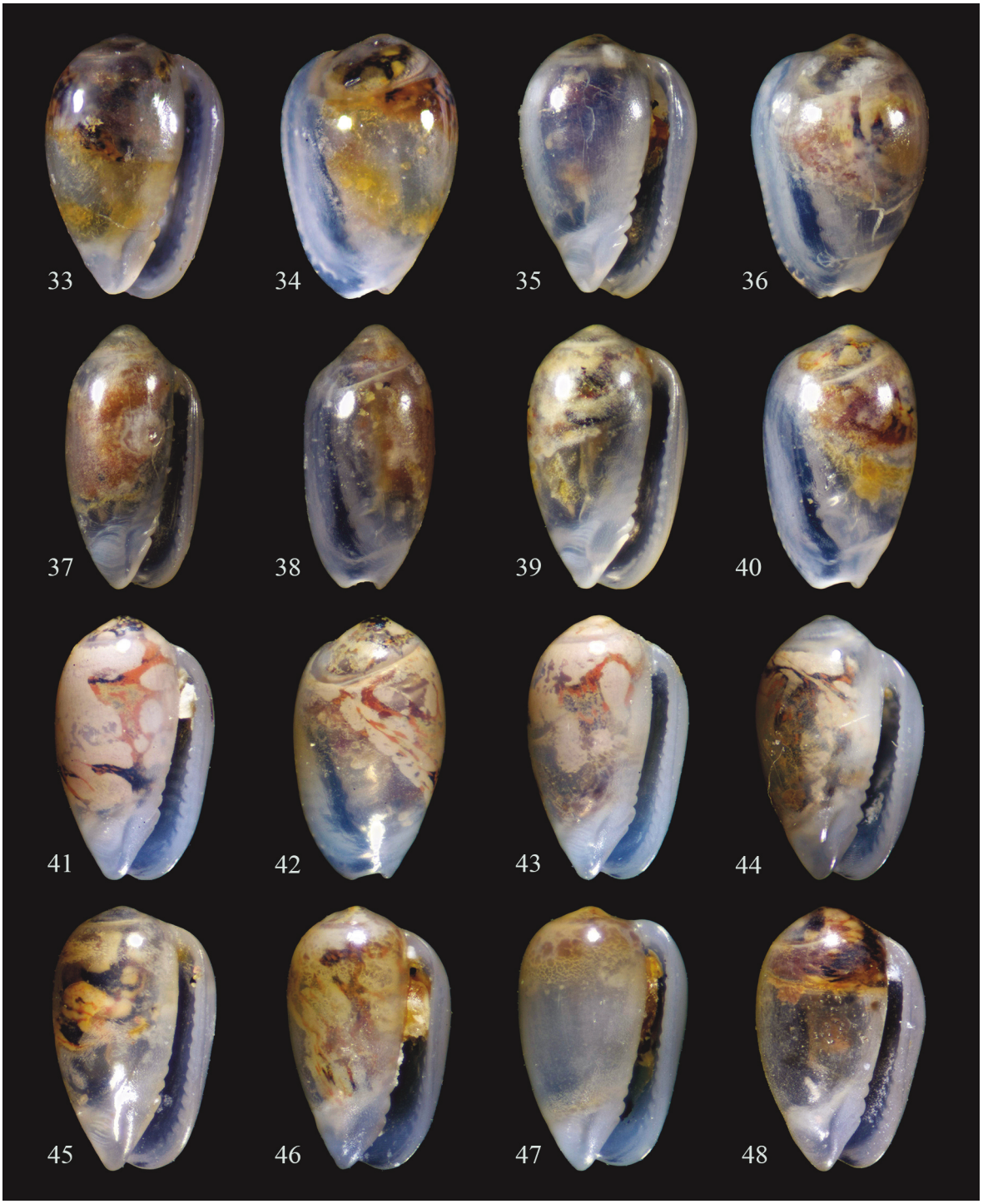
Distribution. *Gibberula gemella* n. sp. is only known from Ascension Island, and it is very probably endemic from this isolated oceanic relief.

Remarks. *Gibberula gemella* n. sp. is separated from *G. monticola* n. sp. by some constant features, even if discreet for the most: *G. gemella* n. sp. shows a more regular suboval outline, versus slightly subpyriform in *G. monticola* n. sp.; the sides of its spire are most often slightly convex, versus slightly concave in *G. monticola* n. sp.; its labrum is poorly shouldered and overall faintly thickened in its upper part, versus more shouldered and more heavily thickened in *G. monticola* n. sp.; its labial denticles are small and equal all along the inner lip, versus rarely visible in the upper part, wide and flat on the inner wall and poorly marked on the labial edge for *G. monticola* n. sp.; the aperture is narrower; the first plait is sticking or merging with the second plait, itself presenting an angular outline and making a flat spot pointing in the aperture, the third plait is much smaller and the next ones hardly suggested, versus unconnected two first plaits in *G. monticola* n. sp., with the three upper plaits decreasing slowly in size; the general outline of the plaits series is forming a distinctive break at the level the second plait, versus a more smooth curve in *G. monticola* n. sp.

Partially intergrading specimens are occurring: for instance, some specimens of *G. gemella* n. sp. can have a slightly subpyriform outline (Figs. 23, 24), some other can have a spire with slightly concave sides (Figs. 23, 27, 28, 29, 32), a slightly thickened upper part of the labrum (Figs. 23, 30), but all the specimens have a narrow aperture, first and second plaits connecting together, non-progressive decrease of the upper plaits, and a broken outline for the plaits series, versus wider aperture, first and sec-

Figures 1–14. *Gibberula monticola* n. sp., Ascension Island, Ladies Loo, Reef ledges, 12/06/2016, stn 20160612-16-ASI-SBL, 18 m depth. Fig. 1–4: holotype MHNG-MOLL-0159464, L = 2.6 mm. Figs. 5–14: *G. monticola*, paratypes 1–10, L = 2.6 mm, 2.7 mm, 2.5 mm, 2.6 mm, 2.4 mm, 2.2 mm, 2.6 mm, 2.2 mm, 2.0 mm, 2.1 mm. Figures 15, 16. *G. oceanica* n. sp., Ascension Island, Ladies Loo, Reef ledges, 12/06/2016, stn 20160612-16-ASI-SBL, 18 m depth. Fig. 15: holotype MHNG-MOLL-0159465, L = 2.3 mm. Fig 16: paratype CFS, L = 2.4 mm; CFS.

Figures 17–32. *Gibberula gemella* n. sp. Fig. 17–20: holotype MHNG-MOLL-0159463, L = 2.4 mm; Ascension Island, Ladies Loo, Reef ledges, 12/06/2016, stn 20160612-16-ASI-SBL, 18 m depth. Figs. 21–32: paratypes 1–12, L = 2.5 mm, 2.6 mm, 2.3 mm, 2.4 mm, 2.6 mm, 2.6 mm, 2.7 mm, 2.2 mm, 2.4 mm, 2.6 mm, 2.1 mm, 2.5 mm, respectively; Ascension Island, Ladies Loo, Reef ledges, 12/06/2016, stn 20160612-16-ASI-SBL, 18 m depth.



Figures 33–36. *Gibberula monticola*. Figs. 33, 34: L = 2.5 mm; Ascension Island, Red Rock, 18/06/2016, stn 20160618-17-ASI-SBL, 14 m depth. Figs. 35, 36: L = 2.5 mm; Ascension Island, Red Rock, 28/08/2016, Rocky reef, 07°53,726 S 014° 23,725 W, stn 20160828-32-ASI-SBL, 11 m depth. Figures 37–38: *G. oceanica*, L = 2.2 mm; Ascension Island, Sudan Wreck reef, 10/10/2015, stn 20151010-12-ASI-SBL, 25 m depth. Figures 39–47. *G. gemella*, Ascension Island. Figs. 39, 40: L = 1.9 mm; Comfortless Cove, 01/01/2016, stn 20160101-01-ASI-SBL, 6 m depth. Figs. 41–43: L = 2.3 mm, 2.3 mm; English bay, 16/07/2015, -7°,893967 lat -14°,383500 long, 9 m depth. Fig. 44: L = 2.3 mm; Red Rock, 08/10/2016 stn 20161008-38-ASI-SBL, 14 m depth. Fig. 45: L = 2.2 mm; English bay, 11/11/2015, 7°53'25,42"S 014°22'50,24"W, 9 m depth. Figs. 46, 47: L = 2.0 mm, 1.9 mm; Boatswain Bird Island, 26/02/2017, stn 20170226-14-ASI-SBL, 11 m depth. Fig. 48: L = 2.4 mm; Clarance Bay arches, Georgetown, 06/02/2016, stn 20160205-05-ASI-SBL, 29 m depth.

ond plaits not connected, upper plaits decreasing progressively in size, and smooth curved outline for the plaits series in *G. monticola* n. sp. However, some individuals are quite ambiguous and their attribution is more difficult: for instance, the specimen of *G. gemella* n. sp. in Fig. 29 differs from the specimen of *G. monticola* n. sp. in Fig. 9 only by its longer first plait merging with the second plait, and by the broken outline of the plaits series, not by the other shell features such as the general shell outline, the width of the aperture or the shape of the labrum.

The separation of the two species *G. monticola* n. sp. and *G. gemella* n. sp. on the ground of their respective morphologic features seems to work: despite the fact that many of the "specific features" can be occasionally shared at some degree by these twin forms, two dominant combinations of features are clearly expressed and they argue in favor of the recognition of two distinct species. Considering a probable case of sibling species resulting of a local radiation, the imperfect phenetic separation of the shell features may reflect an early stage of specific disbranching.

The indications given by the colour shades displayed by dry animals (Figs. 33–48) do not allow noticeable inferences. It seems that the animal of *G. monticola* n. sp. has lesser white patches and a more fragmented pattern (Figs. 33–36), whereas the animal of *G. gemella* n. sp. seems to have bigger white layers (Figs. 39–48). By comparison, the animal of *G. oceanica* n. sp. seems to have a more uniformly reddish coloured chromatism (Figs. 37, 38).

Familia PLESIOCYSTISCIDAE G.A. Coovert et H.K. Coovert, 1995

Subfamilia PLESIOCYSTISCINAE G.A. Coovert et H.K. Coovert, 1995

Genus *Plesiocystiscus* G.A. Coovert et H.K. Coovert, 1995

Type species: *Marginella jewetti* Carpenter, 1857, by original designation.

Plesiocystiscus consanguineus (E.A. Smith, 1890) (Figs. 51–80)

Marginella (*Volvaria*) *consanguinea* E.A. Smith, 1890: 266, pl. 23, fig. 11.

Type material. Syntypes. NHMUK 1889-10-1-397–411 (15 shells registered, 13 shells confirmed by the curator, 12 shells photographed), Figs. 51–53: L = 2.3 mm, L = 2.3 mm, L = 2.1 mm; NHMUK 1889-10-1-417–427 (11 shells registered and photographed); NHMUK 1889-10-1-428-432 (5 shells registered and photographed), Figs. 54–56: L = 2.7 mm, L = 2.05 mm, L = 2.2 mm. St. Helena Island, W. Turton collection. The syntype pictured in Fig. 51 (L = 2.3 mm) is designated as lectotype of *Marginella* (*Volvaria*) *consanguinea* E.A. Smith. The other syntypes must be considered as paralectotypes.

Type locality. St. Helena Island.

Other examined material. Numerous specimens and shells collected in most of the stations, from 8 m to 20 m (Figs. 57–80).

Description. For original description see in E.A. Smith (1890: 23). Shell morphology (Fig. 51). Shell smooth, whitish, porcelaneous, shining; slender fusiform outline, slightly subcylindrical, short conical spire with concave sides, large bulged lenticular protoconch; aperture moderate, narrowed at its mid-part, widely opening towards the base, thin labrum with receding shoulder, sinuous reflected inner lip pointing into the aperture at its mid-part, weakly depressed on its outer part, anal canal narrowed, base rounded; three thin packed columellar plaits, the first one moderately long and slightly concave, the second one quite thicker and produced in the aperture, the third one much smaller and faintly produced, the three plaits forming a slightly convex series at the base of the columella.

Distribution. *Plesiocystiscus consanguineus* is only known from St. Helena, and it is very probably endemic from this isolated oceanic relief. We note that no similar shell morphology is recorded from South Africa.

Remarks. The placement of this species and of the following one in the genus *Plesiocystiscus* on the ground of the simple shell features is highly speculative, as these two species might belong as well to the genus *Cystiscus* W. Stimpson, 1865 (Cystiscidae). As a matter of fact, no evident feature of their shell morphology does seem to allow to separate the two genera. On the contrary, the two groups are deeply differing for their animal features, especially concerning the characters of their head (non-slit head, long thin tentacles, black eyes at the base of the tentacles, and medium sized

siphon in *Plesiocystiscus*, versus slit head, no tentacles but two club shaped frontal lobes, red eyes on the sizes of the head, and no siphon in *Cystiscus*) and of their radula (triserial unmodified rachiglossan radula with central rachidian plate and two lateral teeth in *Plesiocystiscus*, versus uniserial modified rachiglossan radula conserving only the central plate in *Cystiscus*). We propose to follow G.A. Coovert & H.K. Coovert (1995) who proposed to place *Marginella consanguinea* in the genus *Plesiocystiscus*, despite the fact that these authors did not document neither the morphology of the live animal live nor the radula type. Our own argument for such a provisional placement is that only *Plesiocystiscus* species are recorded for now from the Atlantic and Panamic waters, whereas the genus *Cystiscus* seems to be restricted to the Indo-Pacific waters, and because the distribution of the two genera seems to be not overlapping for the most. However, exceptions might occur, as three *Plesiocystiscus* species belonging apparently to the same species group were recently recorded from the Indo-Pacific waters (Boyer, 2023): *P. bavayi* Boyer, 2003 from New Caledonia and two undescribed species, respectively from Masirah Island (Oman) and from Mirissa (Sri Lanka) (pers. obs.). The island of St Helena being located near to the contact zone between the South African fauna and the main Atlantic fauna (Mediterranean, West African and Caribbean influences), *Plesiocystiscus* species as well as *Cystiscus* species might well occur in the place, and our proposed placement remains to verify.

Plesiocystiscus consanguineus proves to be quite variable in shell length and in shell outline. The length size ranges from 2.1 mm to 3.4 mm. The outline is generally slender suboval or fusiform with tapering base, but squatter specimens can occur (Figs. 52, 54–56). The spire is generally produced and pointing, but sometimes very short or domed (Figs. 54, 55, 57). The protoconch is teat-like in most specimens, but sometimes lowered (Figs. 54, 63, 64).

For its shell features (overall its shell outline), *Plesiocystiscus consanguineus* shows little resemblance with the slender *Plesiocystiscus* species described from equatorial West Africa, which present a more flexuous labrum: *P. bubistae* (Fernandes, 1987) from the Cape Verde Islands, *P. gutta* (Gofas & Fernandes, 1988) from São Tomé, *P. josephinae* (Fernandes & Rolán, 1992) and *P. violaceus* Rolán & Gori, 2014 from Principe Island. *Plesiocystiscus bubistae* (Fernandes, 1987) from the Cape Verde Islands is differing by a squatter shell outline and above all by stronger and less oblique columellar plaits. *Plesiocystiscus consanguineus* presents also some resemblance with the indo-pacific *P. bavayi* species group, which presents a massive subcylindrical shell outline. By comparison, the species from St. Helena described below in *Plesiocystiscus* presents more shell affinities with species reported from South Africa and provisionally accepted in the genus *Cystiscus*, such as *Cystiscus aphanacme* (Tomlin, 1908) and *Cystiscus peelae* Lussi et Smith, 1998. However, we shall place also this last species in the genus *Plesiocystiscus*, due to the variability of its shell morphology: its "bulged phase" is looking like some South Africa species proposed in the genus *Cystiscus* (but with undocumented animal morphology and radula pattern), but its tiny "slender phase" is better looking like *Plesiocystiscus* species from São Tomé and Principe.

Plesiocystiscus meridionalis n. sp. (Figs. 81–96)
https://www.zoobank.org/09E9CC34-7291-40A3-9246-34F48D035827

TYPE MATERIAL. Holotype. St. Helena Island • 1 sh; Bouys hole/Cavalley hole, stn 0428/Q323; 15 m depth; 28/04/2017; L = 3.1 mm (Figs. 81, 82); MHNG-MOLL-0159466. Paratypes. St. Helena Island • 4 sh; same data as the holotype; L = 2.7 mm, 2.6 mm, 2.9 mm and 2.8 mm (Figs. 83–86); paratype 1–4 CFB • 4 sh; same data as the holotype; L = 2.5 mm, 2.4 mm, 2.2 mm and 2.2 mm (Figs. 87–90) ; paratype 5–8 CWR • 6 sh; same data as the holotype; L = 2.1 mm, 2.0 mm, 2.0 mm, 1.9 mm, 1.9 mm and 2.0 mm (Figs. 91–96); paratype 9–14 CFS.

TYPE LOCALITY. St. Helena Island.

OTHER EXAMINED MATERIAL. Numerous specimens and shells collected in most of the stations, from 5 m to 29 m depth, CFS.

DESCRIPTION. Shell morphology (Figs. 81, 82). Tear-shaped outline, whitish vitreous shell, smooth glassy surface, domed top, teat-like protoconch, shouldered labrum, moderately thickened in its upper part, flexuous in its central part, no outer margin, smooth inner lip, moderately opened aperture in its

upper part, more widely opened in its lower part, quite incised anal canal, no siphonal notch, three thin and oblique columellar plaits, poorly produced.

DISTRIBUTION. *Plesiocystiscus meridionalis* n. sp. is only known for now from Ascension Island, but closely matching species are occurring in South Africa and the possible occurrence of *P. meridionalis* must be verified among the poorly documented cystiscid fauna from this region.

ETYMOLOGY. Referring to the southern situation of St. Helena Island in the Atlantic field.

REMARKS. The shell morphology of *P. meridionalis* n. sp. presents a high variability, dealing both with the length size of the shell and with the shell outline. For the most, two contrasted forms are occurring: the typical form characterized by larger bulged shells with domed top and teat-like protoconch (Figs. 81, 82, 84, 85, 86, 88) sizing 2.4 to 3.1 mm, versus the smaller slender form with pointing spire (Figs. 83, 87, 91–96) sizing 1.9 to 2.7 mm. For the other shell features, such as the shape of the labrum and of the aperture or the shape and the organisation of the columellar plaits, these two dominant forms look similar. Few specimens look as intergrading these two dominant patterns (Figs. 89, 90). We interpret these two forms as corresponding to a sexual dimorphism within the same species, the bulged form constituting the female phase, and the smaller slender form constituting the male phase. The same kind of sexual dimorphism was documented in the *Cystiscus viaderi* species group (Boyer, 2004). The occurrence of a sexual dimorphism has never been reported for now in other *Cystiscus* or *Plesiocystiscus* species groups, but it is proposed here as the most likely hypothesis in the present state of the documentation. The observation of the soft parts of the animals in the two variant forms of *P. meridionalis* n. sp. would allow to confirm or to disprove our hypothesis.

The placement of our new species in the genus *Plesiocystiscus* is following the same speculative reasons as exposed for the species *P. consanguineus*.

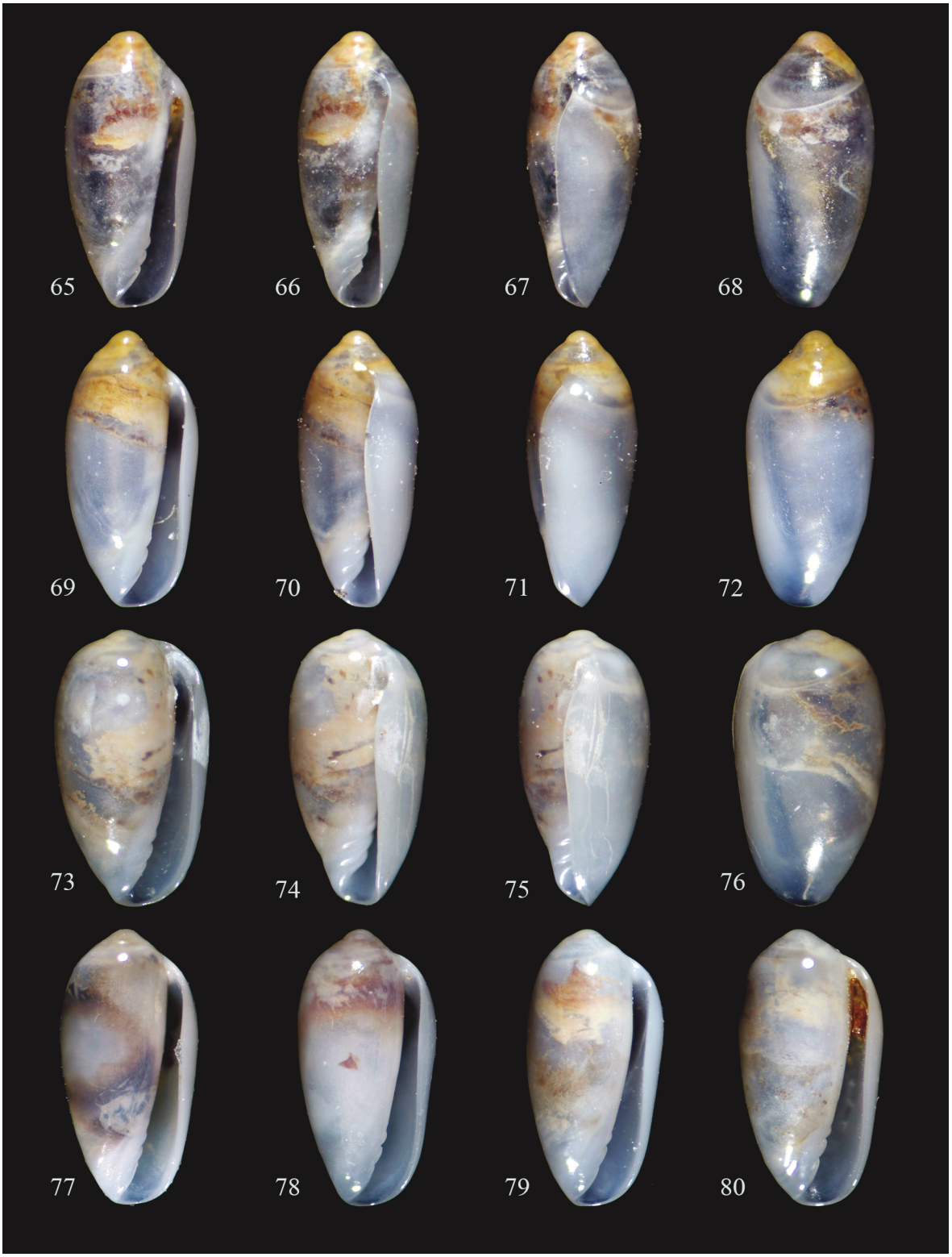
DISCUSSION

The three marginellid species reported from Ascension Island by E.A. Smith (1890b: 319) are "*Marginella capensis* Dunker" (wrong citation for *M. capensis* Krauss), "*M. zonata* Kiener", and "*M. dunkeri* Krauss", all these records not resulting apparently from direct observation but from the citation of previous authors. In fact, these three species belong to the genus *Volvarina* as *V. capense* (Krauss, 1848), *V. zonata* (Kiener, 1841) and *V. dunkeri* (Krauss, 1848), and they are well-known representatives of the South African fauna. As these species are quite large (L = 4 to 12 mm) and common in shallow waters of South Africa, their occurrence in the waters of Ascension Island would not be neglected in the samplings currently under study. So, we infer that these reports of E.A. Smith correspond to mistaken literature records about this locality.

Beside *Marginella* (*Volvaria*) *consanguinea*, E.A. Smith (E.A. Smith, 1890a: 266–267) did report two other cystiscid species from St. Helena. He recognized "*Marginella* (*Volvaria*) *cinerea* Jousseaume" - *Granula cinerea* Jousseaume, 1875, replacement name for *Marginella semen* Reeve, 1865 (not Lea, 1833), described with no locality - said to be represented by about 20 specimens in the Turton collection but not illustrated, and he described as new a tiny species as *Marginella* (*Volvaria*) *atomus* E.A. Smith, 1890 (E.A. Smith, 1897: pl. XXIII, fig. 12), based on 4 specimens coming from the same Turton collection.

Recognizing *Granula cinerea* in the fauna of St. Helena, E.A. Smith noted however that the syntype of *M. semen* deposited in NHMUK "is incorrectly said by Reeve to have four plaits on the columella", as only three plaits are discernible in this syntype, like in the specimens from St. Helena attributed to the species. E.A. Smith is noting also that the "Reeve's figure does not accurately represent the form of the spire, and the sutural line is too low down". In fact, the syntype of *M. semen* has a stout bulged tiny shell, with three very low and oblique columellar plaits poorly produced in the aperture (personal examination), and it does not match with any form known from St. Helena, including with *P. meridionalis* n. sp.: even if certainly attributable to the genus *Cystiscus* or the genus *Plesiocystiscus*, the shell of *Granula cinerea* (new name for *Marginella semen*) is characterized by a stouter oval-subcylindrical outline (versus subtriangular outline with tapered lower part in *Plesiocystiscus meridionalis*) and by the upper part of the third plait

Figures 49–50. *Marginella atomus* E.A. Smith, 1890, syntype NHMUK 1889-10-1-433–436, L = 1.1 mm; St. Helena Island. Figures 51–56. *M. consanguinea* E.A. Smith, 1890, St. Helena Island. Figs. 51-53: syntypes 5, 9 and 10, NHMUK 1889-10-1-397–411b, L = 2.3 mm, 2.3 mm, 2.1 mm, respectively. Figs. 54–56: syntypes 24, 26 and 28, NHMUK 1889-10-1-428-432, L = 2.7 mm, 2.05 mm, 2.2 mm, respectively. Figures 57–64: *Plesiocystiscus consanguineus*, L = 3.4 mm, 2.9 mm, 2.7 mm, 2.1 mm, 2.3 mm, respectively; St. Helena Island, Bouys Hole/Cavalley Hole, 28/04/2017, stn 0428/Q323, 15 m depth.



Figures 65–68. *Plesiocystiscus consanguineus*, L = 2.5 mm; St. Helena Island, Bedgellet Wreck, 06/04/2017, stn 170426/Q319, 18 m depth. Figures 69–72. *P. consanguineus*, L = 3.1 mm; St. Helena Island, Egg Islet, 20/04/2017, stn 170420/Q311, 8 m depth. Figures 73–76. *P. consanguineus*, L = 2.9 mm; St. Helena Island, 17/05/2017, stn 170517/157, 12 m depth. Figure 77. *P. consanguineus*, L = 3.2 mm; St. Helena Island, Merrimens Islet, 16/07/2016, stn 16/0716/155, 16 m depth. Figures 78–80. *P. consanguineus*, L = 3.2 mm, 3.0 mm, 2.9 mm, respectively; St. Helena Island, Peaked Islet, 09/07/2016, stn 16/07/09/152, 20 m depth.

Figures 81–96. *Plesiocystiscus meridionalis* n. sp. Figs. 81, 82: holotype MHNG-IM-0159466, L = 3.1 mm; St. Helena Island, Bouys Hole/Cavalley Hole, 28/04/2017, stn 0428/Q323, 15 m depth. Figs. 83–96: *P. meridionalis*, paratypes 1–14, L = 2.7 mm, 2.6 mm, 2.9 mm, 2.8 mm, 2.5 mm, 2.4 mm, 2.2 mm, 2.2 mm, 2.1 mm, 2.0 mm, 2.0 mm, 1.9 mm, 1.9 mm, 2.0 mm, respectively; St. Helena Island, Bouys Hole/Cavalley Hole, 28/04/2017, stn 0428/Q323, 15 m depth.

not standing out on the columellar edge. So, it seems that E.A. Smith recognized wrongly the species *Granula cinerea* Jousseaume, 1875 in the population that we are describing as new under the name of *Plesiocystiscus meridionalis*.

Marginella (*Volvaria*) *atomus* E.A. Smith, 1890 is represented by very small heart-shaped shells (rounded subtriangular) with narrow regular aperture and three produced and spaced columellar plaits (Figs 49-50: NHMUK syntype, L = 1.1 mm). This shell morphology of *Marginella atomus*, attributable to the genus *Cystiscus*, is not represented in the collection under study, despite the high number of individuals and stations at disposal. So, we cannot confirm that this species is really living in St. Helena. The locality data given by W. Turton being generally reliable, we wonder if this finding does result from an accidental transportation of empty shells by seaweeds drifting from South Africa, this process being suggested by E.A. Smith himself. We note that a similar species is described from Natal by Lussi & Smith (1998) as *Plesiocystiscus variegatus* (L = 1.1 mm), differing from *Marginella atomus* by its pinched lower part, its quite wider aperture, and its fourth columellar plait. However, the fact that four syntypes are occurring in the type lot of *Marginella atomus* makes the accidental transport of empty shells less evident, and the question of the effective occurrence of *Cystiscus atomus* (E.A. Smith, 1890) in the waters of St Helena remains.

A documentation about the external anatomy and chromatism of live animals (and possibly of the radula morphology) seems to be necessary for a verification of the generic status of the cystiscids of St. Helena, of the specific unity of *Plesiocystiscus meridionalis* from St. Helena, of *Gibberula monticola* and of *G. gemella* from Ascension, and for possible comparison with the fauna of South Africa.

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REFERENCES

Bakker P.A.J. & Swinnen F., 2021. Triphoridae (Gastropoda) from the island of Saint Helena and Ascension Island, with the description of three new species. Basteria, 85: 130–144.

Boyer F., 2004. Description of a new *Cystiscus* (Gastropoda: Cystiscidae) from the Mascarene Islands. Journal of Conchology, 38: 355–361.

Boyer F., 2019. About the supra-generic classification of the Marginelliform Gastropods: a morphological study. Biodiversity Journal, 10: 221–236.

Boyer F., 2023. An overview of the specific diversity in the genus *Cystiscus* Stimpson, 1865 and the description of 27 new *Cystiscus* species (Muricoidea: Cystiscidae) from the Walters Shoal, south-western Indian Ocean. Journal of Conchology, 44: 529–549.

Boyer F., 2024. Revision of the wavy ornated cystiscids (Volutoidea Cystiscidae) from the Dhofar (southern Oman) and description of new taxa. Biodiversity Journal, 15: 525–545.

Boyer F. & Renda W., 2022. Revision of *Gibberula philippii* (Monterosato, 1878) in a populational approach (Gastropoda Cystiscidae). Biodiversity Journal, 13: 443–478.
http://dx.doi.org/10.31396/Biodiv.Jour.2022.13.2.443.478

Boyer F., Renda W. & Swinnen F., 2024. Description de deux nouvelles espèces de *Gibberula* du Cameroun (Mollusca : Volutacea : Cystiscidae). Revue Suisse de Zoologie, 131: 139–143.

Coovert G.A. & Coovert H.K., 1995. Revision of the Supraspecific Classification of the Marginelliform Gastropods. The Nautilus, 109: 43–110.

Fedosov A.E., Caballer M.G., Buge B., Sorokin P.V., Puillandre N. & Bouchet P., 2019. Mapping the missing branchs on the neogastropod tree of life: molecular phylogeny of marginelliform gastropods. Journal of Molluscan Studies, 85: 440–452.

Fernandes F. & Rolán E., 1991. The Marginellidae (Mollusca, Gastropoda) of Principe Island (Republica de São Tome e Principe). Journal of Conchology, 34: 85–90.

Gofas S., 1989. The Marginellidae of Angola: the genus Gibberula. Journal of Conchology, 33: 109–139.

Gofas S. & Fernandes F., 1988. The marginellids of São Tome, West Africa. Journal of Conchology, 33: 1–30.

Houart R. & Swinnen F., 2023. Update of the genus *Claremontiella* (Gastropoda: Muricidae: Ergalataxinae) in the Atlantic with the description of a new species from Ascension Island. Gloria Maris, 61: 206–212.

Lussi M. & Smith G., 1998. Revision of the family Cystiscidae in South Africa with introduction of three genera and the description of eight new species. Malacologia Mostra Mondiale, 27: 2–23.

Nappo A. & Swinnen F., 2024. A new small-sized species of *Pedicularia* Swainson, 1840 (Gastropoda: Pediculariidae) from Ascension Island. Bollettino Malacologico, 60: 24–28.
https://doi.org/10.53559/BollMalacol.2023.19

Oliver J.D., Swinnen F. & Rolan E., 2023. Contribution to the knowledge of the family Pyramidellidae Gray, 1840 (Mollusca, Gastropoda) on the islands of Saint Helena and Ascension. Iberus, 41: 153–198.
https://zenodo.org/doi/10.5281/zenodo.8333901

Padula V., Wirtz P. & Schrödl M., 2014. Heterobranch seaslugs (Mollusca: Gastropoda) from Ascension Island, South Atlantic Ocean. Journal of the Marine Biological Association of the United Kingdom, 97: 743–752.

Poorten J.J. Ter & Swinnen F., 2019. *Americardia lindamaesae* spec. nov., a new cardiid from Asczension Island (Bivalvia, Cardiidae). Basteria, 83: 41–51.

Rolán E. & Fernandes F., 1997. The small marginelliform gastropods from Ghana (Neogastropoda, Cystiscidae). Argonauta, 11: 3–12.

Rolán E. & Gori S., 2014. New information on the marginellids of São Tome and Principe, with new records and the description of four new species. Iberus, 32: 1–25.

Rosewater J., 1975. An annotated list of the Marine Mollusks of Ascension Island, South Atlantic Ocean. Smithsonian Contributions to Zoology 189: 1–41.

Schwabe E. & Tsiamis K., 2014. Just undiscovered or invasive? The first record of a chiton (Mollusca: Polyplacophora) from the remote Ascension Island, southern Atlantic Ocean. Journal of the Marine Biological Association of the United Kingdom, 97: 727–733.
http://dx.doi.org/10.1017/s0025315414001076

Smith E.A., 1890a. Report on the Marine Molluscan Fauna of the Island of St. Helena. Proceedings of the Zoological Society of London, 1890 (2): 247–317, pls XXI–XXIV.

Smith E.A., 1890b. On the Marine Mollusca of Ascension Island. Proceedings of the Zoological Society of London, 1890 (2): 317–322.

Swinnen F. & Nappo A., 2022. New species of Cerithiopsidae H. Adams & A. Adams, 1853 (Mollusca, Gastropoda, Caenogastropoda) from Ascension Island. Gloria Maris, 61: 76–84.

Swinnen F. & Nappo A., 2023. New species of Rissoidae Gray, 1847 (Mollusca, Gastropoda, Caenogastropoda) from Ascension Island. Gloria Maris, 61: 231–237.