

# Rediscovery of *Caecum folini* Kisch, 1959 (Gastropoda, Caecidae)

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*Caecum folini* Kisch, 1959 (= *Caecum eburneum* de Folin, 1886 non C.B. Adams, 1852) is recorded and illustrated for the first time since its description. *Caecum uvea* Pizzini, Raines & Vannozi, 2013 is regarded as a junior synonym of the former.

Key words: Mollusca, Gastropoda, *Caecum*, New Caledonia, synonyms.

## INTRODUCTION

*Caecum folini* Kisch, 1959 (new name for *Caecum eburneum* de Folin, 1886 because of homonymy with *Caecum eburneum* C.B. Adams, 1852) was described from Cape York (northern Australia) based on the material collected during the legendary Challenger Expedition carried out by the Royal Society of London in the years 1873-1876 circumnavigating the globe. The identity of *C. folini* has been always uncertain because no specimens exactly corresponding to the original drawing was found since its description.

Pizzini et al. (2013) tentatively identified some specimens from New Caledonia, Fiji and Loyalty with this species (Pizzini et al., 2013: 21, figs 11C, D, 19B). The recent finding of some specimens from New Caledonia perfectly corresponding to the original drawing permitted to clarify the identity this species.

## MATERIAL AND METHODS

Abbreviations: MNHN = Muséum National d'Histoire Naturelle, Paris (France); NHMUK = Natural History Museum, London (United Kingdom). The examined material came from the "Campagne EBISCO" carried out by the MNHN in New Caledonia in 2005. Details on the campaign can be found at <http://expeditions.mnhn.fr/>. For the dates of pub-

lication of the Zoology part of the Report of the Scientific Results of the Voyage of H.M.S. Challenger During the Years 1873-76 I refer to Low & Evenhuis (2013).

## SYSTEMATIC PART

**Superfamily Truncatelloidea Gray, 1840**

**Family Caecidae Gray, 1850**

**Subfamily Caecinae Gray, 1850**

**Genus *Caecum* Fleming, 1813**

***Caecum folini* Kisch, 1959**

(Figs 1-9)

*Caecum eburneum* de Folin, 1886: 688, pl. 50, fig. 9. Type locality: "Station 186. September 8, 1874. Lat. 10°30'S, long. 142°18'E. Wednesday Island, Cape York, North Australia. 8 fathoms. Coral mud". Holotype NHMUK 1887.2.9.2365.

*Caecum folini* Kisch, 1959a: 329. Nomen novum for *Caecum eburneum* de Folin, 1886 (non C.B. Adams, 1852: 385, 535). *Caecum folini* — Kisch, 1959b: 42.

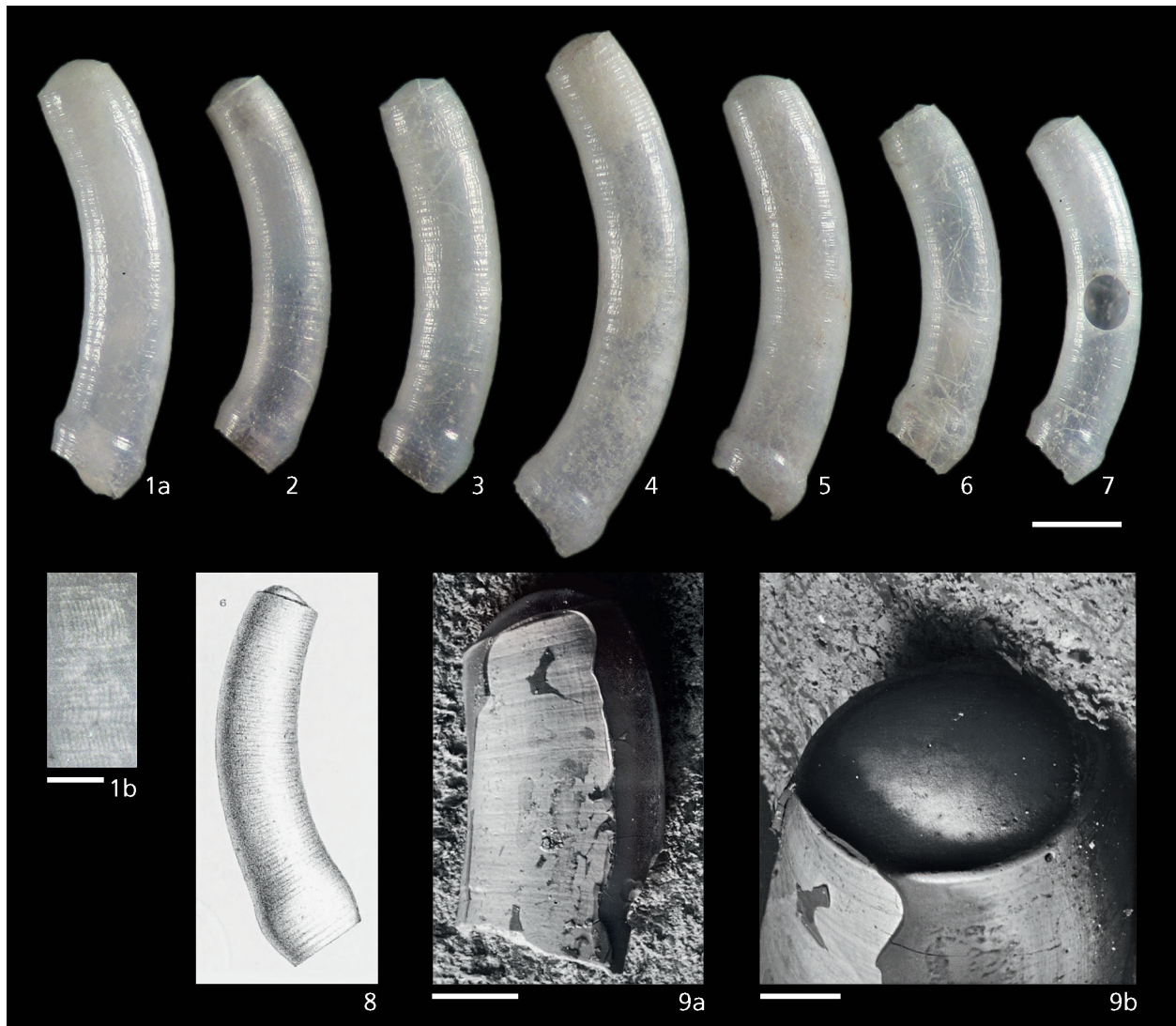
*Caecum uvea* Pizzini, Raines & Vannozi, 2013: 37, figs 14N-Q. Type locality: "Musorstom 7, 1992, Wallis Islands, sw Pacific: Stn DW 605, 13°21'S, 176°08'W, 335-340 m". Holotype MNHN 24835. **New synonym.**

Non:

*Caecum* cf. *folini* — Pizzini, Raines & Vannozi, 2013: 21, figs 11C, D, 19B (= most likely *Caecum gulosum* Hedley, 1899)

Material examined. — Holotype *Caecum eburneum* de Folin, 1886 NHMUK 1887.2.9.2365 (Figs 9a-b) = Wednesday Island, Cape York, North Australia. 8 fathoms, lat. 10°30'S, long. 142°18'E. The holotype of *C. eburneum* is broken and almost unrecognizable (Figs 9a-b); hence identification is only based on the original description and illustration. Holotype *Caecum uvea* MNHN-IM-2000-24835 = Wallis Islands, sw Pacific, 335-340 m, 13°21'S, 176°08'W. New record: New Caledonia, NW Bellona, Stn DW 2565, 20°21'S, 158°41'E, 414-419 m, 7 shells, Bouchet, Lozouet & Warén leg. 13.X.2005 (MNHN).

Original description. — "Testa minuta, parum arcuata, cylindrica, satis lata, haud elongata, nitida eboris con-



**Figs 1-9.** *Caecum folini* Kisch, 1959. 1-7. Specimens from EBISCO Campaign, New Caledonia (MNHN), same magnification; 1b: microsculpture of specimen in Fig. 1a. 8. Original drawing of *Caecum eburneum* (adapted from de Folin, 1886). 9. Holotype of *Caecum eburneum* de Folin, 1886, NHMUK 1887.2.9.2365. Scale bar: 500  $\mu$ m (1a, 2-7); 50  $\mu$ m (1b); 200  $\mu$ m (9a); 100  $\mu$ m (9b).

spectu, laevis, transversim irregulariter strigata, aperturam versus inflata, dein normalis et paululo restricta, subannulata. Apertura haud declivi, labro acuto. Septo mamillato, parum prominente. // Length, 0.087 in[ches]. Breadth, 0.02 in[ches]. // This species, like most of the smooth *Caecum* which have a mamillate septum, is in form almost cylindrical, and is brilliant, very faintly yellow, with the aspect of ivory. It is somewhat irregularly transversely striate. Its essential distinguishing characteristic is a somewhat marked swelling rather remote from the mouth towards which it again contracts, so as to present at the end nearly the same diameter as at an earlier point. This swelling presents some three or four folds, or feeble rings, close to the mouth, which is very slightly contracted, is not oblique, and presents a very sharp edge. The septum is roundly mamil-

late, but very little prominent.”

Remarks. — This species was originally described by de Folin as *Caecum eburneum*. *Caecum folini* Kisch, 1959 is a replacement name because the name *Caecum eburneum* was introduced earlier by C.B. Adams for another species from Panama.

In the original description of *Caecum eburneum* de Folin pointed out that the main character of this species was the gradual expansion of the tube in a rather remote position before the aperture with respect of other *Caecum*, followed by an equally slow contraction, so that the diameter of the tube before the swelling is approximately the same as at the aperture. Unfortunately, only an apical fragment of the holotype of this species survived (Figs 9a-b). Therefore, it was impossible to discern whether the swelling before the aper-

ture was really distinctive. In fact, it is known that sometimes de Folin's original drawings are imprecise, as in the case of *Caecum succineum* de Folin, 1880, where a mucronate septum is shown (see de Folin, 1886: Caecidae pl. 3, fig. 16; actually, this species shows no mucro) or *Strebloceras subannulatum* de Folin, 1880, in which the aperture is oriented in the opposite side (see de Folin, 1886: Caecidae pl. 1, figs 2-3), or some details are exaggerated or misleading, as in the case of *Caecum strigosum* (see de Folin 1868: 53, pl. 5, fig. 5). However, the finding of 7 specimens from New Caledonia proved that in this case the original drawing, here reproduced in Fig. 8, was rather accurate. Figs 1-7 show 7 shells collected during the EBISCO Campaign. Their length is in the range 2-3 mm, encompassing the length reported in the original description (2.2 mm). In particular, the shell in Fig. 2 corresponds well to the original description. The colour is semitransparent white in the case of fresh shells, whereas it is ivory white in the case of older shells (Figs 4-5), as reported in the original description and from which the name originally chosen by de Folin derived. The septum is low dome shaped in all cases, in agreement with the original description, whereas in the original drawing the top of the septum seems to be slightly displaced toward the dorsal side of the tube. This character is not observed in the holotype, which shows a simple dome shaped mucro like the New Caledonian specimens. There is a faint annular sculpture throughout the tube, more clear in correspondence of the swelling. The surface appears somewhat frosted due to the presence of a longitudinal sculpture of variable strength, not mentioned in the original description but still visible in the holotype (Fig. 9a). At high magnification, a longitudinal, worm-like microsculpture is visible (Figs 1b, 9b). This character has been observed only in specimen in Fig. 1 and is likely worn off in the others.

The specimen reported by Pizzini et al. (2013: figs 11C, D, 19B) as *Caecum* cf. *folini* probably belongs to *Caecum gulosum* Hedley, 1899 (see Vannozi, 2017: fig. 2K-M).

As can be seen, there is a certain degree of variability of the onset of the swelling, which is more or less gradual. In fact, while in the specimens in Figs 2 and 6 the swelling is gradual as indicated in the original drawing, in other cases the swelling develops more abruptly. Moreover, the lip is sometimes prolonged, making that those specimens recall *Caecum uvea* Pizzini, Raines & Vannozi, 2013, described from Wallis Is., north of New Caledonia. The holotype of this species, the only specimen so far known, corresponds well to the specimen illustrated in Fig. 4. Therefore, *Caecum uvea* should be considered a junior synonym of *Caecum folini*.

It is worth noting that both the specimens from New Caledonia and the holotype of *C. uvea* come from deep water stations, with a depth range of 335-419 m. This is unusual for this genus, which is known to live mostly in shallow water.

On the other hand, de Folin reported this species from 15 m depth. Therefore, it cannot be ruled out that the shells coming from deep water stations are in fact specimens rolled downslope after death.

Based on the above data, it can be concluded that *Caecum folini* is a valid species occurring in the south-west Pacific in a region including northwestern Australia, New Caledonia and Wallis Is.

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# The Iberian *Pyrenaearia cantabrica* (Hidalgo, 1873) clade: elucidation of the type localities of its taxa (Gastropoda, Pulmonata, Hygromiidae)

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Within the genus *Pyrenaearia* P. Hesse, 1921, *Pyrenaearia cantabrica* (Hidalgo, 1873), from the NW Iberian Peninsula, is the species with the widest distribution and variability. Herein we discuss the taxa included within the *P. cantabrica* clade sensu Elejalde et al. (2009), including photographs of types and live specimens, and we identify the correct type localities of the alpine taxa *P. schaufussi* (Kobelt, 1876), *P. oberthuri* (Ancey, 1884) and *P. daanidentata* Raven, 1988. For *P. cantabrica*, *P. schaufussi* and *P. oberthuri* lectotypes are designated. This provides a solid basis for further study of this clade. It is shown that some specimens used in past molecular studies of *Pyrenaearia* were attributed to a wrong taxon.

Key words: *Pyrenaearia*, Gastropoda, Hygromiidae, Spain, distribution.

## INTRODUCTION

*Pyrenaearia cantabrica* (Hidalgo, 1873) is a gastropod of the family Hygromiidae Tryon, 1866, with rounded, depressed shell, and present in a substantial part of the NW Iberian Peninsula. Within the genus *Pyrenaearia*, it is the species with the widest geographical distribution (Fig. 1) and also the largest altitudinal range. At low altitudes, it inhabits limestone rock faces and ridges; at higher altitudes it is also present in rocky slopes and karst areas. It is consid-

ered a polytypic species, with several local forms that were described as species, recently synonymised by Elejalde (2008) and Elejalde et al. (2009), with the exception of *P. daanidentata* Raven, 1988. The latter is an alpine taxon only known from a very small area. For all alpine taxa (*P. daanidentata*, *P. schaufussi* (Kobelt, 1876) and *P. oberthuri* (Ancey, 1884)) further study is required to determine their taxonomic status (species or subspecies; Elejalde et al., 2009). In some recent papers (Cadevall & Orozco, 2016; Bank & Neubert, 2017) these taxa are maintained as separate species. *Pyrenaearia velascoi* (Hidalgo, 1867), also from the NW Iberian Peninsula, is excluded from this review, as it belongs to a different clade (Elejalde et al., 2009).

In the literature (Elejalde et al. (2009), Cadevall & Orozco (2016) and previous papers) there is confusion about all three alpine taxa, due to uncertainty about the precise type localities of these. As a consequence, in the molecular studies of *Pyrenaearia* some taxa have been represented by specimens of another taxon, which could invalidate some of the conclusions. A systemic and multidisciplinary revision was undertaken of *P. cantabrica*, the synonymised taxa *P. cantabrica* var. *covadongae* Ortiz de Zárate López, 1956 and *P. poncebensis* Ortiz de Zárate López, 1956, and the alpine taxa *P. schaufussi*, *P. oberthuri* and *P. daanidentata*. In this study several taxonomic details are presented and the precise type localities of *P. schaufussi*, *P. oberthuri* and *P. daanidentata* are presented which, due to various mistakes, had not been located or had been misplaced. Additionally, the first photographs of several types (holotypes, paratypes, lectotypes, topotypes; Figs 2-18), live specimens (Figs 34-39) and their habitat (Figs 22-33) are presented.

In previous literature no sharp differentiation has been made between the taxa of *Pyrenaearia* living at higher altitudes. For example, Elejalde (2008: 46), citing Faci (1991: 509) described the scree between 1820-2060 m inhabited by *Pyrenaearia navasi* (Fagot, 1907) as 'alpine', whereas in