

# On the systematic position of the genus *Cryptazeca*

(Gastropoda: Pulmonata).

By

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With 8 figures.

**Abstract:** Detailed descriptions of the excretory and genital system of *Cryptazeca monodonta* (FOLIN & BERILLON 1877) are presented in this work. The foot morphology published by the authors of this genus is compared with our observations on it. The genital system of *C. vasconica* (KOBELT 1894) is also described.

The occurrence of an orthurethrous excretory system in *Cryptazeca* FOLIN & BERILLON 1877 is noticed. Thus, we propose to change its taxonomical position from suborder Sigmurethra, family Ferussaciidae to suborder Orthurethra, family Cochlicopidae.

## Introduction.

The genus *Cryptazeca* was included by PILSBRY with *Ferussacia*, *Ceciloides*, *Azeca*, *Cochlicopa* and five other genera in the same family (Ferussaciidae) in the Orthurethra (PILSBRY in WATSON 1928). *Hypnophila* was considered a subgenus of *Azeca*. Posteriorly WATSON (1928) showed the existence of a sigmurethrous excretory system in *Ferussacia* and *Ceciloides* after detailed study of the pallial organs of both genera. This led to the separation of the families Cochlicopidae, which remained in the Orthurethra (with the genera *Azeca*, *Cochlicopa* and *Hypnophila*), and the family Ferussaciidae, which was assigned to the suborder Sigmurethra (with *Ferussacia*, *Ceciloides* etc.) (ZILCH 1959).

WATSON (1928) following the figures and considerations about the foot morphology published by FOLIN & BERILLON (1877) and BARROIS (1877) and considering the existence of a foot fringe and caudal mucous gland, regarded this genus to be closely related to *Ferussacia* and *Ceciloides* rather than to the Orthurethra. Therefore, in this reorganization the genus *Cryptazeca* was finally included in the family Ferussaciidae (ZILCH 1959, 1973).

Recently GITTENBERGER (1983) makes a revision of the genus *Cryptazeca* indicating the great conchological similarity of this genus with *Hypnophila* and says (: 312) "With the

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available anatomical data I consider the classification of the genus *Cryptazeca* insufficiently argued and, at least to me, the question remains whether the observed conchological similarities between *Hypnophila* and *Cryptazeca* are due to convergent evolution, or to a phylogenetic relationship closer than that suggested by classifying these genera in different suborders". Since it had been impossible to find any alive specimen of *Cryptazeca*, new examinations of this genus, from the South-West of France and Cantabrian Mountains, could not been done, and it had been impossible during a century to give new data in any way.

Now, the find of some living specimens of *Cryptazeca* has allowed us to give a description of the excretory and genital systems of this genus and to compare our observations with the available literature.

## Results.

### Genital system:

*Cryptazeca monodonta* (5 specimens from Zuberoa. Basses Pyrénées):

Except for the distal part, the penis is elliptical in shape. The inner wall of the penis is strongly thickened, giving a ring-shaped stimulatory organ. The surface of this stimulator is covered by some small papillae (fig. 6). These papillae are composed by a shaped and curved spinule placed above a semicircular base. The penial retractor muscle inserts at the very end of the penis. There is no epiphallus. The vas deferens inserts near the penial retractor muscle. The vagina is totally covered by a yellowish coloured perivaginal gland. The bifurcation of the oviductus and the spermathecal duct is strongly enlarged. The bottom of the spermathecal duct has the same diameter as the beginning of the oviductus. The long and broad bursa copulatrix is about 1/3 the length of the spermathecal duct; both together are twice as long as the penis.

*Cryptazeca vasconica* (3 specimens from Carranza. Biscay):

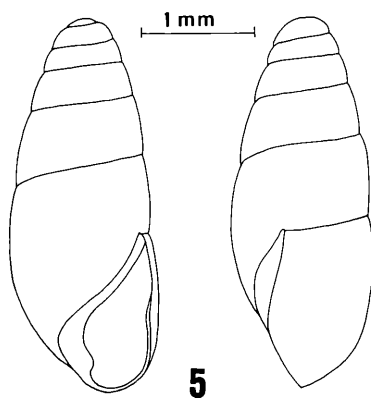
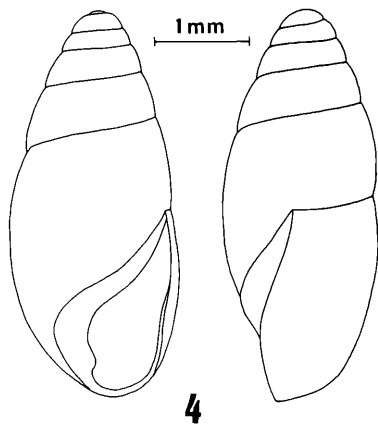
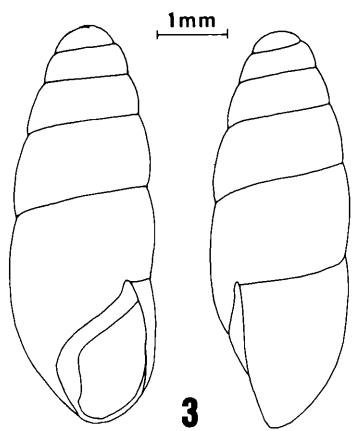
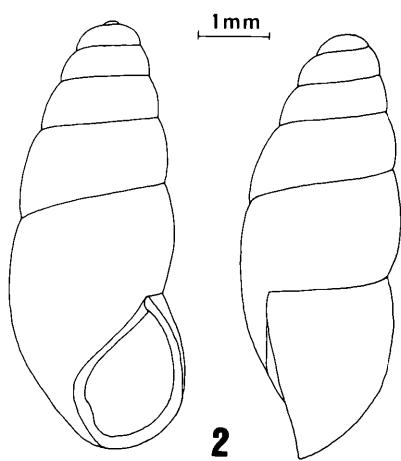
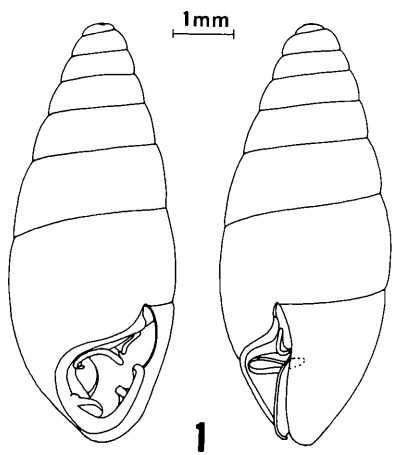
The distal part of the penis is as broad as the vagina. The penis is enlarging proximally and in the central part it becomes three times thicker than in the proximal one. The distal fourth part becomes narrower and its diameter is 1/2 that of the central part. The inner wall of the penis is thickened making a stimulatory organ, which is covered by some small papillae. These papillae are very similar to that described in *C. monodonta*, but more curved (fig. 7). The penial retractor muscle and the vas deferens insert at the very end of the penis. There is no epiphallus. As in *C. monodonta*, the vagina is covered by a perivaginal gland. The upper part of the vagina is enlarged. The spermathecal duct is as broad as the vas deferens and it leads to a small bursa copulatrix.

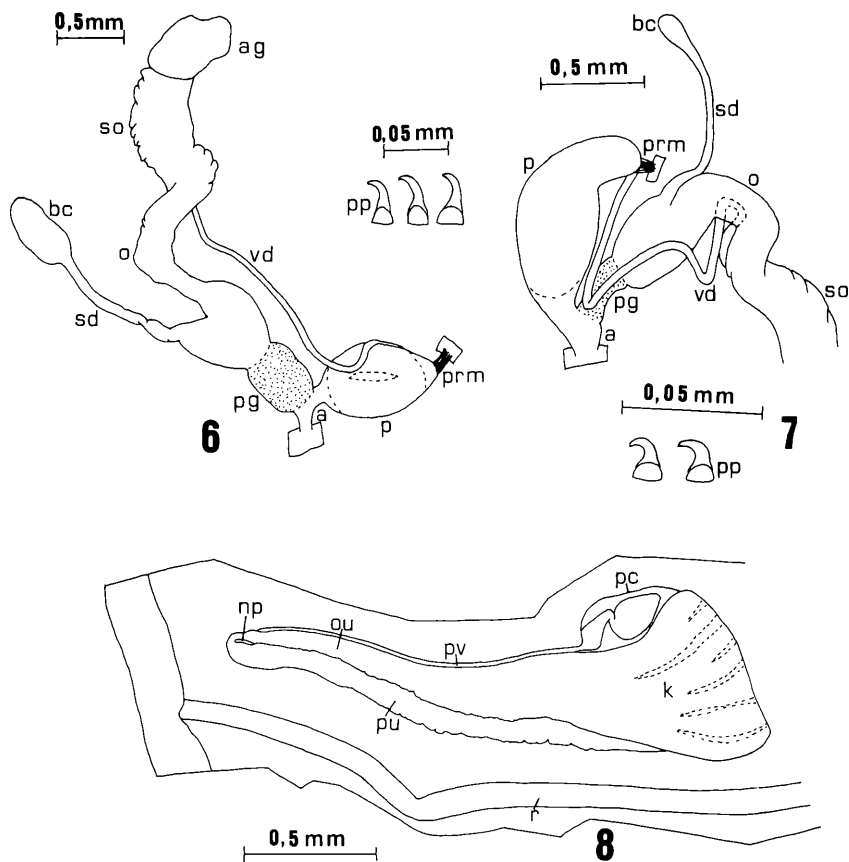
### Excretory system:

The excretory system of *Cryptazeca monodonta* (fig. 8) shows the typical morphology of an orthurethrous system: The kidney is long and divided into two parts, a broad one (nephridial sac) and a distal one being more narrowed (orthureter). The nephridial pore is located at the apex of the orthureter. In this part the orthureter leads to a closed primary ureter. The primary ureter has the same length as the orthureter.

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Figs. 1-5. — 1) *Azeca goodalli*, 2) *Cochlicopa lubrica*, 3) *Hypnophila boissii*, 4) *Cryptazeca monodonta*, 5) *Cryptazeca vasconica*. ►





Figs. 6-8. — 6) *Cryptazeca monodonta*, genital system; 7) *Cryptazeca vasconica*, genital system; 8) *Cryptazeca monodonta*, excretory system. — a: atrium, k: kidney, ag: albumen gland, np: nephridial pore, bc: bursa copulatrix, ou: orthureter, o: oviductus, pc: pericardium, p: penis, pu: primary ureter, pg: perivaginal gland, pv: pulmonary vein, pp: penial papillae, r: rectum, prm: penial retractor muscle, sd: spermathecal duct, so: spermoviductus, vd: vas deferens.

### Foot morphology:

In the original description of the foot of *C. monodonta*, FOLIN & BERILLON (1877) say that there is a well defined peripodal groove in it. In the studied specimens of *Cryptazeca*, we have not seen this peripodal groove, and to verify it, we have made some histological sections of the foot of a few specimens of *Cryptazeca*. In these preparations we have been able to see that apart from the lacking of the cited peripodal groove, the histology of the foot of our specimens agrees with the data published by BARROIS (1877) for *C. monodonta*. Thus, in the rear part of the foot, there is a great accumulation of some voluminous unicellular mucous glands. They do not constitute any special gland with own morphology (see MOL & al. 1970). These mucocytes, located under the epithellium, open independently into the foot surface among the tegumentary cells.

## Shell:

A good description of the shell of the four known species of *Cryptazeca* has been published by GITTENBERGER (1983). On the basis of this work and our observations we can see a great similitude between this genus and the family Cochlicopidae. Thus, the following features are common to the genera *Cryptazeca*, *Azeca*, *Cochlicopa* and *Hypnophila*:

- Ovoid-conical shaped shell.
- Shell very glossy, translucent, pale to dark brown colored (sometimes white).
- Umbilicus absent.
- Very sharp parieto-palatal edge (somewhat less in *Cochlicopa*).
- Pear-shaped aperture.
- Outer lip slightly thickened innerly.
- Inner margin of the mouth with a callus having a well defined edge. It extends until the columellar bottom.
- Transverse sculpture obsolete (except in *Cryptazeca vasconica* and *C. subcylindrica*) and shell with a microsculpture of irregular spiral lines.
- Shallow sutures.

Moreover the central part of the outer lip is slightly curved inward in *Cryptazeca* and *Hypnophila*. In the genus *Cryptazeca* the columella is obliquely truncated at its bottom, giving the appearance of a small columellar tooth; in *Cochlicopa* and *Hypnophila* there is a small columellar denticle in the same position; in *Azeca* the internal denticles and folds are more numerous.

## Conclusions.

As we have seen, the excretory system of the genus *Cryptazeca* shows an orthurethrous kidney; this leads us to change the taxonomical position of this genus, from the suborder Sigmurethra, family Ferussaciidae, to the suborder Orthurethra. We propose to include the genus *Cryptazeca* in the family Cochlicopidae on the basis of its great conchological similarities with the genera *Azeca*, *Cochlicopa* and *Hypnophila*.

The genital system of *Cryptazeca* is similar to the genital system described in *Hypnophila* (GIUSTI 1976): There is nor penial appendage, nor diverticulum of bursa copulatrix; there is no epiphallus.

From the study of the genital system, we conclude that the peculiar penial papillae as well as the existence of a perivaginal gland can be used as diagnostic characteristics for the genus *Cryptazeca*.

**Acknowledgments:** This work has been supported by a fellowship of the Basque Government to study the orthurethrous molluscs of the Basque country.

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Zeitschrift/Journal: [Archiv für Molluskenkunde](#)

Jahr/Year: 1987

Band/Volume: [118](#)

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Artikel/Article: [On the systematic position of the genus \*Cryptazeca\* \(Gastropoda: Pulmonata\) 57-62](#)