

THE TAXONOMIC STATUS OF *XEROPLEXA* MONTEROSATO, 1892 (PULMONATA: HELICIDAE: HELICELLINAE), A SURPRISE

LA SITUACION TAXONÓMICA DE *XEROPLEXA* MONTEROSATO, 1892 (PULMONATA: HELICIDAE: HELICELLINAE), UNA SORPRESA

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RESUMEN

"*Helix*" *setubalensis* es la especie tipo de taxon nominal *Xeroplexa*. Se describe por primera vez la estructura de la genitalia de esta especie. De manera bastante sorprendente, da como resultado que *Xeroplexa* debería ser considerado como un sinónimo joven de *Candidula*. La estrecha similitud conchológica entre *Candidula setubalensis*, *Trochoidea barceloi* y *Helicella orzai* es debida a una triple convergencia evolutiva.

SUMMARY

"*Helix*" *setubalensis* is the type species of the nominal taxon *Xeroplexa*. The structure of the genitalia of this species is described for the first time. Quite surprising, it turned out that *Xeroplexa* should be considered a junior synonym of *Candidula*. The striking conchological similarity between *Candidula setubalensis*, *Trochoidea barceloi* and *Helicella orzai* is due to triple convergent evolution.

Palabra clave: Mollusca, Helicellinae, *Xeroplexa*, *Candidula*, Península Ibérica, Taxonomía.

Key words: Mollusca, Helicellinae, *Xeroplexa*, *Candidula*, Iberian, taxonomy.

INTRODUCTION, THE HELICELLINAE

In the present paper the classical interpretation is given to the Helicellinae, which are regarded as a subfamily of the Helicidae with numerous species occurring in (rather) warm and dry habitats. The species are characterized conchologically by shells without a clearly reflected outer lip of the aperture, usually coloured whitish, with an additional, more or less regular pattern of brownish, spirally arranged blotches and/or spiral lines or bands. Anatomically the species are characterized by the position of the right tentacular retractor muscle, which is running free, i. e. not crossing between penis and vagina.

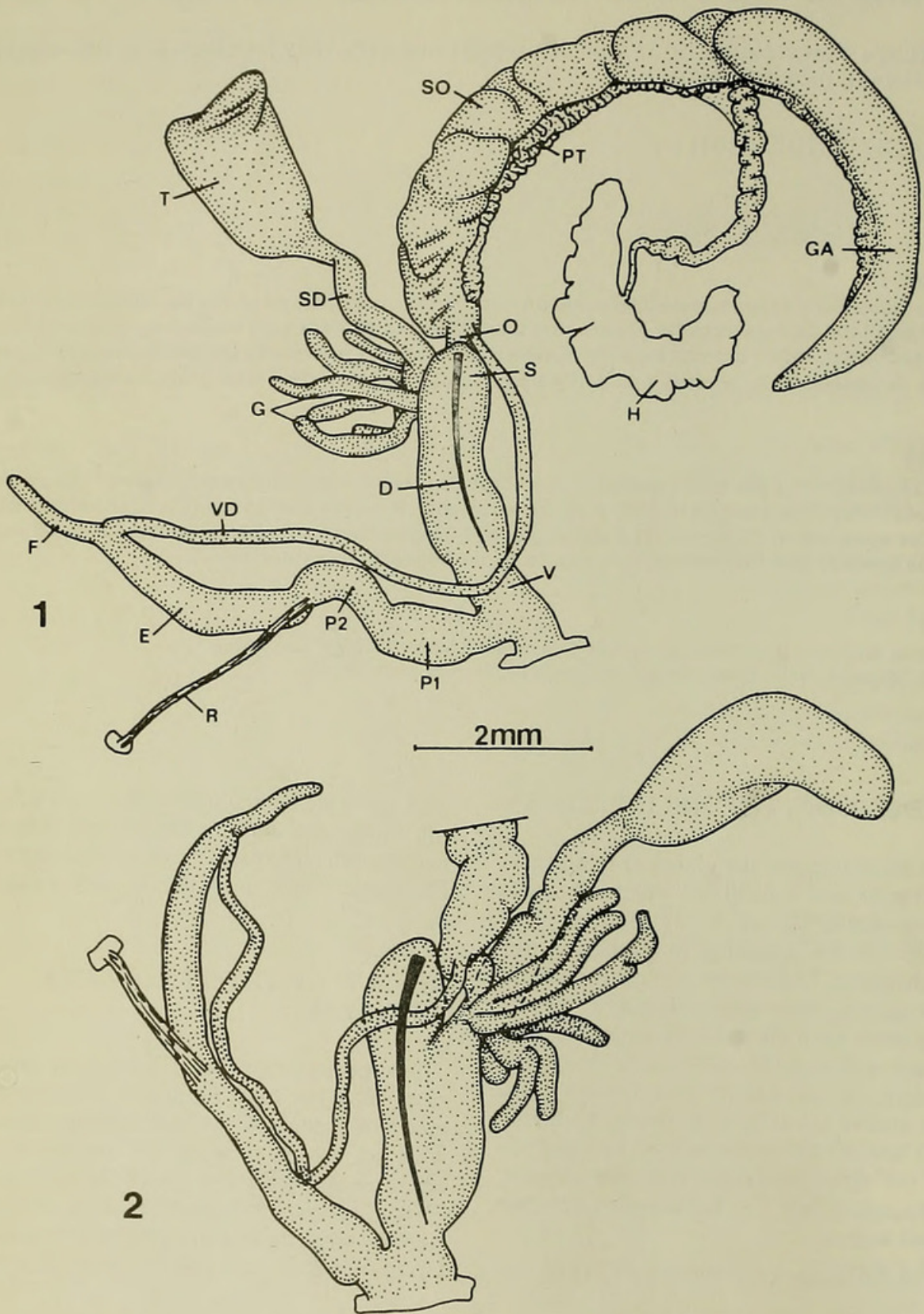
Certain authors (e. g. Shileiko, 1978) do not

look upon the Helicellinae sensu auct. as a natural entity and classify the various helicelloid genera with more than one other subfamily of the Helicidae. This problem is not dealt with here.

REVIEW OF THE *XEROPLEXA* PROBLEM

The genus-group name *Xeroplexa* Monterosato, 1892 has most frequently been used for a group of species of the Helicellinae with shells with an angulate or keeled periphery. This because the type species of *Xeroplexa*, viz. "*Helix*" *setubalensis* Pfeiffer, 1850, is characterized by shells with a strongly keeled periphery. Up till now this type species, originally descri-

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bed from the coastal hills near Setúbal in Portugal, has remained unknown anatomically. Conchologically, however, it is quite similar to *Trochoidea barceloi* (Hidalgo, 1878) from eastern Spain.

Although convergent evolution in shell morphology is known to be common among the Helicellinae, it has only rarely been questioned (see below) whether "*Helix*" *setubalensis* and *Trochoidea barceloi* should actually be considered congeneric. The latter species is characterized anatomically by two rudimentary dart sacs, without darts, associated with the vagina (Ortiz de Zárate López, 1943: 64). This is the configuration typical for *Trochoidea* Brown, 1827. The foregoing explains why e. g. Zilch (1960: 670) mentioned "*Trochoidea* (*Xeroplexa*) *setubalensis*" as the type species of a subgenus *Xeroplexa*, characterized by depressed and more or less strongly keeled shells, of the genus *Trochoidea*.

Forcart (1976: 143), while revising eastern Mediterranean Helicellinae, proposed to use the subgeneric name *Xerocrassa* Monterosato, 1892, for all *Trochoidea* species without an appendix inserting on the genital atrium, irrespective of their conchological characters. Because shell characters are notoriously unreliable for a (sub)generic assignment in Helicellinae, I follow this proposal. The problem remains whether *Xeroplexa* should be considered a synonym of the simultaneously published taxon *Xerocrassa*, or not.

The status of *Xeroplexa* became more problematic with the discovery of *Helicella bierzona* Gittenberger & Manga, 1977 and *Helicella*

orzai Gittenberger & Manga, 1981. These two species have strongly keeled shells, closely resembling those of "*Helix*" *setubalensis* (see Gittenberger & Manga, 1981: 122, figs. 1-3). Consequently, Gittenberger & Manga (1977: 178, foot-note) indicated that, after conchological characters only, *Xeroplexa* might also belong in the synonymy of *Helicella* Férussac, 1821. From a zoogeographical point of view this might even be considered more probable.

During the last few years I tried in vain in various collections to find specimens (shells) of "*Helix*" *setubalensis* with at least dry remains of the soft parts inside. Some friends, visiting the surroundings of Setúbal brought me snails from there, but not the right ones. Finally Mr. T. E. J. Ripken (Delft) himself visited this part of Portugal and most kindly collected several live specimens of the snails in request.

This material brought the solution of the *Xeroplexa* problem.

SOLUTION OF THE PROBLEM

Quite surprising it turned out that *Xeroplexa* Monterosato, 1892 should be considered a junior synonym of *Candidula* Kobelt, 1871 because of the structure of the genitalia of its type species. *Candidula setubalensis*, as this species should be called, has a prominent, single dart sac, with a long dart.

Candidula setubalensis (Pfeiffer, 1850), genitalia. Figs. 1, 2.

Two specimens have been dissected.

Figs. 1, 2.— *Candidula setubalensis* (Pfeiffer, 1850), genitalia; Portugal, district of Setúbal, SW. of Setúbal, grassy slope along the coastal road c. 100 m W. of a name-board indicating "Setúbal", UTM NCO6; T.E.J. Ripken leg., 16-XI-1983.

Abbreviations: D, dart; E, epiphallus; F, flagellum; G, glandulae mucosae; H, glandula hermaphrodítica; O, oviduct; P, penis (1, proximal part; 2, distal part); PT, prostata; R, penial retractor muscle; S, dart-sac; SD, spermathecal duct; SO, spermoviduct; T, spermatheca; V, vagina; VD, vas deferens.

Candidula setubalensis (Pfeiffer, 1850), genitalia, Portugal, distrito de Setúbal, S.O. de Setúbal, pendiente herbácea a lo largo de la carretera de la costa c. 100 m. O. del cartel que indica "Setúbal", UTM NCO6; T.E.J. Ripken leg., 16-XI-1983.

Abreviaciones: D, dardo; E, epifalo; F, flagelo; G, glándulas mucosas; H, glándula hermafrodita; O, Oviducto; P, pene (1, parte proximal; 2, parte distal; PT, prostata, R, músculo retractor del pene; S, Saco del dardo; SD, conducto de la espermateca, SO, ovispermiducto; T, espermateca; V, vagina; VD, vaso deferente.

The flagellum measures clearly less than half the length of the epiphallus; the latter is c. as long as the penis. The proximal part of the penis is slightly broadened over most of its length, corresponding with the presence of a blunt penial papilla inside; the distal part is somewhat more slender and about as long as the proximal part. There is a single, large dart-sac, with a simple, curved dart inside. The dart-sac is united with the vagina for nearly two-thirds of its length. The distal, free part of the vagina is only about half as long as the much broader free distal part of the dart-sac; it equals the much narrower oviduct in length. There are six or seven extremities of the glandulae mucosae. The spermathecal duct is in line with the vagina and about as long as the comparatively large, elongated oval spermatheca (in fig. 1 the spermatheca is dented apically).

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