

The Cyprian *Albinaria* species, keywise descriptions, illustrations and an annotated check-list (Gastropoda Pulmonata: Clausiliidae)

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Our knowledge concerning the Cyprian *Albinaria* species is summarized. Five endemic species, one of which with two subspecies, are reported from the island. A possible sixth species was not available for study.

Key words: Gastropoda, Pulmonata, Clausiliidae, *Albinaria*, taxonomy, Cyprus.

INTRODUCTION

The Cyprian species of the very speciose genus *Albinaria* Vest, 1867 (Gastropoda Pulmonata: Clausiliidae) are poorly known. Only Nordsieck (1977: 300) summarized his preliminary views concerning these gastropods. He stated that probably the Cyprian *Albinaria* species constitute a monophyletic group, characterized conchologically by for example a rather broad apex ("sie sind z. B. durch \pm plumpe Gehäuse-Spitze ausgezeichnet"). Without mentioning underlying arguments, he classified *Albinaria ungeri* (Zeilebor, 1865), *A. virgo* (Mousson, 1854) and *A. rollei* (Boettger, 1896) together as the "Gruppe der *virgo*", noting that *A. rollei* might have only subspecific status next to *A. virgo*. In addition *A. greeni* Tomlin, 1935, *A. mavromoustakisi* Brandt, 1961, *A. saxatilis* (Pfeiffer, 1846) and *A. avia* (Charpentier, 1852) were combined as the "Gruppe der *saxatilis*", with the comment that the initial two taxa might prove to be subspecies of a single species.

While revising some groups of non-marine Cyprian molluscs, several samples of *Albinaria* spec. could be studied conchologically. Doing so, results were obtained that deviated considerably from Nordsieck's provisional classification. *A. ungeri* and *A. virgo* turned out to be interconnected by transitional populations that are found in various areas, i.e. not concentrated in a connecting zone. Therefore, these nominal taxa cannot even be given subspecific status. *A. rollei* proved to be sympatric with *A. virgo* (not in mixed populations as far as known) and clearly separate. Although *A. greeni* and *A. mavromoustakisi* do both have decollate shells, they differ considerably in additional characters, so that a combination into a single species cannot be taken into serious consideration. The allopatric and conchologically similar *A. saxatilis* and *A. avia* can be classified together as subspecies.

The present paper solely aims to provide a better starting point for future research concerning the species group in question. Therefore, an identification key, an annotated check-list and illustrations of the various taxa are given.

It remains questionable whether the five Cyprian *Albinaria* species do constitute a monophyletic group indeed. Convincing autapomorphic characters did not come to light. All the species are sinistral. Quantitative data concerning the relative apical

widths of the shells of the various species were not given by Nordsieck and are not provided by the present authors; such measurements are not considered promising.

Dr. F. E. Loosjes kindly informed us that a problematic *Albinaria*, in fact a sixth Cyprian species, has been collected at Liveras (UTM VE91) by Mr. J. Nienhuis.

We wish to thank here Messrs. Z. Bar (Hilversum), L. J. M. Butot (Bilthoven), J. Hemmen (Wiesbaden), A. Hovestadt (Rotterdam), Dr. R. Janssen (Frankfurt am Main), H. K. Mienis (Jerusalem), and Dr. F. E. Loosjes (Wageningen), who all contributed relevant data to the present paper.

IDENTIFICATION KEY FOR ALBINARIA

1. Adult shells usually without apical whorls (decollate): 2
 - Undamaged adult specimens not decollate: 3
2. Shell width 3.2-3.8 mm; sculptured with prominent sharp riblets, which are as broad as the interstices or narrower; juvenile specimens show that the initial teleoconch whorls are flattened and sometimes not provided with a prominent sculpture: *A. greeni* (figs. 7, 8)
 - Shell width 3.0-3.4 mm; all teleoconch whorls sculptured with coarse riblets, which are broader than the interstices (only the cervical ribs more widely spaced); the initial teleoconch whorls are moderately strongly inflated and provided with a prominent sculpture: *A. mavromoustakisi* (figs. 9, 10)
3. All teleoconch whorls prominently sculptured with riblets: 4
 - Riblets lacking on (nearly) all whorls (there may be a prominent cervical sculpture): 5
4. Shell with a rather broad, oblique, base, provided with a furrow; profile of the body-whorl with sides that are about parallel with the columella; lunule situated laterally, clearly seen when the shell surface is wetted; prominent ribs with an indistinct microsculpture in between; cervical part sculptured with very prominent, nearly straight, ribs that have only few branches; height 11.5-15.9 mm, width 2.9-3.7 mm: *A. saxatilis avia* (figs. 5, 6)
 - Shell basally keeled and provided with a furrow that accentuates the keel; in profile the sides of the body-whorl converge towards the shell base; lunule situated dorsolaterally and hardly or not discernible even if the shell is wetted; prominent ribs with a prominent microsculpture in between, which makes the ribs less clearly separate from the background; cervical part sculptured with very prominent, somewhat irregular, ribs that have some branches; height 13.6-19.1 mm, width 3.25-4.4 mm: *A. saxatilis saxatilis* (fig. 4)
5. Shell with a prominent basal keel; subcolumellar lamella indiscernible, even in oblique view; height 14.8-20.5 mm, width 3.4-4.4 mm: *A. virgo* (figs. 2, 3)
 - Shell not prominently keeled, somewhat inflated basally; subcolumellar lamella clearly discernible in oblique view; height 18.1-23.2 mm, width 4.1-4.6 mm: *A. rollei* (fig. 1)

SYSTEMATIC LIST OF THE TAXA, WITH SYNONYMS, LOCALITY DATA AND ADDITIONAL NOTES

For collections the following abbreviations are used: Bar, Z. Bar, Hilversum; Hem, J. Hemmen, Wiesbaden; Hov, A. Hovestadt, Rotterdam; HUJ, Hebrew University, Jerusalem; Neu, W. H. Neuteboom, Heemskerk; RMNH, Rijksmuseum van Natuurlijke Historie, Leiden; SMF, Senckenberg-Museum, Frankfurt am Main. Localities are recorded with the UTM 10 km-grid code.

Albinaria rollei (Boettger, 1896)

(figs. 1, 11)

Clausilia (Albinaria) rollei Boettger, 1896: 126 ("Gebirge Pentadactylo auf Cypern"); Holotype SMF 68667 (Zilch, 1977: Taf. 28 Fig. 37), Paratype SMF 68668.

Material. — Mt. Pentadactylos, SW. of Lapithos (= 25 km NW. of Nicosia), 750 m alt., WE20 (RMNH); 15 km NE. of Nicosia, WE40 (HUJ); "Halevka near" Kythrea, ?WE40 (RMNH).

Range (fig. 11). *A. rollei* is a rare species, only known from a restricted part of the mountains northwest and northeast of Nicosia.

Notes. — According to Boettger (1896: 127) *A. rollei* is less closely related to *A. virgo* and *A. ungeri* than these two taxa are mutually. Nordsieck (1977: 300), in contrast, preferred to classify *A. ungeri* as a separate species, opposite the other two taxa, for which he suggested a subspecific status.

The present authors found that *A. rollei* can always be distinguished easily, whereas *A. virgo* and *A. ungeri* are connected by numerous intermediate forms in such a way that they cannot even be considered subspecies.

Albinaria virgo (Mousson, 1854)

(figs. 2, 3, 11)

Clausilia virgo Mousson, 1854: 387 ("entre Cérines et Nicosie"); syntype SMF 68676 (fig. 2).

Clausilia ungeri Zeebor, in Zeebor & Kotschy, 1865: 593 ("Cypern"); syntypen SMF 68671/2 (fig. 3).

Material. — Nicosia, WD29 (SMF); Mt. Buffavento (= Voufaventon), WD39 (HUJ, SMF); (Agios Ioannis) Chrysostomos, WD39 (SMF); Lapithos, WE10 (HUJ); northern slope of Mt. Kornos near Lapithos, 660-830 m alt., WE10 (SMF); Sina monastery, 5 km S. of Lapithos, WE10 (SMF); St. Hilarion castle (= Agios Ilarion), 2000, 2300 and 2500 ft., WE20 (Hov, HUJ); Kyrenia, WE20 (HUJ, SMF); Agirta (= Aghirda), WE20; Mt. Pentadactylos, SW. of Lapithos, WE20 (HUJ); Bellapais, WE30 (SMF); Mt. Armenica, 20 km NE. of Nicosia, WE40 (SMF); "Haleiga" (? = "Halevga" near Kythrea, ?WE40 (HUJ); Karpas peninsula, "Sinan Monastery" (? near Sina Oros), WE81 (RMNH).

Range (fig. 11). — This species is distributed in the narrow mountain chain along the northern coast of Cyprus.

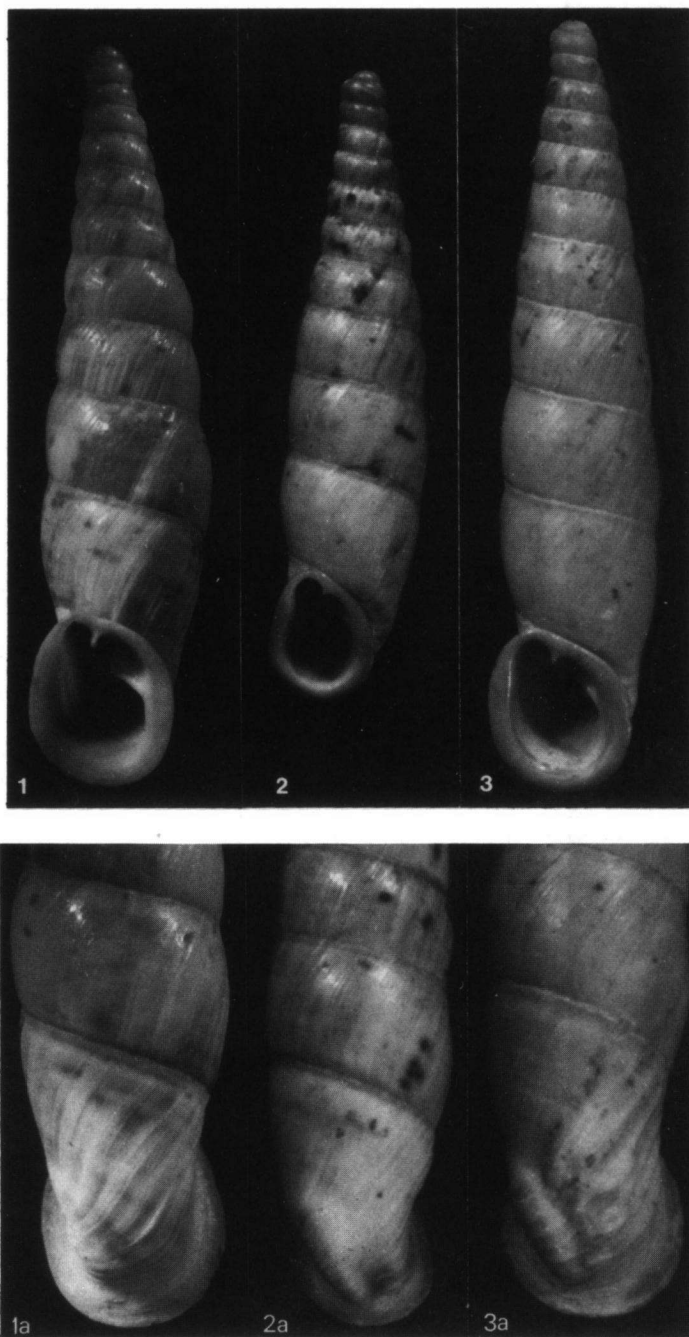
Notes. — In this species the cervical sculpture varies between obsolete and very prominent irregular radial wrinkles. Within a single population the entire range of variation is not developed, however. Because the two morphologically extreme types on which, according to the syntypes, *A. virgo* and *A. ungeri* were based, are not clearly restricted to separate ranges, subspecific status cannot be accepted here.

Albinaria saxatilis saxatilis (Pfeiffer, 1846)

(figs. 4, 12)

Clausilia saxatilis Pfeiffer, 1846: 94 ("Cyprus"); syntypes not seen.

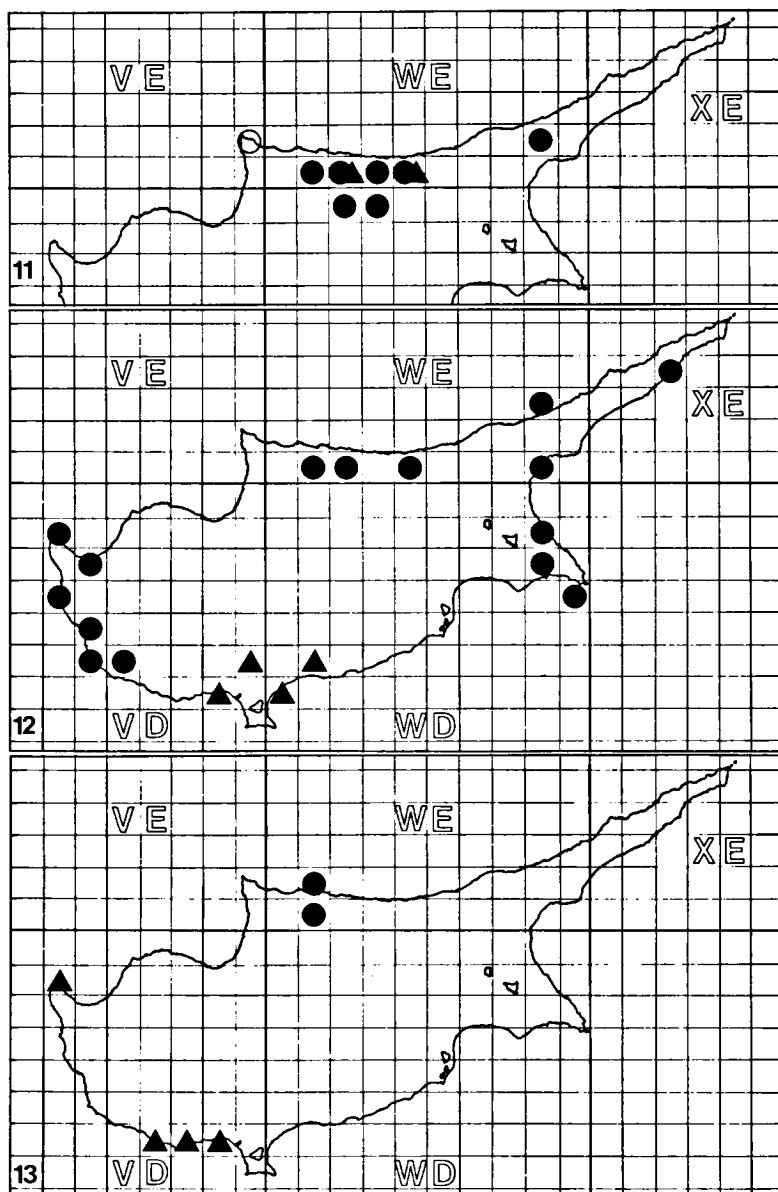
Material. — (Cape) Lara, VD36 (Hov); Agios Georgios (= Ayios Yeoryios), VD36 (Hov); "Baths of Aphrodite" (= 4.5 km NW. of Neokhorio, = Neon Chorion), VD38 (Bar); Paphos, Gladstone Street, VD44 (Neu); Kato Paphos, VD44 (Hem, HUJ, Neu); Ayios Neophytos, VD45 (Hem); 2 km NW. of Peyia, VD45 (Bar); 1 km N. of Peyia, VD45 (Hem); 2.5 km W. of Polis, VD47 (Hem); Yeroskipos, VD54 (Bar); 1 km W. of Ayia Napa, WD87 (Hem); Famagusta, WD88 (HUJ); Cape Greco, WD96 (Hov); Sina monastery, 5 km S. of Lapithos, WE10 (SMF); Kyrenia, WE20 (HUJ, SMF); Mt. Armenica, 20 km NE. of Nicosia, WE40 (SMF); 15 miles N. of Famagusta, WE80 (HUJ); Dhavlos, WE82 (RMNH); Rizokarpaso, XE23 (HUJ, SMF).



Figs. 1-3. Cyprian *Albinaria* species without prominent sculpture. 1, *A. rollei*, near Kythrea, height 19.6 mm (RMNH, ex colln. Brandt); 2, *A. virgo*, syntype, Cyprus, height 16.9 mm (SMF 68676); 4, *A. virgo*, syntype of *ungeri*, Cyprus, height 20.5 mm (SMF 68671). Figs. 1a-3a show the cervical parts of the same shells. Figs. 1-3, $\times 5$; figs. 1a-3a, $\times 8$. Photographs: 1, 1a, RMNH (E. Gittenberger); 2, 2a, 3, 3a, SMF (E. Haupt).



Figs. 4-10. Cyprian *Albinaria* species with prominent radial sculpture. 4, *A. saxatilis saxatilis*, Cape Greco, height 16.2 mm (Hov); 5, 6, *A. saxatilis avia*, Amathous, height 16.0 mm (RMNH) (5) and between Kividhes and Ypsonas, height 16.0 mm (RMNH) (6); 7, 8, *A. greeni*, Kourion, height 14.3 mm (7) and 7.8 mm (8) (Hov); 9, 10, *A. mavromoustakisi*, W. of Vavla (= Vavilas), height 11.5 mm (9) and 6.1 mm (10). All figs. $\times 5$. Photographs RMNH (E. Gittenberger).



Figs. 11-13. Records of Cyprian *Albinaria*. 11, *A. spec.* from Liveras (circle), *A. rollei* (triangles) and *A. virgo* (dots); 12, *A. saxatilis saxatilis* (dots) and *A. saxatilis avia* (triangles); 13, *A. greeni* (triangles) and *A. mavromoustakisi* (dots).

Range (fig. 12). — The nominate subspecies of *A. saxatilis* is the most wide-spread Cyprian *Albinaria*. It does not occur in the central part of the island. Along the southern coast, near Limassol, it is replaced by *A. s. avia*.

Notes. — The dimensions given in the original description (Pfeiffer, 1846: 94), viz. 16 × 4 mm, apply to this subspecies. Pfeiffer received his material from the shell dealer Parreyss, who did also provide Rossmässler with shells of this subspecies and of *A. s. avia*. See further the notes on *A. s. avia*.

Albinaria saxatilis avia (Charpentier, 1852)
(figs. 5, 6, 12)

Clausilia avia Charpentier, 1852: 376 ("Cyprus"); syntypes not seen.

Clausilia avia Rossmässler, 1856: 75, pl. 80 figs. 893, 894 ("Cypern"); lectotype (design. Zilch, 1977: 350) SMF 230512.

Material. — Episkopi, Apollo temple, VD83 (Hem, HUI, RMNH); Paramali forest, VD83 (Bar, HUI, RMNH); between Kividhes and Ypsonas, VD94 (RMNH); Limassol, WD03 (RMNH); Amathous, WD14 (RMNH).

Range (fig. 12). — This subspecies is restricted to a small area along the southern coast around Limassol.

Notes. — Rossmässler (1856: 75, 76, pl. 80 figs. 893, 894) compared "*Clausilia*" *saxatilis* and "*C.*" *avia* and gave excellent descriptions and illustrations of both. He could study material of the two taxa that had been distributed by Parreyss to various malacologists. Rossmässler (1856) and Charpentier (1852) independently introduced the name originally given by Parreyss.

Albinaria greeni Tomlin, 1935
(figs. 7, 8, 13)

Albinaria greeni Tomlin, 1935: 164, fig. ("Hills between Limassol and Paphos at an altitude of ca. 800 feet"); syntypes in HUI.

Material. — "Baths of Aphrodite" (= 4.5 km NW. of Neokhorio, = Neon Chorion), VD38 (Hem, Hov, HUI); "Fontana Amoroza" (= 9 km NW. of Neokhorio), VD38 (Hov); 5 km W. of Pissouri (= 33 km W. of Limassol), VD63 (Hem); type locality, between Limassol and Paphos, 800 ft. alt., VD73 (HUI); Kourion, 10 km W. of Limassol, VD83 (Hov). Not located: "Bafo Hills near Missuri" (SMF).

Range (fig. 13). — This species is restricted to a few localities in SW. Cyprus.

Notes. — We locate the type locality in UTM VD73 because in that area the altitude of 800 ft. is reached along the road between Limassol and Paphos.

The apical part of juvenile shells is quite different from that in *A. mavromoustakisi* (see figs. 8, 10).

Albinaria mavromoustakisi Brandt, 1961
(figs. 9, 10, 13)

Albinaria (*Interstriata*) *mavromoustakisi* Brandt, 1961: 14, pl. 1 fig. 9 (isolated rocks S. of the road near Basileios); holotype: SMF 163953.

Material. — Basileios (= Vasileia, 18 km W. of Kyrenia), WE10 (HUI, RMNH, SMF 163953 [holotype], 163045/4 [paratypes]); Vavla (= Vavilas, 20 km W. of Kyrenia), WE11 (HUI).

Range (fig. 13). — The species is only known from a small area 18-20 km W. of Kyrenia.

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