

**Five new *Albinaria* subspecies from the eastern Peloponnese, Greece;
with notes on *Isabellaria* s.l. (Gastropoda Pulmonata: Clausiliidae)**

E. GITTENBERGER

Nationaal Natuurhistorisch Museum, P.O. Box 9517, NL 2300 RA Leiden, The Netherlands

Five subspecies of *Albinaria* from the E. Peloponnese, Greece, are described as new to science, viz. *A. argynnis levipalatalis*, *A. argynnis profundella*, *A. discolor eureka*, *A. discolor pelocarinata*, and *A. grisea akrocurta*. Within a single species, *A. discolor eureka* bridges the gap between the two allegedly distinct genera *Albinaria* and *Isabellaria* sensu auct.; the parapatric *A. grisea akrocurta* and *I. confusa*, which are strikingly similar in general shape, might also be considered congeneric taxa at least.

Key words: Gastropoda, Pulmonata, Clausiliidae, *Albinaria*, *Isabellaria*, parallelism, taxonomy, Greece.

INTRODUCTION

During a systematic survey of the molluscan fauna of the Parnon mountains, in the eastern Peloponnese, Greece, several taxa new to science were discovered. Some of these, belonging to the clausiliid genus *Albinaria* Vest, 1867, are described in the present paper. It concerns a series of subspecies. They are relevant in the context of evolutionary studies, which is one of the reasons that they should be named prior to the time-consuming finalization of a more general revision of the Peloponnesian representatives of the speciose genus *Albinaria*.

SYSTEMATIC PART

Unless indicated otherwise, the material cited below refers to paratypes. For collections the following abbreviations are used: HNV, H. Nordsieck, Villingen-Schwenningen (Germany); NHMW, Naturhistorisches Museum, Wien (Austria); NNM, Nationaal Natuurhistorisch Museum, Leiden (The Netherlands); PSA, P. Subai, Aachen (Germany); RBA, R.A. Bank, Amsterdam (The Netherlands); WMD, W.J.M. Maassen, Duivendrecht (The Netherlands).

***Albinaria argynnis levipalatalis* subsp. nov.**
(figs. 3, 4)

Material. — Lakonia: rocky area above Limin Ierakos (20 km E. of Molai), 20 m alt., FF8574 (HNV/2; NNM 56872/holotype, 56873/12; SMF 310353/2); NW. side of Ierax (18 km E. of Molai), 60 m alt., FF8275 (NHMW/2; NNM 56874/17; PSA/2; RBA/2; WMA/2).

Diagnosis. — A rather tumid form of *A. argynnis* (Westerlund, 1898), with an obsolete dorsal keel; frontal upper palatal fold as prominent as the principalis or more obsolete.

Description. — Shell spindle-shaped, rather tumid, with 9-10 whorls; lower whorls strongly flattened and separated by a shallow suture. Initial teleoconch whorls prominently sculptured with rather widely spaced ribs, running between the suture lines;

lower whorls with an increasingly more obsolete sculpture, which increases somewhat in prominence again, only from the lower part of the penultimate whorl on. On the cervical part of the body whorl, the ribs are more or less regularly arranged and still quite vague near the suture. Basal keel short but prominent; a dorsal keel can hardly be distinguished and, consequently, there is no clear furrow between cervical keels. Aperture rather diamond-shaped with rounded corners, protruding, with a broadly reflected and strongly thickened lip. Shell greyish white, with (very) irregular corneous spots, occasionally longitudinal streaks.

Columellaris moderately protruding into the aperture; subcolumellaris hardly discernible in front view, but clearly seen in oblique view, as a slightly curved lamella. Parietalis prominent, for about half its length running parallel to the spiralis. Principalis clearly seen in frontal view, running inside as far as the uppermost, backwardly curved part of the narrow but prominent, dorsal lunula; the short, sharp lamelliform basalis is only vaguely connected to the lunula.

Height 14.9-17.9 mm; width 4.3-5.0 mm.

Range. — Only known from the area north and northwest of the scenic fiord of Limin Ierakos.

Notes. — This taxon is considered the southernmost subspecies of *A. argynnis*. The main reasons to do so are the distributional range and, morphologically, the presence of a frontal upper palatal lamella, in combination with the general shape. Rare specimens without a frontal upper palatal lamella remind of *A. grisea*. More to the south the range of "*Isabellaria*" *campylauchen* (Boettger, 1883) starts, probably the sister species of *A. argynnis*. In these vicariant species a prominent frontal upper palatal fold occurs.

Etymology. — After *levis* (Latin) = insignificant. The epithet refers to the more or less obsolete palatalis.

***Albinaria argynnis profundella* subsp. nov.**

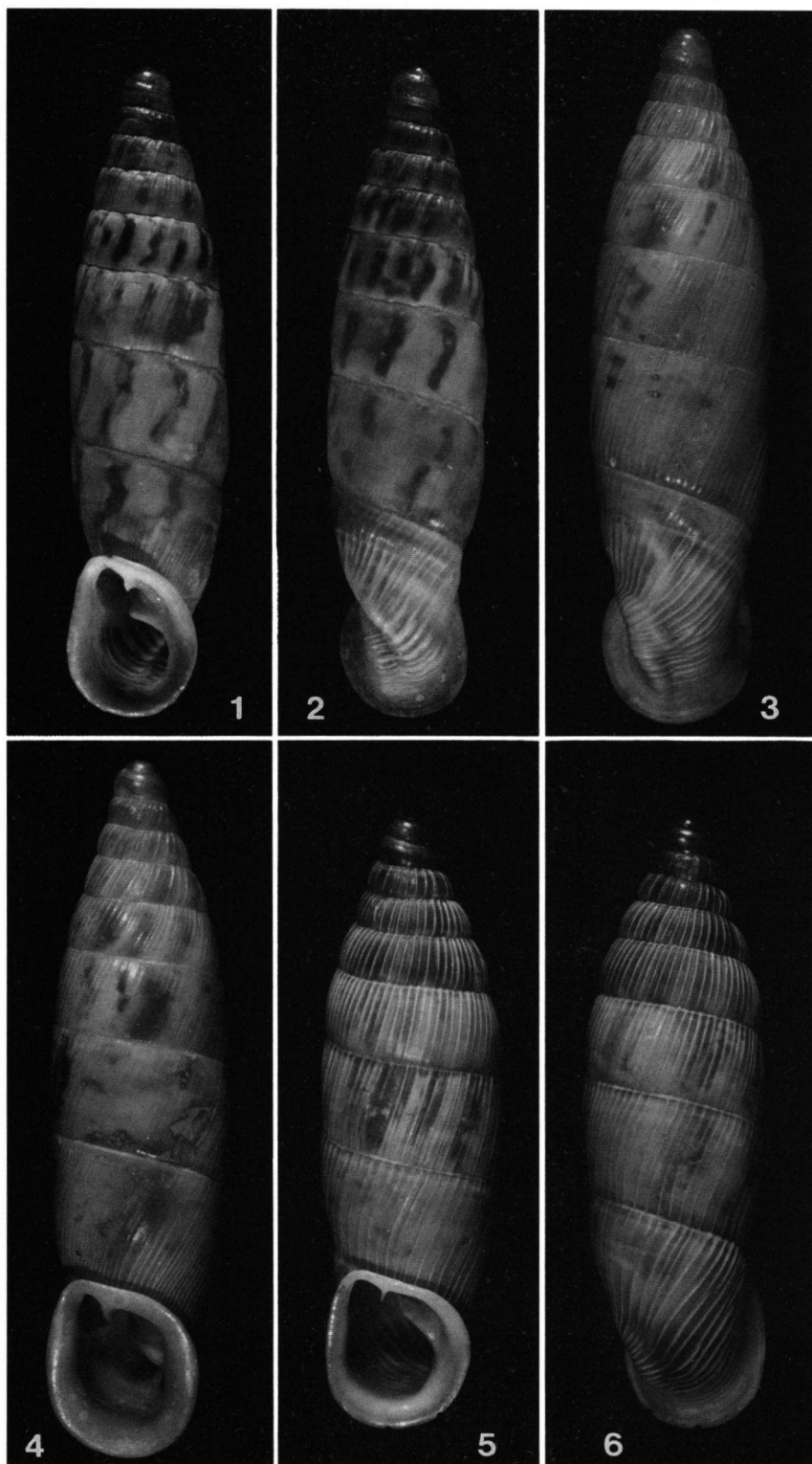
(figs. 1, 2)

Material. — Arkadhia, along the coastal road, 4.5 km NE. of Leonidhion, 30 m alt., FG6816 (HNV/2; NHMW/2; NNM 56875/holotype, 56876/30; PSA/2; RBA/2; SMF 310354/2; WMD/2).

Diagnosis. — A slender form of *A. argynnis*, with a lateral lunula and a sharp cervical furrow between two prominent keels, of the conspicuously twisted back of the body whorl; frontal upper palatal fold more prominent than the principalis.

Description. — Shell (very) slender spindle-shaped, with $8-9\frac{3}{4}$ whorls; lower whorls strongly flattened and separated by a slightly indented suture. Initial teleoconch whorls irregularly sculptured with ribs that are prominent near the upper suture line and strongly decrease in prominence downward, towards the lower suture line, which is often not even reached. Lower whorls with an obsolete sculpture, apart from the lower part of the penultimate whorl and the cervical part of the body whorl, which has sharp ribs, especially on the keels. The cervical ribs do not, or hardly, reach the suture above. Basal keel short but prominent, separated by a sharp furrow from the longer, more conspicuous dorsal keel. Above the dorsal keel, the shell wall is concave. Aperture

Figs. 1-6. *Albinaria* spec. 1, 2, *A. argynnis profundella* subsp. nov., holotype (NNM), actual height 14.6 mm; 3, 4, *A. argynnis levipalatalis* subsp. nov., holotype (NNM), actual height 15.8 mm; 5, 6, *A. grisea akrocurta* subsp. nov., holotype (NNM), actual height 13.9 mm. Photographs A. 't Hooft (R.U., Leiden).



obliquely oval, protruding, with a broadly reflected, moderately thickened lip. Shell greyish white, with a more or less regular pattern of radial, corneous streaks, which may be straight or curved, sometimes zigzag-like.

Columellaris broadly protruding into the aperture; subcolumellaris hardly, or not, discernible in front view, but clearly seen in oblique view, as a nearly straight lamella. Parietalis prominent, shortly running parallel to the spiralis. Principalis clearly seen in front view, running inside as far as the uppermost, backwardly curved, part of the narrow but prominent, lateral lunula; the short, quickly narrowing, or longer, more lamelliform, basalis is connected with the lunula and runs along the inside ridge that corresponds with the furrow between the cervical keels.

Height 12.2-16.5 mm; width 3.2-3.7 mm.

Range. — Known from only a small area within the range of *A. a. argynnis*, along the coastal road northeast of Leonidhion.

Notes. — This form is restricted to a small area within the range of the nominate subspecies. It is named as a subspecies because of the very characteristic shape of the cervical part of the shell, found in all specimens collected at the type locality.

Etymology. — After *profundus* (Latin) = deep. The epithet refers to the position of the lunula.

***Albinaria discolor eureka* subsp. nov.**

(figs. 7-9)

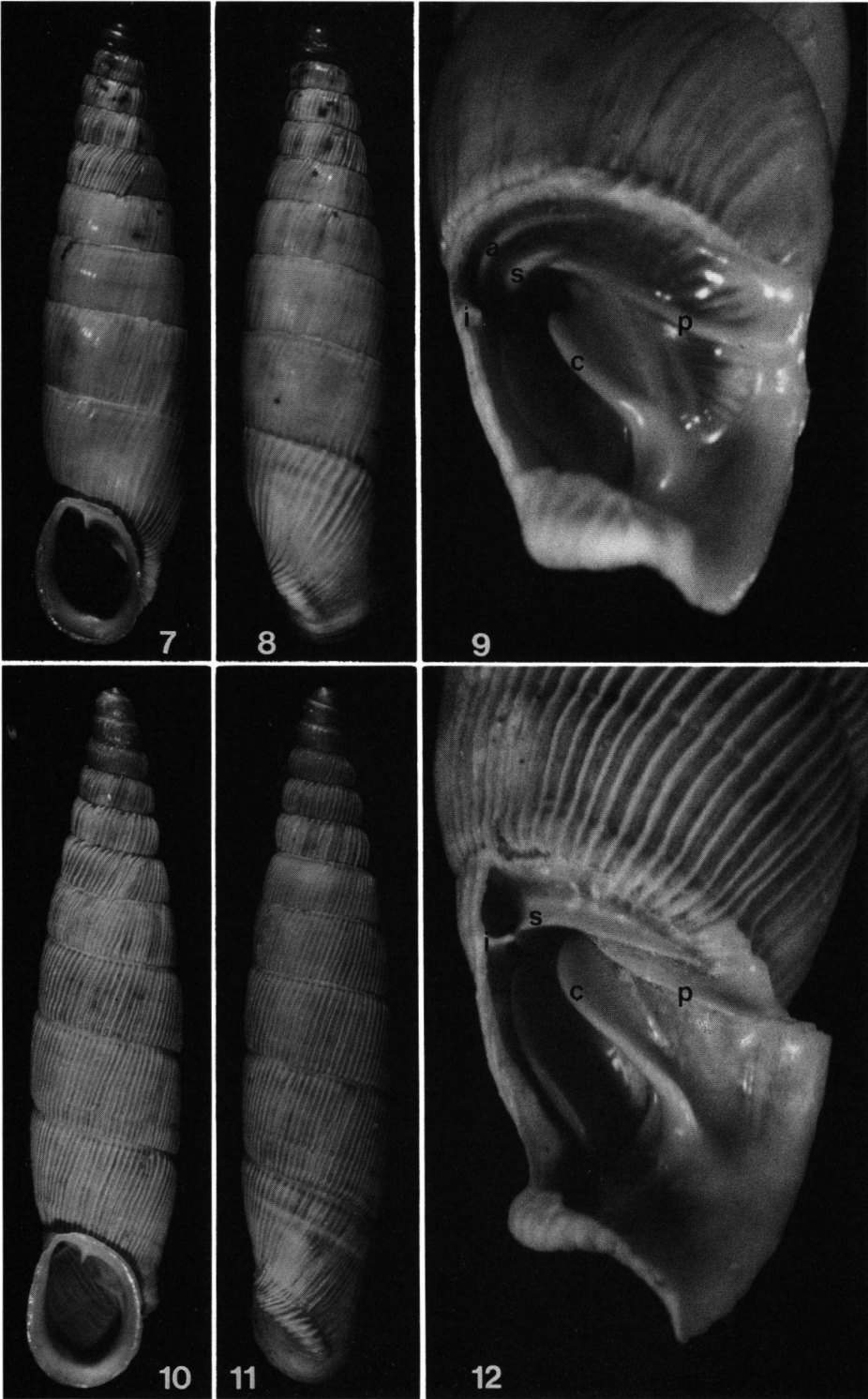
Material. — Lakonia: N. side of Molai, 175 m alt., FF6576 (HNV/3; NHMW/3; NNM 56877/holotype, 56878/89; PSA/3; RBA/3; SMF 310355/3; WMD/3); Elaia (= Elia), 10 m alt., FF 6169 (HNV/3; NHMW/2; NNM 56879/82; PSA/2; RBA/2; SMF 310356/2; WMD/2).

Diagnosis. — A slender spindle-shaped form of *A. discolor*, with a short but prominent basal keel, an obsolete sculpture, and a G-type clausilial apparatus with a long lamella parallela accompanying a relatively low spiralis and an equally low principalis.

Description. — Shell slender fusiform to club-shaped, with 9-11 whorls; lower whorls strongly flattened and separated by a shallow suture. Initial teleoconch whorls with very narrowly spaced ribs, which become nearly completely obsolete on the lower whorls, only increasing in prominence to faint ribs again on the cervical part of the body whorl. Basal keel short but prominent; no dorsal keel developed. Aperture elliptical, protruding, with a moderately broadly reflected, somewhat thickened lip. Shell bluish white, with some irregular corneous spotting, especially on the upper whorls; shells with larger corneous parts occur in the population from Elaia.

Columellaris low and very obliquely running inside; subcolumellaris usually not even visible in oblique view. Parietalis moderately prominent, not or over only a short distance running parallel to the relatively low spiralis. Parallel to the spiralis, the still lower parallela runs somewhat further in front; inside, the lamellae reach about equally

Figs. 7-12. *Albinaria* spec. 7-9, *A. discolor eureka* subsp. nov., holotype (NNM), actual height 14.5 mm [7, 8], with a detail of a paratype, showing the parietalis (p), spiralis (s) and parallela (a) on the parietal apertural wall, the columellaris (c), and the principalis (i) in cross-section [9]; 10-12, *A. discolor pelocarinata* subsp. nov., holotype (NNM), actual height 16.3 mm [10, 11], with a detail of a paratype, showing the parietalis (p) and spiralis (s) on the parietal apertural wall, the columellaris (c) and subcolumellaris (b), and the principalis (i) in cross-section [12]. Photographs A. 't Hooft (R.U. Leiden).



deep. The principalis is about as low as the spiralis, and the clausilium blade reaches high into the parieto-palatal angle, which implies that there is no by-pass canal there. In this G-type clausilial apparatus there is neither a fulcrans nor a suturalis. Inside, the principalis runs as far as the uppermost part of the rather broad lunula, which is shortly curved backward.

Height 12.7-17.2 mm; width 3.3-4.2 mm.

Range. — This subspecies is known from populations on the southernmost border, and halfway on the east side, of the Kurkula Mtn., W. of Molai.

Notes. — In size, shape and sculpture, this subspecies cannot be distinguished from the parapatric nominate subspecies. Its clausilial apparatus, however, belongs to the G-type, which was considered atypical for *Albinaria* for a long time (see e.g.: Gittenberger & Schilthuizen, in press; Nordsieck, 1984). At the two localities where this form was found abundantly, situated c. 7 km apart, all specimens that were studied have the diagnostic characters mentioned above. Preliminary anatomical research has shown, that this form and *A. d. discolor* share a qualitative character in the male part of the genitalia (M. Graafland, personal communication).

Whatever their evolutionary origin may be, we are evidently not dealing here with rare hybrid forms, but with a taxon occurring in large populations, that deserves to be named. Its generic assignment to *Albinaria*, and its status as a subspecies of *A. discolor*, are in line with the biogeographical and morphological, conchological and anatomical, data that are available.

Etymology. — The epithet emphasizes the relevance of the discovery of this subspecies with regard to the problematic status of the Peloponnesian so-called *Isabellaria* species.

***Albinaria discolor pelocarinata* subsp. nov.**

(figs. 10-12)

Material. — Lakonia: 4 km NW. of Dhaimonia (= Demonia), halfway to Papadhianika, 120 m alt., FF6661 (HNV/2; NHMW/1; NNM 56880/holotype, 56881/16; PSA/1; RBA/1; SMF 310357/1; WMD/1).

Diagnosis. — A slender spindle-shaped form of *A. discolor*, with sharp fine ribs on all teleoconch whorls, an N-type clausilial apparatus with a large by-pass canal in the palato-parietal corner, and a very prominent, flaring basal keel.

Description. — Shell (very) slender spindle-shaped to somewhat more club-shaped, with $9\frac{1}{2}$ - $11\frac{1}{2}$ whorls; lower whorls flat, but separated by a markedly indented suture. All teleoconch whorls covered by sharp ribs, which are slightly more widely spaced on the initial ones, and locally more prominent on the crest of the basal keel; on the penultimate whorl there are c. 7 ribs per mm. In between the ribs there are few, vague, growth-lines. The body whorl is provided with a very prominent, slightly flaring, basal keel, above which the wall is concave in outline. Aperture elliptical, protruding, with a moderately reflected and thickened lip. Shell greyish white, sometimes with some corneous spots.

Columellaris low and very obliquely running upward; subcolumellaris not even discernible in oblique view. Parietalis moderately high in front, for over half its length running parallel to the spiralis, which increases gradually in height inwardly. Principalis prominent, running up to as far as the entire body whorl inside, thus clearly deeper than the broad lunula, which has a very short lamelliform uppermost part, pointing backward.

Height 13.6-17.1 mm; width 3.3-3.55 mm.

Range. — Only known from the type locality.

Notes. — This taxon could also be considered a separate species because of the shape of the basal keel, which is clearly more prominently flaring than in all other forms of *A. discolor*. In sculpture it reminds of *A. d. haessleini*, which has a G-type clausilial apparatus, however.

A. d. pelocarinata recalls various *Albinaria* taxa from southern Turkey (for example *A. schuetti* Nordsieck, 1984, and *A. supercarinata* Gittenberger, 1992) with similar or even more prominent basal keels. This similarity, which is restricted to the shape of the shell basis, can hardly be anything else than a result of parallel evolution.

Etymology. — This is the most prominently keeled (*carina* = keel) *Albinaria* known from the Peloponnese.

***Albinaria grisea akrocurta* subsp. nov.**

(figs. 5, 6)

Material. — Lakonia: 2 km W. of Niata, 250 m alt., among limestone rocks and stones, FF6186 (HNV/2; NHMW/2; NNM 56882/holotype, 56883/13, 56891/9; PSA/2; RBA/2; SMF 310358/2; WMD/2); 3 km W. of Skala, low limestone gorge N. of the road, 200 m alt., FF4580 (HNV/2; NHMW/2; NNM 56884/48; PSA/2; RBA/2; SMF 310359/2; WMD/2).

Diagnosis. — A form of *A. grisea* with a very short apical part and a relatively large, subcylindrical, broad lower part, with a more or less prominent sculpture, and a roundish aperture.

Description. — Shell with a short, conical, apical part, taking up to c. $\frac{1}{4}$ of the total height, and a relatively broad, subcylindrical main body, slightly tapering towards the basis. With $8\text{--}9\frac{1}{4}$ whorls; lower whorls strongly flattened and separated by a shallow suture. Initial teleoconch whorls with moderately prominent, rather widely spaced, ribs, which become somewhat more dense on the following whorls, becoming more distant again only on the cervical part of the body whorl. The sculpture may be hardly, or not, discernible on the middle part of the shell; the ribs themselves are nowhere more prominent than on the initial teleoconch whorls. There is a short, modest, basal keel, which is separated from the regularly inflated rest of the body whorl by a shallow indentation. Aperture roundish, protruding, with a broadly reflected, moderately thickened lip. Shell greyish white, with irregular corneous spots and streaks.

Columellaris low and very obliquely running inside; subcolumellaris hardly discernible in front view. Parietalis prominent, for nearly half its length running parallel to the spiralis. Principalis running inside as far as the uppermost, backwardly curved, part of the sharp and narrow, dorsal lunula. Aperture without a basalis.

Height 11.0-16.2 mm; width 3.6-4.7 mm.

Range. — The two records are in S. Lakonia, in a still insufficiently known area, at two sides of the Evrotas river.

Notes. — This taxon is classified with *A. grisea* because of the shape of the body whorl, especially the structure and sculpture of the cervical part of it. Without inspecting the clausilial apparatus this subspecies cannot be distinguished from "*Isabellaria*" *confusa* (Boettger, 1878), which might be parapatrically distributed; the ranges of the two taxa should be studied in more detail.

Etymology. — After *akron* (Greek) = summit, and *curtus* (Latin) = short, referring to the short apical part of the shell.

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