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**A new species of the genus *Alopi* H. & A. ADAMS (Gastropoda, Pulmonata, Clausiliidae) from Lotru valley, southern Carpathians, Romania**

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**Abstract:** In this paper a new species of the genus *Alopi* H. & A. ADAMS (Clausiliidae, Alopiinae) from Lotru valley, southern Carpathians, Romania, is described: *A. hirschfelderi* n. sp.

**Keywords:** Gastropoda, Pulmonata, Clausiliidae, *Alopi*, new species, Romania.

**Zusammenfassung:** In dieser Arbeit wird eine neue Art der Gattung *Alopi* H. & A. ADAMS (Clausiliidae, Alopiinae) vom Lotru-Tal, Südkarpaten, Rumänien, beschrieben: *A. hirschfelderi* n. sp.

### Introduction

H.-J. HIRSCHFELDER (Kelheim), together with T. SCHNEID, collected a right-coiled *Alopi* species near Brezoi, Lotru valley, Romania, which he failed to determine, because the right-coiled species from that region, *A. hildegardae* R. KIMAKOWICZ 1931 occurring nearby or *A. bielzii* (L. PFEIFFER 1849) more far away, are different. Therefore, he sent me pictures and then specimens for determination. Because I could not identify the species with any other one, I came to the conclusion to be in for a new species.

A comparison with all known right-coiled *Alopi* species (NORDSIECK 2008) had the result that the assumed new species differs from all of them. It is externally similar to a fossil ribbed subspecies of *A. hildegardae*, *A. h. majorosi* SZEKERES 2007, from deposits of the Polovragi cave in close neighbourhood. Furthermore, it bears resemblance to *A. helenae* R. KIMAKOWICZ 1928, especially to its ribbed subspecies *A. h. ciucasiana* GROSSU 1969. This species, however, lives in the southeastern Ciucaş Mountains in a distance of about 140 km as the crow flies.

### Material and methods

The material this paper is based on consists of 24 specimens, most of them collected as empty shells. Soft material for the examination of genital characters was not available. One subadult specimen was still alive and was preserved for DNA analysis.

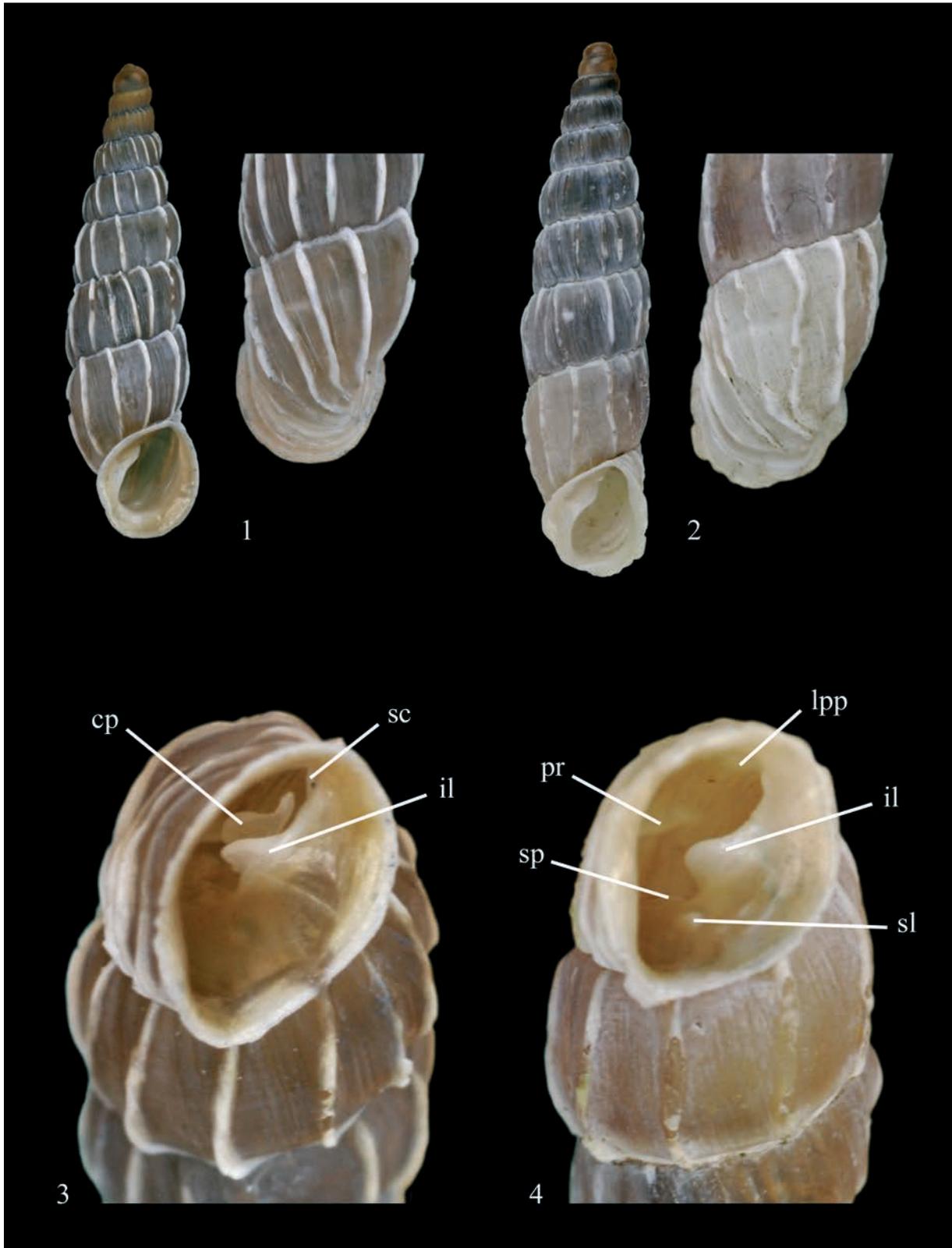
As to the methods of shell examination and the respective terms see NORDSIECK (2007: chapter XII, with appendix 2).

Abbreviations of shell measurements:

H = Shell height; D = shell width; H<sub>A</sub> = aperture height; D<sub>A</sub> = aperture width; R = rib number on penultimate whorl; W = whorl number.

Abbreviations of collections:

coll. = Collection; HNC = Haus der Natur - Cismar; SMF = Forschungsinstitut Senckenberg Frankfurt a. Main.



**Figs. 1-4:** Shell of *Alopia hirschfelderi* n. sp. (phot. S. HOF).

Figs. 1-2: Shell frontal x 6, body whorl dorsal x 9; shell height = H; Fig. 1: holotype, H = 13.5 mm, Fig. 2: paratype, H = 15.2 mm.

Figs. 3-4: Shells with oblique view into the aperture; Fig. 3 showing clausilium plate, H = 11.6 mm, Fig. 4 showing lamellae and plicae, H = 11.8 mm.

Abbreviations: cp = clausilium plate, il = inferior lamella, lpp = lower palatal plica, pr = principal plica, sc = subcolumellar lamella, sl = superior lamella, sp = spiral lamella, upp = upper palatal plica.

## Description of the new species

*Alopi* H. & A. ADAMS 1855

*Alopi* (*Alopi*)

*Alopi* (*A.*) *hirschfelderi* n. sp. (Figs. 1-4, 9-10)

**Diagnosis:** A right-coiled *Alopi* (*A.*) species with strongly ribbed shell with somewhat reduced clausiliar: superior lamella mostly reduced to a callous point; spiral lamella weak; principal plica relatively short; palatal plicae missing, lower one rarely present; clausilium plate mostly not traceable, if visible, reduced in size, not occupying the lumen of body whorl.

**Description:** Shell whitish-grey to violet-grey, fresh violet-brown, protoconch whitish to dark brown; protoconch smooth, first teleoconch whorl rib-striated, single rib-striae becoming stronger, other whorls with lamella-like ribs (on penultimate whorl on average 14-15 ribs), on the upper whorls white above, on the following whorls most ribs totally white (Figs. 1, 3), additionally white sutural thread present, between the ribs indistinctly rib-striated (Figs. 3-4), before peristome ribs more densely spaced or not; basal keel distinct, cervix rounded, sutural bulge indistinct or missing; aperture detached and  $\pm$  protruding, oval to oval-piriform, peristome  $\pm$  with inner lip at the palatal side; superior lamella very short to missing (mostly callous point or spot, Fig. 4), spiral lamella widely separated from superior lamella, short, distinct to nearly missing (mostly weak, Fig. 4); inferior lamella steeply ascending, moderately high, in part low, ending on columellar edge (Figs. 3-4); subcolumellar lamella descending far (mostly more than inferior lamella), visible in oblique view (Fig. 3); lunellar in dorsal or nearly dorsal position; principal plica moderately long to short (visible through the shell, Figs. 1-2), relatively weak (Fig. 4), palatal plicae missing, rarely lower one present as callous spot (Fig. 4); clausilium mostly not traceable, in 9 of 23 specimens visible in oblique view (Fig. 3),  $\pm$  narrow (not occupying lumen of body whorl), outer lobe not pointed (right-angled or receding, Fig. 3), inner lobe digit-like. Inner lamellae endings (1 specimen examined): Inferior lamella penetrating more deeply than spiral lamella, ending ventrolaterally.

**Type material:** Holotype (SMF 341631, Fig. 1): Romania, Județul Vâlcea, Brezoi, small brook valley ca. 900 m north of Lotru bridge (415 m a. s. l.), 45°21'13" N / 24°14'32" E, 25.V.2013, leg. H.-J. HIRSCHFELDER.

Paratypes: same data (leg. H.-J. HIRSCHFELDER & T. SCHNEID, SMF 341632/11, coll. HIRSCHFELDER/11). The specimen used for DNA isolation is excluded as paratype.

**Measurements:** Holotype (Fig. 1): H 13.5 mm, D 3.5 mm,  $H_A$  3.33 mm,  $D_A$  2.91 mm;  $W > 8\frac{3}{4}$ .

Paratypes (n = 22): H 11.4-15.2 mm; D 3.2-3.8 mm,  $W 7\frac{3}{4}$ -9 $\frac{1}{2}$ .

R (n = 23): 10-20, mean 14.5.

Paratype (Fig. 2): H 15.2 mm, D 3.8 mm,  $H_A$  3.52 mm,  $D_A$  3.08 mm;

specimen with oblique view into aperture (Fig. 3): H 11.6 mm, D 3.3 mm,  $H_A$  3.01 mm,  $D_A$  2.56 mm;

dto. (Fig. 4): H (apex damaged) 11.8 mm, D 3.5 mm,  $H_A$  3.01 mm,  $D_A$  2.75 mm.

**Etymology:** Named in honour of Mr. H.-J. HIRSCHFELDER (Kelheim), who collected, together with T. SCHNEID and other colleagues, the new species.

### Remarks:

1. Clausilium: It is not quite clear, if the clausilium of most specimens is invisible or missing or if it is only lost. The fact that the clausilium is visible both in specimens collected alive and collected as dead shells favours the first possibility.

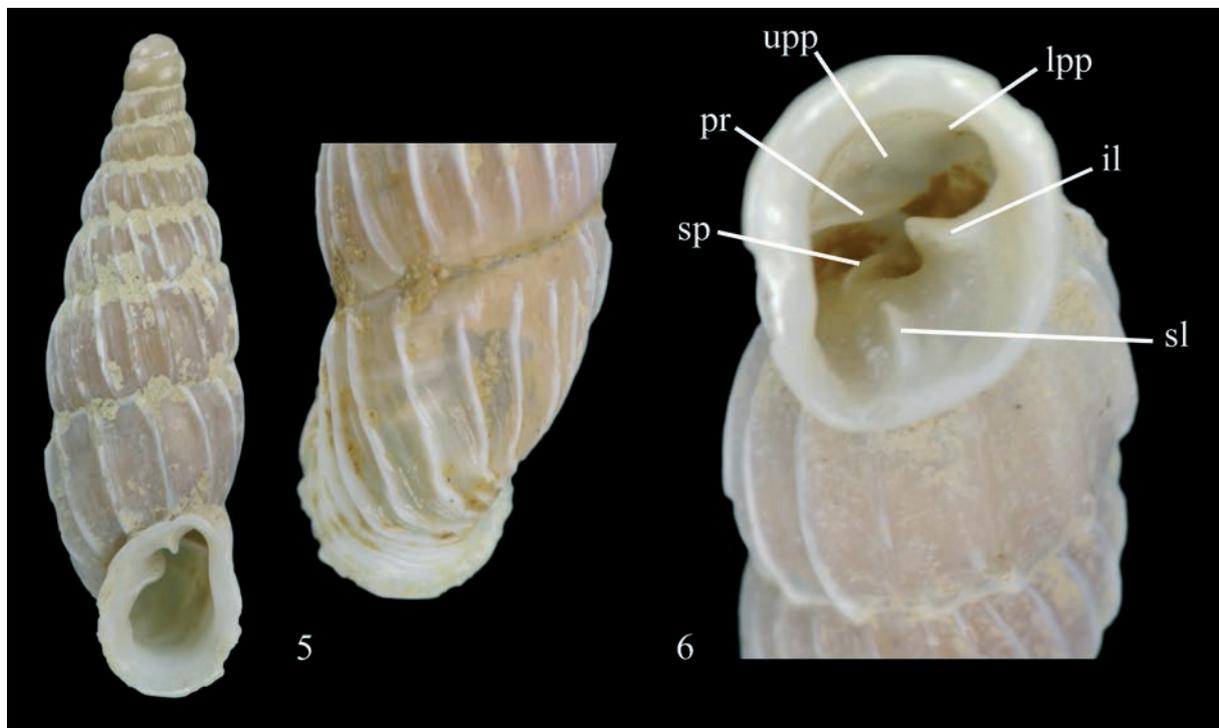
2. Locality (comm. HIRSCHFELDER, Figs. 7-10): Pyramid-like conglomerate rocks with southwestern exposition, bare of vegetation. The animals live under overhangs especially in the lowest part (Figs. 9-10). They can be found also in other places, within a radius of less than 100 meters, on rocks with western or southwestern exposition, but not on smooth ones or on those with southern or northern exposition. No other snails could be traced where the new species is living. In other parts of the rocks the following species have been found: *Macedonica marginata* (ROSSMÄSSLER 1835), *Laciniaria*

*exalta* (WESTERLUND 1878), *Clausilia dubia* DRAPARNAUD 1805 (a widely ribbed form = *C. d.* cf. *ingenua* sensu GROSSU 1981) and *Mastus venerabilis* (L. PFEIFFER 1855).

### Discussion

The new *Alopi*a taxon differs from *A. hildegardae*, also from the ribbed subspecies *A. h. majorosi* (Figs. 5-6), by the reduction of the clausiliar (superior lamella reduced, palatal plicae missing, only lower palatal plica occasionally present). From *A. helenae*, especially the ribbed subspecies *A. h. ciucasiana*, it is distinguished by the sculpture (regularly ribbed, ribs totally white) and the reduction of the clausiliar (same differences as above).

It is possible that *A. hirschfelderi* n. sp. is related to *A. hildegardae* which is occurring nearby. However, the subspecies which has a similar sculpture, *A. h. majorosi*, is extinct and therefore insufficiently known (SZEKERES 2007: 8-9). It has been found in cave deposits of unknown age (Holocene or late Pleistocene?) in the Oltet valley near Polovragi. The material is scarce and defective (clausilium plate according to the development of the clausiliar present, but in all specimens lost). Like in the other subspecies of *A. hildegardae* the remaining clausiliar is less reduced than in *A. hirschfelderi* n. sp.

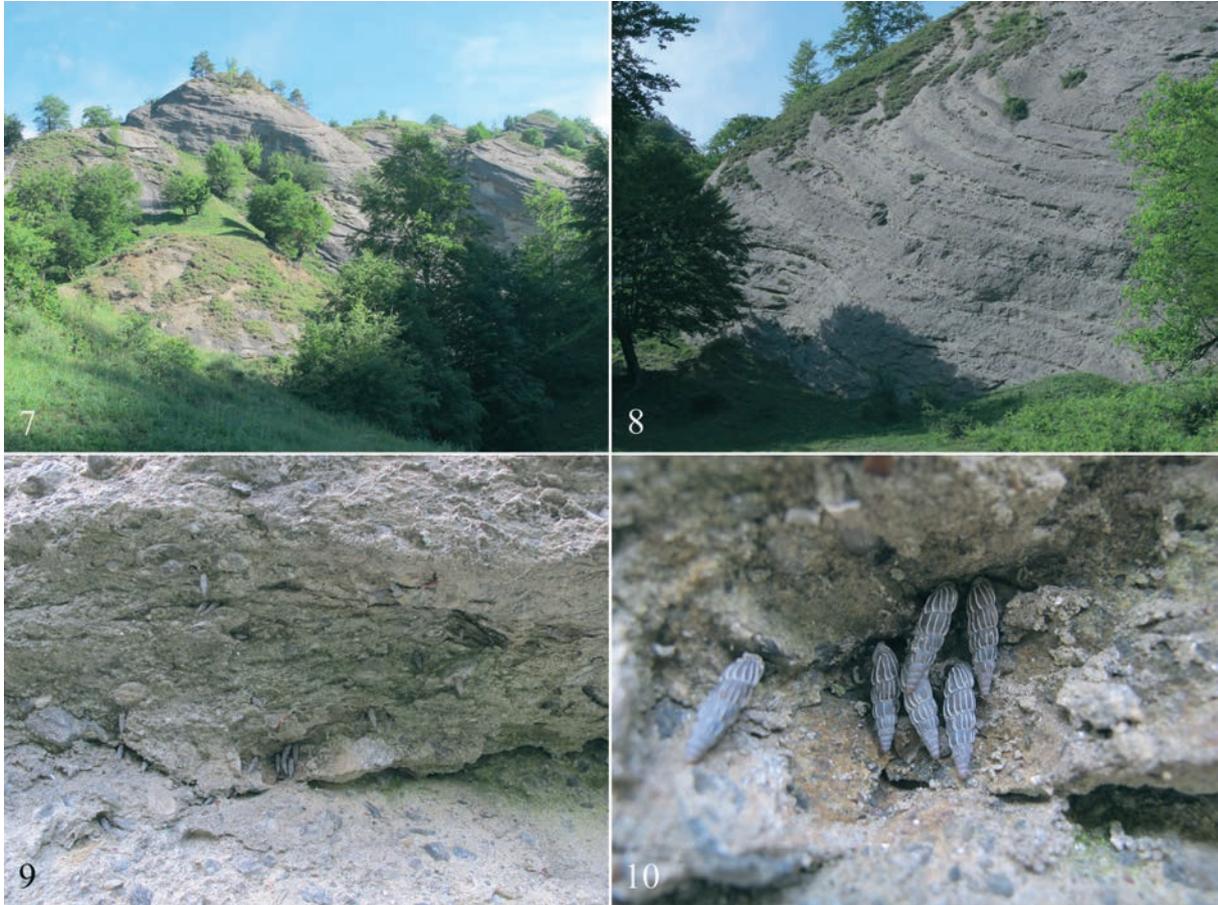


**Figs. 5-6:** Shell of *Alopi hildegardae majorosi* SZEKERES 2007 (phot. S. HOF); Romania, Județul Vâlcea, Polovragi, near entrance of Peștera Polovragi, 22.VII.1998, leg. MAJOROS & NÉMETH. Fig. 5: Shell frontal x 6, body whorl dorsal x 9; shell height = H; paratype (SMF 329420), H = 14.7 mm. Fig. 6: Shell with oblique view into aperture; paratype (HNC 66435), H = 11.2 mm. Abbreviations see Figs. 1-4.

On the other hand, *A. hirschfelderi* n. sp. could be a dispersed taxon close to *A. helenae*. It is a phenomenon within the genus *Alopi*a that some species (same species or closely related ones) have been found in far distances from their distribution centres. As examples *A. bielzii* (L. PFEIFFER 1849), *A. livida* (MENKE 1828) and *A. plumbea* (ROSSMÄSSLER 1839) are given. The range of *A. bielzii* comprises the Poiana Ruscă, Metaliferi and Trascău Mountains in the western Carpathians; it has also been found far away in the Zadiel gorge in the Slovak Karst (*A. b. clathrata* (BIELZ 1856)). *A. livida* is distributed in the Bucegi and the adjacent Piatra Craiului Mountains in the southern Carpathians; it occurs also far away in the Bihor and Trascău Mountains in the western Carpathians (*A. l. julii* A. J. WAGNER 1914). *A. plumbea* has its distribution centre in the Postăvaru and Piatra Mare Mountains in

the southeastern Carpathians; a very similar species (*A. petrensis* H. NORDSIECK 1996, see NORDSIECK 1996: 91) occurs far away in the surroundings of Petroșani in the southern Carpathians. All these relations were recently confirmed by DNA analysis (FEHÉR & al. 2013: fig. 2).

Therefore, the new *Alopia* taxon is described as a new species.



**Figs. 7-10:** Locality and living specimens of *Alopia hirschfelderi* n. sp. (phot. H.-J. HIRSCHFELDER). Figs. 7-8: Conglomerate rocks at the type locality. Figs. 9-10: Living animals on the rock, roosting.

### Recommendation

Because of a possibly very restricted distribution of *A. hirschfelderi* n. sp., it is urgently recommended to collect, if at all, only few living specimens of the species and only for scientific purposes. It should not be collected for supplementing collections or even for selling (as is usual for clausiliid species with handsome shells)!

### Acknowledgements

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