

Revision of the Ariantinae, 3. *Superba* n. gen., with the description of three new species

(Gastropoda: Pulmonata: Helicidae)

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Abstract

In the present work, the genus *Superba* n. gen., which belongs to the subfamily Ariantinae of the Helicidae, is described. Three new taxa, *S. skipetarica asketa* n. ssp., *S. grisea* n. sp. and *S. kulmakana* n. sp. are confined to the new genus. Records for all taxa are listed and mapped. The new genus is compared to other related genera of the subfamily Ariantinae, such as *Cattania*, *Josephinella*, and *Liburnica*.

Keywords: Ariantinae, *Superba*, taxonomy, anatomy, distribution, new genus, new species, Albania, Greece.

Kurzfassung

In dieser Arbeit wird die Gattung *Superba* n. gen. innerhalb der Ariantinae beschrieben. In dieser Gattung werden drei Taxa neu beschrieben: *S. skipetarica asketa* n. ssp., *S. grisea* n. sp. und *S. kulmakana* n. sp. Neben Beschreibungen und Verbreitung der Arten werden die Unterscheidungsmerkmale gegenüber den benachbarten Gattungen der Ariantinae, *Cattania*, *Josephinella* und *Liburnica* diskutiert.

Schlüsselwörter: Ariantinae, *Superba*, Taxonomie, Anatomie, Verbreitung, neue Gattung, neue Arten, Albanien, Griechenland.

Introduction

During August 2004 and August 2006, the Tomor Mountains in southern Albania were visited by expeditions conducted in the framework of the Scientific Research Programme on the Balkan area on behalf of the Hungarian Natural History Museum (FEHÉR et al 2004), in order to collect plant and animal specimens¹. Among others, living specimens of three hitherto unknown taxa

of the Ariantinae could be found. The investigation of the genital organs revealed that they constitute a group of rather closely related species which has to be separated from other groups of Ariantinae on generic level.

Since several years, the senior author of this publication investigates the taxonomy of the central- and east European Ariantinae. As a result it is foreseeable that

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most of the groups hitherto ranked as subgenera of *Helicigona* A. FÉRUSAC 1821 have to be raised to generic level. The subdivision particularly focuses on the character states of the penial papilla and the atrial stimulator, a small pad of tissue which is usually located in the atrial lumen and which turned out to probably be characteristic on generic level. This organ was for example called "crest-like structure (cls)" by GIUSTI et al. (1997).

As a first step, the new genus *Superba* is described for the small group of species of the Ariantinae inhabiting South Albania and the neighbouring areas of northern Greece.

Abbreviations

F	private collection W. FAUER (now in the Zoological Museum of the University of Hamburg)
H	private collection A. HUNYADI, Budapest
HNHM	Hungarian Natural History Museum, Budapest
IZPAN	Instytut Zoologiczny, Polska Akademia Nauk, Warszawa
NEUB	private collection E. NEUBERT, Badenweiler
NMW	Natural History Museum, Vienna

NNM	Nationaal Natuurhistorisch Museum, Leiden
REI	private collection P. L. REISCHÜTZ, Horn
S	private collection P. SUBAI, Aachen
SMF	Naturmuseum Senckenberg, Frankfurt a. M.
STU	private collection STUMMER (now in the Institute of Palaeontology of the University of Vienna)
ZMUA	Zoological Museum of the University of Athens

Additional abbreviations

±	more or less
AD	diameter of aperture
AH	height of the aperture
alk.	specimen preserved in alcohol
AST	atrial stimulator
D	shell diameter
H	height of the shell
juv.	juvenile specimen
UTM	UTM-Code for the inventory of the European Invertebrates

All measurements are given in mm.

Systematic account

Superba n. gen.

Type species: *Helicigona skipetarica* SUBAI 1995.

Diagnosis: Shells small to medium sized, low conical to almost flat. The colour pattern basically consists of three deep brown spirals (in some taxa reduced to almost lacking). The shell surface generally without hairs, usually smooth and shining. In some species, the radial stripes form thick ribs. The aperture is rounded to obliquely oval, the apertural fringes are close together. The umbilicus is always open, funnel-shaped, moderately to very wide.

The body is grey to greyish-brown. Mantle with grey, irregularly fusing spots of pigment. The secondary ureter is completely open. The genital organs with simple or subdivided glandulae (in some specimens, both types of subdivision may occur). The stem of the bursa copulatrix is very short. Diverticulum usually as long as vesicular stem + vesicle.

The main part of the AST is situated centrally in the atrium and forms an elevated triangular pad of tissue. It sometimes shows a short pilaster pointing towards the

penial lumen, and rarely a short second pilaster pointing towards the vaginal lumen. The penial papilla is short and conical, with a deep lateral furrow, its surface is structured by fine oblique folds. The pore of the papilla is situated basically in the lateral perforation.

The dart is short and clumsy, its stem is thin. die Krone und der Spitzenteil sind doppelt so breit wie jene. The tip of the dart reaches 40 % of the overall length of the dart².

Differential diagnosis: *Superba* differs from the genus *Cattania* BRUSINA 1904 by is generally smaller and less conical shells and the much lower whorls. The AST of *Superba* is much smaller and flatter. The penial papilla of *Cattania* is contracted in the middle (not contracted in *Superba*). The pore of the penial papilla is situated on the tip of the papilla in *Cattania*, while in the deep lateral furrow in *Superba*. The new genus differs from *Liburnica* KOBELT 1904 and *Josephinella* F. HAAS 1934 by its hairless surface of the shell and the low, almost flat whorls. Additionally, shells of species of *Liburnica* display a characteristic white callus or denticle at the basis of the aperture. In species of *Josephinella*, the colour of the shell is greenish to brownish, while in *Superba* it is whit-

²The both species from Greece have darts which are longer, more slender and which have also relatively smaller and more slender apical parts.

ish to greyish; the shells have always a single dark spiral in the medium position, while in *Superba*, three colour spirals are present. In species of *Josephinella*, the AST is large with two zigzag like processes, but in *Superba*, the AST is flatter with reduced processes.

Distribution patterns: Species of *Cattania* inhabit an area north and east of the area of *Superba*; towards north it reaches the Banat in SW Romania, and eastwards and southwards to the Black Sea and the Aegean Sea. *Liburnica* is found along the Dalmatian and Albanian coast and reaches NW Greece. Species of *Josephinella* live in an area from Central Albania to West and Central Greece and reach the south of the Peloponnesus. Several species of *Josephinella* live sympatric with species of *Superba*.

Etymology: from Latin “superbus, -a, -um = excellent” for the wonderful appearance of the shells; gender female.

Superba grisea n. sp.

Plate 1, fig. 1; textfigs 1, 7–8

Types and locus typicus: Holotype HNHM 95542. Paratypes HNHM 95468/4 + 1 (preserved), SMF 328953/1, S 20211/1 (partly damaged); Albania, Periferi Skrapar, Qafa e Dëvris, NE of Radesh along the Çorovodë-Zaloshnjë road, east side of the gorge, limestone rocks, 1150 m alt, UTM DK 38, 8.8.2004, leg. FEHÉR. — Additional paratypes: HNHM 95978/14 + 7 (alk.) + 3 (juv., alk), H/21, 22.8.2006, leg. FEHÉR, HUNYADI, HUSZÁR & MURÁNYI.

Additional material: (from the type locality, but no type material): HNHM 95469/17 (juv. + fragments), leg. FEHÉR, 8.8.2004; HNHM 95979/8, H/8 (juv. + fragments), 22.8.2006, leg. FEHÉR, HUNYADI, HUSZÁR & MURÁNYI.

Diagnosis: Shell medium sized, basic shell colour grey, with extraordinarily narrow spiral bands, riblets blunt, diverticulum shorter than the stem of bursa copulatrix, flagellum long.

Description: The shell of medium size, depressed to slightly conical with $4\frac{1}{2}$ –5 regularly increasing whorls; shell colour grey to slightly brownish, in the upper third of the whorls with two narrow brown spirals (width 0.5–0.8 mm); the third spiral always on the periphery of the shell and of the same width as the other two; usually, the initial 2–2.5 whorls are brownish.

The protoconch of 1.5–1.75 whorls, which are smooth in the beginning; after 1.5 whorls, the protoconch surface is sculptured by fine radially arranged stripes consisting of minute granules. Teleoconch sculptured by low, irregularly arranged riblets, which become increasingly coarser and more blunt on the last whorls of the shell. On the last whorl, minute spiral threads can be found, which sometimes may be arranged in short oblique areas (high magnification required).

The last whorl reaches 1.7–2 the size of the penultimate whorl, obliquely descending before the aperture. Suture of medium depth and slightly undulating. Umbili-

cus of medium width, perspective; it increases regularly from the initial whorl, and increases rapidly in size in the last whorl reaching the double width of the penultimate whorl (ca. 3.4–4.8 mm). Aperture spherical to oval, the insertions with a distance of 2.8–4.2 mm and connected by a thin but well visible callus; apertural rim sharp, laterally and basally somewhat extended (0.6–1 mm).

Shell measurements (n = 7): H: 10.1–11.3; D: 22–23.3; AH: 9.2–10.7; AD: 11.1–12.

The animal’s head (after six adult and one juvenile specimen) and the dorsum are greyish to brownish; lateral flanks and tail usually brighter; foot whitish with a grey fringe; mantle with weak and irregularly placed spots of pigment; there is no regular pattern of spots. The secondary ureter reaches a length of 20–27 mm, is completely open; at its end it is subdivided in two separate ducts of 1.5–2 and 3–4 mm length, respectively. The mandible is medium to chestnut brown and has 5–6 narrow ridges.

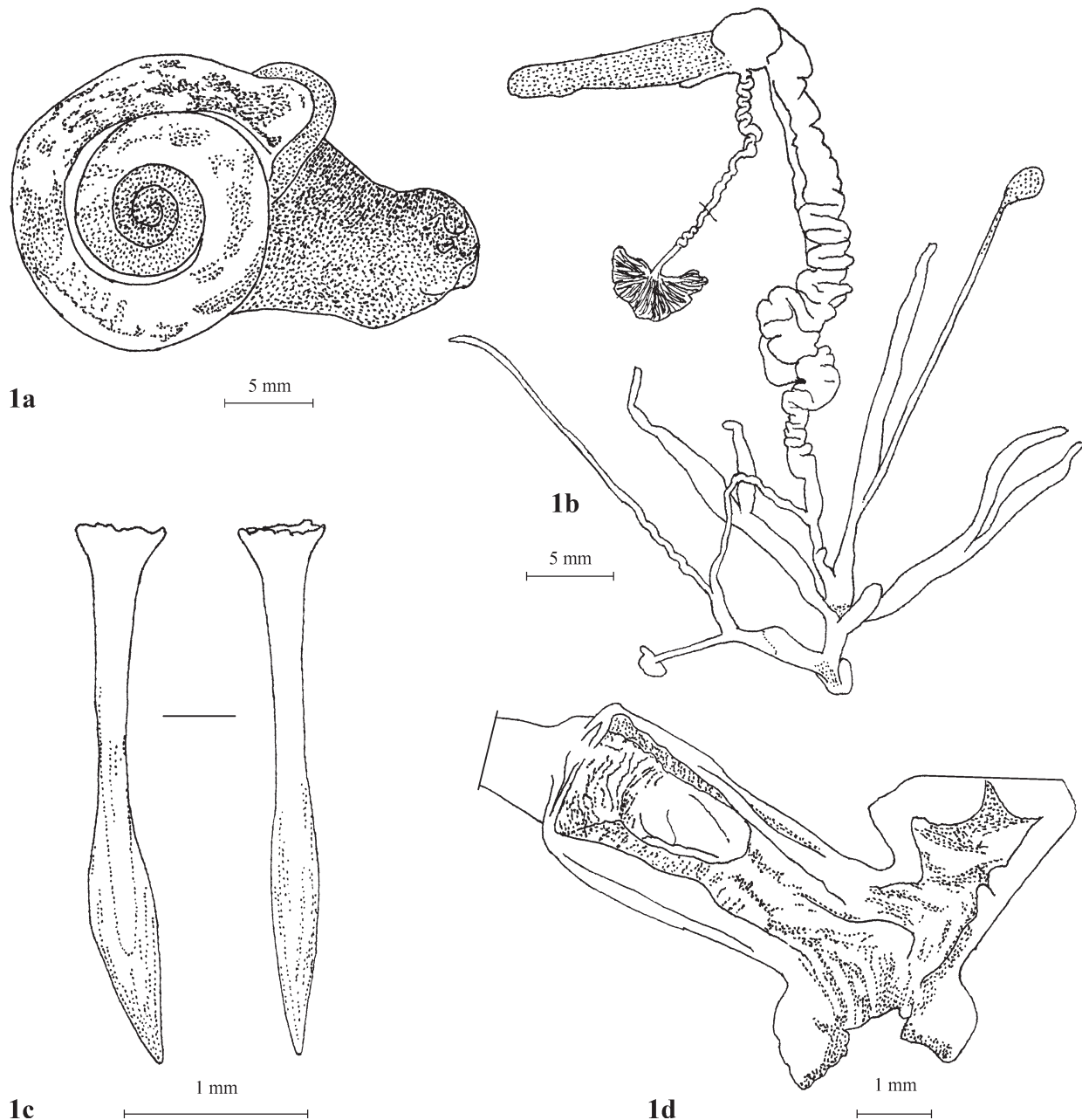
Characters of genital organs: female part: glandulae elongate, somewhat narrow at the tip, reaching five to six times the length of the dart sac; usually, the glandulae split at 40 % of their absolute length, but in two specimens, a combination of a subdivided and a simple glandula could be observed. One specimen had two simple glandulae. Stem of bursa copulatrix short, reaching 20–25 % of the vesicular stem; diverticulum reaches 2/3 of vesicular stem + vesicle. Vagina as long as or even shorter as the dart sac (which is quite short if compared to the other species) with several broad transverse pilasters. Dart short, somewhat clumsy, 2.5–3 mm long, with a narrow stem, slightly curved; crown funnel-shaped.

The AST starts at the genital pore with a thick pilaster, bends perpendicularly in the middle of the genital atrium forming a low pyramidal pad with flattened flanks and connects to a small pilaster pointing towards the penial lumen. In some specimens, this pilaster forms a broad longitudinal fold.

Male part: flagellum reaches almost twice the length of penis + epiphallus; it is slightly coiled or undulated in its basal part; penial lumen with several broad and flat longitudinal pilasters reaching in the distal part of the penis; in the surrounding of the penial papilla with narrow transverse pilasters; penial papilla ± long with slightly oblique transverse folds on its surface; the pore of the papilla inside a deep longitudinal furrow which is situated laterally on the papilla and reaches from the base of the papilla to almost the tip.

Etymology: from Latin “griseus, -a, -um = grey” describing the greyish basic colour of the shell.

Differential diagnosis: the shell of *S. kulmakana* n. sp. displays a creamy basic colour with much broader spiral bands, its whorls are flatter; the diverticulum in *S. kulmakana* is relatively longer if compared to *S. grisea*, and it has always deeply subdivided glandulae. In *S. s. skipetarica* SUBAI 1995, the shell is usually smaller, the basic colour is brighter with more intensively deeply



Textfig. 1. *Superba grisea* n. sp. — a) whole body extracted from the shell; b) situs of the genital organs; c) dart; d) lumen of the distal genital organs showing AST, penial papilla and vagina. Albania, Periferi Skrapar, Qafa e Dëvris, NE of Radesh along the Çorovodë-Zaloshnjë road.

brown coloured bands, the surface is granulated (smooth in *S. grisea*), and the umbilicus increases regularly in size. The glandulae are grey, and the diverticulum is relatively longer. In *S. reischuetzi* (SUBAI 1990), the shell is usually smaller and more depressed, the basic colour is white with broad and bright brownish spiral bands. The radial riblets in *S. reischuetzi* are much finer, and the apertural rim is less dilated; the diverticulum in *S. reischuetzi* has the same length as vesicular stem + vesicle.

Distribution: *S. grisea* lives in southern Albania, in the southern part of the Kulmak Mts. This species is only known from the locus typicus.

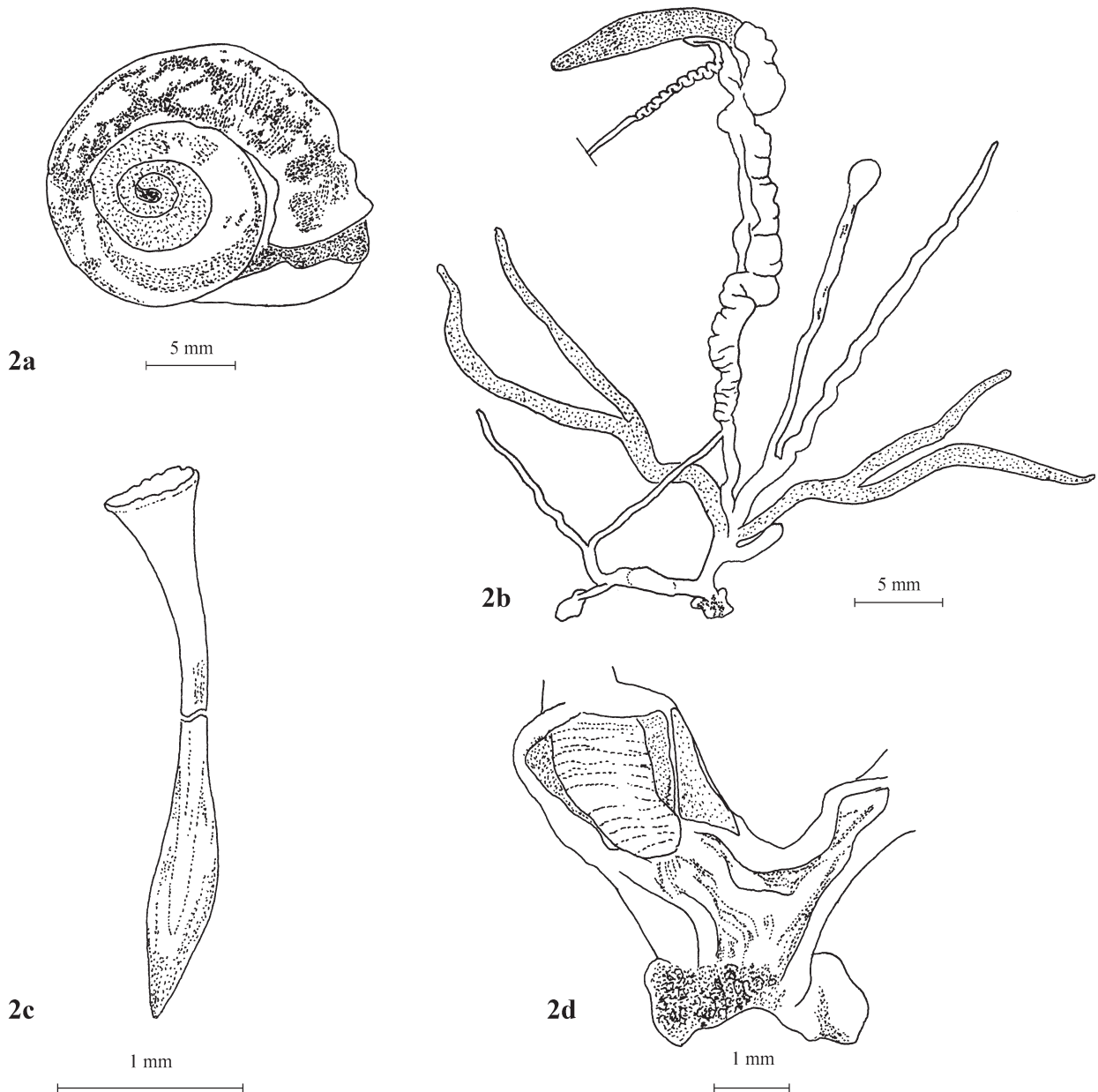
***Superba kulmakana* n. sp.**

Plate 1, fig. 3; textfigs 2, 7–8

Types and locus typicus: Holotype HNHM 95543. Paratypes: HNHM 95470/45 + 8 (alk.), SMF 328954/1, S 20210/2; Albania, Periferi Skrapar, Periferi Skrapar, small canyon 1 Km NW of Maja e Kulmakut, on limestone rocks, 2070 m alt., UTM DK 39, 9.8.2004, leg. FEHÉR.

Additional material: from the locus typicus, HNHM 95471/15 (juv. + fragments, no types).

Diagnosis: Shell of medium size, spire low conical, teleoconch with three spiral bands of chestnut brown



Textfig. 2. *Superba kulmakana* n. sp. — a) whole body extracted from the shell; b) situs of the genital organs; c) dart; d) lumen of the distal genital organs showing AST, penial papilla and vagina. Albania, Periferi Skrapar, Mali i Kulmakës, 1 km NW of Maja e Kulmakut.

colour; surface of teleoconch smooth, sculptured with fine growth lines, umbilicus wide; glandulae long, deeply subdivided; diverticulum longer than the stem of bursa copulatrix.

Description: The shell is depressed to slightly depressed conical with 4.5–5.25 regularly increasing whorls, apex sometimes mammillate. The basic colour is cream with three spiral bands of chestnut brown colour. Their width is ca. 0.5–1 mm and usually of the same size. In some specimens, the third spiral below the shell's periphery can reach a width of up to 2.5 mm and fade out towards the umbilicus. The upper 2–2.5 whorls are usually yellowish brown.

The protoconch whorls consist of 1.5 whorls which are sculptured with fine granules. The surface of the teleoconch is shining, granulated and sculptured by a few low radial stripes. On the lower whorls, this sculpture pattern becomes somewhat more coarse. On the last whorl, a few closely spaced spiral furrows can be observed (high magnification required). The last whorl reaches 1.8–2 the size of the penultimate whorl and bends slightly to strongly towards the aperture. Suture of medium depth, slightly indentate; umbilicus deep and funnel-shaped, regularly increasing in width, but doubling its size in the last whorl. Here, it reaches a diameter of 4–5.5 mm. Aperture spherical to oval, the insertions

with a distance of 1.5–3.1 mm and connected by a thin, almost invisible callus; apertural rim sharp, laterally and basally regularly extended reaching 0.8–1.25 mm, somewhat enlarged towards the umbilicus.

Shell measurements (n = 48): H: 9.1–14.5; D: 20.3–27.3; AH: 8.5–12; AD: 10.2–14.7.

The animal's body (after 8 specimens from 1 km N of Maja e Kulmakut) is uniformly greyish to brownish greyish, the tail sometimes brighter, the sole of foot cream with darker fringes. The mantle displays a pattern of irregularly arranged, blurred dark spots. On the upper whorls, these spots are only few but their density increases on the lower whorl. The secondary ureter reaches a length of 17–25 mm, is completely open and splits terminally in two canals of 1.5 and 2.5 mm length, respectively. The mandible is medium to chestnut brown and has 4–5 ridges.

Characters of genital organs: female part: glandulae elongate, somewhat narrow at the tip, reaching five to seven times the length of the dart sac; the glandulae split already at 30–40 % of their absolute length. Stem of bursa copulatrix short, reaching 20–25 % of the vesicular stem; the diverticulum is as long as or only slightly shorter than the combined length of vesicular stem + vesicle. The vagina reaches the same length of the dart sac or is slightly shorter and may be narrowed by a transverse fold in some specimens. Dart short, somewhat clumsy, 2.7–3 mm long, slightly curved; crown broadly funnel-shaped, narrow in the middle.

The AST with a ± broad and flat stem part and strongly upraised in the centre of the atrium. The penial arm of the AST points towards the penial papilla and reaches approximately half of the penial lumen; it becomes flat at its end. The vaginal arm is usually reduced, in a few specimens, such a pilaster enters the vagina until half of its length.

Male part: The penial lumen is filled with narrow pilasters arranged in parallel to the penial branch of the AST. The penial papilla is short conical with slightly sunken transverse folds; the tip is bluntly rounded. Laterally, there is a furrow reaching from the base to the tip of the papilla; the pore is situated in this furrow at the base of the papilla. The flagellum reaches 1.3–1.5 the size of penis+epiphallus; it has one or two loops in its basal part.

Etymology: the name *kulmakana* refers to the Kulmak Mts., where this new species is living.

Differential diagnosis: *Superba kulmakana* differs from *S. grisea* by its basic shell colour (greyish in *S. grisea*, cream in *S. kulmakana*) and the broader and more distinct spiral bands. The teleoconch surface is granulated in *S. kulmakana* but smooth and covered with a whitish surface layer in *S. grisea*. The diverticulum in *S. grisea* is relatively shorter if compared to *S. kulmakana*. In *S. s. skipetarica*, the lower spiral is often much broader. The umbilicus of this species is relatively

narrower, the apertural insertions are not so close, the apertural rim is less dilated, its glandulae are greyish pigmented and usually not subdivided or only the upper quarter of their length. The shell of *S. reischuetzi* is smaller and more depressed, its spirals are light brown, only the protoconch whorls are granulated, and its teleoconch surface is smooth besides some fine radial stripes. The apertural insertions are considerably distant to each others, the apertural rim is less dilated, the glandulae are relatively shorter and cylindrical up to the tip, the dart is much more slender.

Distribution: Until now, *S. kulmakana* is only known from its locus typicus.

Superba reischuetzi (SUBAI 1990)

Plate 1, fig. 2; textfigs 3, 7–8

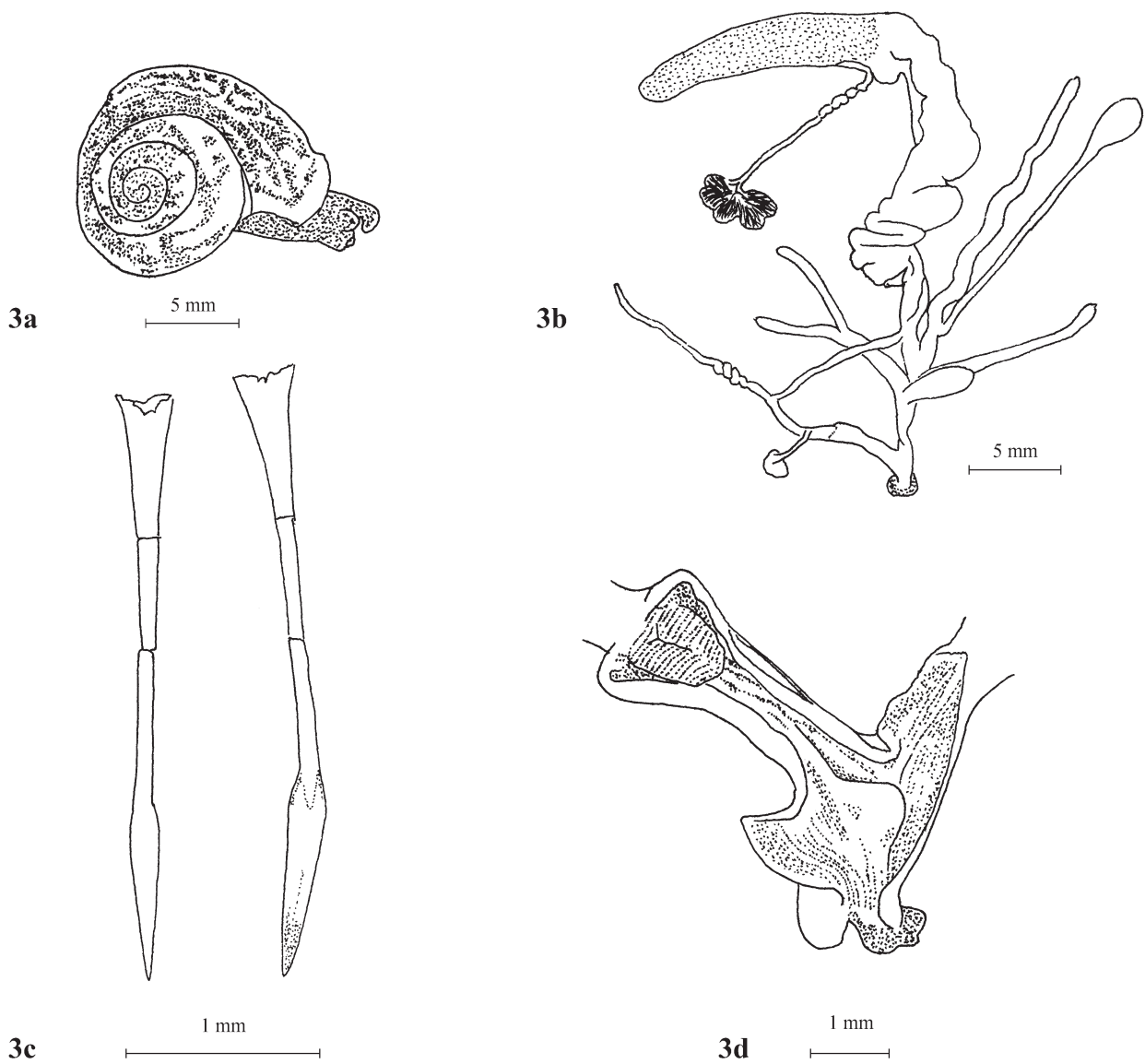
- 1990 *Chilostoma reischuetzi* SUBAI, – Annalen des Naturhistorischen Museums in Wien, **91** (B): 244, Taf. 1 Fig. 1–3 (shell), Abb. 1 (genital organs) [Locus typicus: “Griechenland, Epirus, Felsen b. d. türkischen Brücke über den Aóos-Fluß bei Kónitsa (UTM DK 73)”, Holotype: NMW 84363/1].
- 1990 *Chilostoma reischuetzi*, – REISCHÜTZ & SATTMANN, Annalen des Naturhistorischen Museums in Wien, **91** (B): 258.

Types and locus typicus: Holotype NMW 84363/1. Paratypes: NMW 84364/2, REI/3, STU/1, Greece, Ípiros, rocks at the Turkish bridge crossing the Aóos river at Kónitsa, UTM DK 73, 12.7.1987, leg. REISCHÜTZ & STUMMER; SMF 328991/1, S 10726/5 + 2 (juv.) + 2 (alk), NNM/1, ditto, 12.4.1988, leg. RIEDEL & SUBAI.

Additional material: ZMUA 20002/3 + 1 (juv.), Greece, Ípiros, canyon of the Aóos river, UTM DK 73, 29.5.1981, leg. MYLONAS; ditto, 11.8.1972, leg. FAUER F/4 + 1 (juv.) (right side of the canyon) and 2 + 1 (juv.) (left side of the canyon); F/2 + 2 (juv.), S 11670/4 + 8 (juv.), same locality, 600 m from the Turkish bridge, on limestone rocks, 580 m alt., UTM DK 73, 26.9.1989, leg. FAUER & SUBAI; NMW/102938/1 + 1 (juv.), same locality, 0.5–1.5 km above the Turkish bridge at Kónitsa, UTM DK 73, 25.6.1988, leg. SATTMANN; ZMUA 20085/2 + 3 (juv.), canyon of the Aóos river, Moni Stómiou, UTM DK 73, 18.5.1982, leg. MYLONAS; ZMUA 20182/3, canyon of the Aóos river, Monastíri, UTM DK 73, 19.5.1982, leg. MYLONAS; N/1 (fragment), rocks at the Turkish bridge crossing the Aóos river at Kónitsa, UTM DK 73, 18.7.1990, leg. NEUBERT; S 19162/1 (juv.), mountain slope 1 km from the road crossing Kónitsa-Kozáni in direction to Amárantos, on limestone rocks, UTM DK 73, 12.4.1988, leg. RIEDEL & SUBAI.

Diagnosis: Shell small, depressed, teleoconch with three spiral bands of light to medium brown colour; surface of teleoconch smooth, umbilicus moderately wide; penial papilla short, dart slender and long.

Description: The shell is depressed conical to almost discoidal with 3.75–5 regularly increasing whorls. The basic shell colour is whitish with three spiral bands of light to medium brown colour. Usually, the uppermost spiral is weak, narrow and faint, while the medium spiral is sharp with a width of ca. 0.8–1 mm. The third spiral is



Textfig. 3. *Superba reischuetzi* (SUBAI 1990). — a) whole body extracted from the shell; b) situs of the genital organs; c) dart; d) lumen of the distal genital organs showing AST, penial papilla and vagina. Greece, Ípiros, rocks at the Turkish bridge crossing the Aóos river at Kónitsa.

the broadest, always situated below the periphery of the shell and up to 2 mm width. The upper 2–2.5 whorls are sometimes yellowish brown.

The protoconch whorls consist of 1.5–1.75 whorls which are sculptured with minute granules. The surface of the teleoconch is smooth, its sculpture consists of irregularly spaced radial riblets. The last whorl reaches 1.7–1.9 the size of the penultimate whorl and bends obliquely towards the aperture. Suture of medium depth, slightly indented; umbilicus funnel-shaped, regularly increasing in width. In the last whorl, its diameter increases 1.5 times if compared to the penultimate whorl. It reaches a diameter of 3.5–5.5 mm. Aperture transversally oval, the insertions with a distance of 3.5–5.5 mm

and connected by a thin almost invisible callus; apertural rim sharp, upper part flattened extended; laterally and basally enlarged reaching 0.8–1.25 mm, somewhat enlarged towards the umbilicus.

Shell measurements ($n = 29$): H: 7–10; D: 16–22.2; AH: 7.5–9.5; AD: 8.5–11.5.

The animal's head and body (after 2 specimens from the type locality) are grey, the tail somewhat brighter; sole of the foot cream. The mantle displays a pattern of irregularly arranged, blurred dark spots on the entire surface. On the upper whorls, these spots are only few but their density increases on the lower whorl. The secondary ureter reaches a length of 15.5–17 mm, is completely open and splits terminally in two canals of 1 and 2 mm

length, respectively. The mandible is medium brown and has 4 ridges.

Characters of genital organs: female part: glandulae of moderate length, reaching three to four times the length of the dart sac; in both specimens investigated, one glandula was undivided, the other one split at 30–40 % of their absolute length. Stem of bursa copulatrix short, reaching 15–20 % of the vesicular stem; the diverticulum is as long as the combined length of vesicular stem + vesicle. The vagina reaches the same length of the dart sac; internally with several narrow longitudinal pilasters. Dart slender, 3.1–3.3 mm long, slightly curved; crown broadly funnel-shaped, narrow in the middle.

The AST with a ± broad and flat stem part and forming a strongly upraised triangular or linguiform pad in the centre of the atrium. The penial arm of the AST reaches the penial papilla (or is even longer); it becomes flat at its end. The vaginal arm is short pointing towards the boundary between atrium and vagina.

Male part: The penial lumen is filled with narrow pilasters arranged in parallel to the penial branch of the AST. There are narrow transverse folds in the proximal part of the penis around the papilla. The penial papilla is short conical with slightly sunken transverse folds. Laterally, there is a furrow reaching from the base almost to the tip of the papilla; the pore is situated in this furrow at the base of the papilla. The flagellum reaches the size of penis+epiphallus; it has up to four loops in its basal part.

Differential diagnosis: The shell of *S. vikosensis* is more depressed with less developed colour spirals; the surface of its teleoconch is sculptured by stronger radial riblets; the upper side of the aperture is more depressed and the umbilicus is wider if compared to *S. reischuetzi*. There are almost no differences in the anatomy of the genital organs except the undivided glandulae and the large size of the AST in *S. vikosensis*. The shell of *S. kulmakana* is larger and less depressed with distinct colour spirals, and its teleoconch is granulated; the apertural insertions are closer, and the apertural rim is more dilated; the glandulae are longer, more deeply subdivided and the diverticulum is relatively longer; the dart is broader. The shell of *S. grisea* is larger with a grey basic shell colour, the radial riblets are more blunt broader; the diverticulum is conspicuously shorter. The shell of *S. s. skipetarica* is less depressed and has chestnut brown spirals differing in size; on the teleoconch, the radial riblets are stronger (forming almost ribs); the glandulae and the diverticulum are relatively longer, the AST is flatter with only a single (the penial) arm; the dart is broader with a larger tip.

Distribution: As far as known, this species lives restricted to the valley of the Aóos river in Ípiros (NW Greece). Quite recently, it was also collected from the valley of the Sarantáporos river. This new locality extends the range of this species about 5 km in northern direction.

Superba skipetarica skipetarica (SUBAI 1995)

Plate 2, figs 4–5; textfigs 4, 7–8

- 1995 *Helicigona skipetaricus* SUBAI, – Annalen des Naturhistorischen Museums in Wien, **97** (B): 88, Abb. 2 (shell), Abb. 13 (genital organs), Abb. 14 (dart), Abb. 22 (distribution) [Locus typicus: “Süd-Albanien, Tomorgebirge, Kar N Çuka Partizan, E-Hang, Kalkfelsen, 1850 m alt., UTM DL 20”, Holotype: NMW 87770/1].
- 1996 *Helicigona skipetaricus*, – WELTER-SCHULTES, Schriften zur Malakozoologie, **9**: 22, 29.
- 1996 *Helicigona skipetaricus*, – DHORA & WELTER-SCHULTES, Schriften zur Malakozoologie, **9**: 164 (distribution map), 166.
- 1996 *Helicigona skipetaricus*, – DHORA & WELTER-SCHULTES, Schriften zur Malakozoologie, **9**: 209.
- 2002 *Helicigona skipetaricus*, – DHORA, Studime mbi molusqet e Shqipërisë: 135, 193.

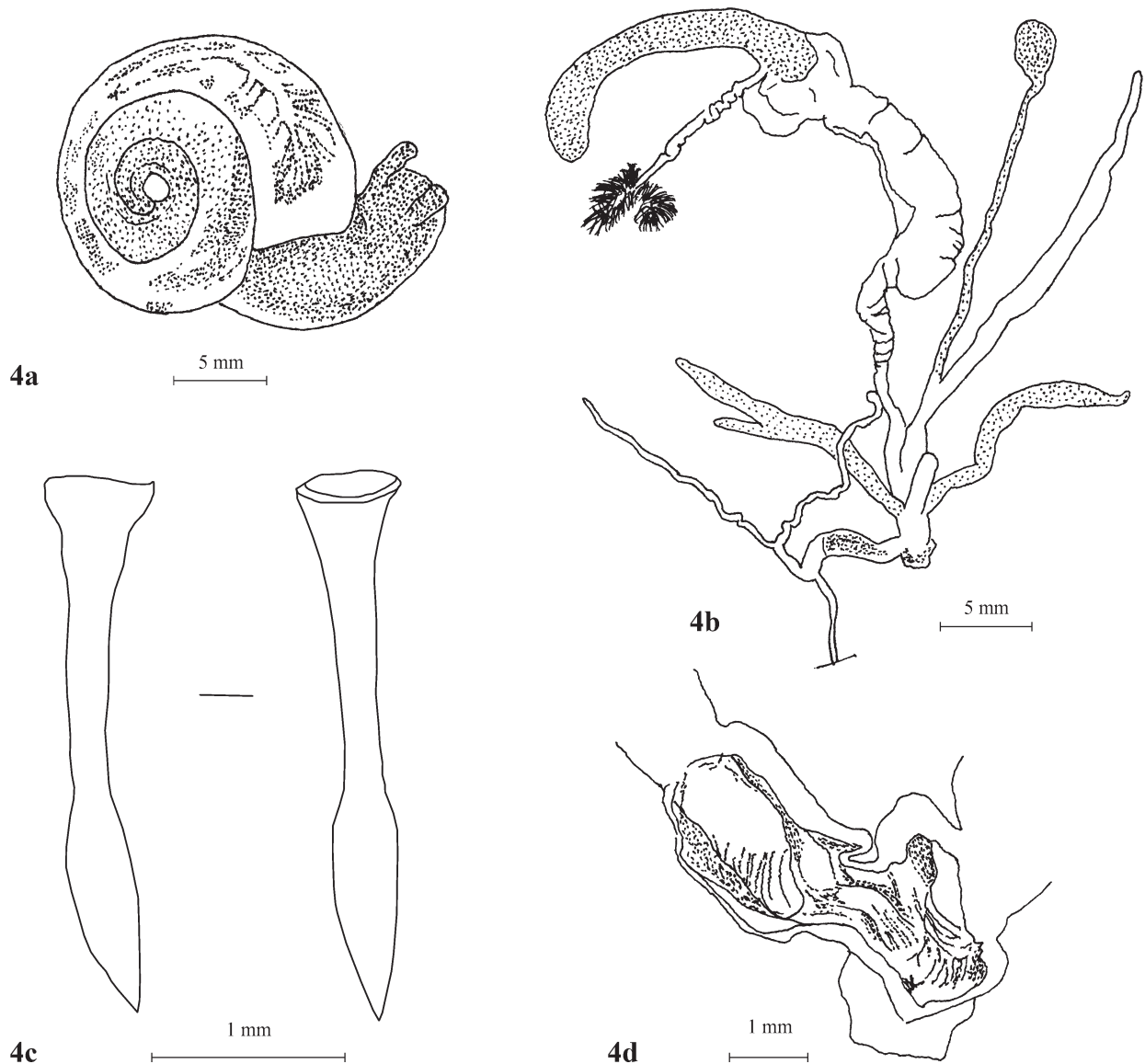
Types and locus typicus: Holotype NMW 87770/1. Paratypes: NMW 87771/11 + 2 (juv.), NMW 87772/9 (alk.), S 14076/2; Kar N Çuka Partizan, eastern slope, limestone rocks, 1850 m alt., UTM DL 20, 16.8.1992, leg. SATTMANN & WEISSENSTEINER; NMW 87768/8, ditto, 2000–2100 m alt., UTM DL 20, 16.8.1992, leg. SATTMANN & WEISSENSTEINER; NMW 87769/6 + 11 (juv.), 87775/4 + 1 (juv. alk.), Kar N Çuka Partizan, limestone gravel, 1730 m alt., UTM DL 20, 15–16.8.1992, leg. SATTMANN & WEISSENSTEINER; NMW 87752/1, N slope of Çuka Partizan, beech forest, 1330 m alt., UTM DL 20, 15.8.1992, leg. SATTMANN & WEISSENSTEINER.

Additional material (populations with transitional character states to *S. s. asketa*): HNHM 95456/ 21 + 4 (juv.), S 20214/2, Albania, Periferi Berat, Mali i Tomorrit, 6 Km N of Maja e Tomorrit, on limestone rocks along the mountain ridge, 2240 m alt., 10.8.2004, leg. FEHÉR; HNHM 95457/98 + 14 (juv.), SMF 328955/1, S 20215/2, ditto, on limestone rocks below the western slope of the mountain ridge, 2060 m alt., 11.8.2004, leg. FEHÉR.

Diagnosis: Shell small to medium sized, basic shell colour whitish, with three chestnut brown spiral bands; surface of the teleoconch with fine radial stripes only; umbilicus of moderate width; genital organs with grey pigment.

Description: The shell is depressed conical to almost flat with 4.5–5 regularly increasing whorls; basic shell colour whitish, with three chestnut brown spiral bands; usually, the upper two spirals are distinct and reach a width of ca.0.5–1 mm (in few specimens, the middle spiral may fade); the lower spiral is as wide as the others, but often increases in width to 3–9 mm and fades towards the umbilicus. The upper 2–2.5 whorls are usually yellowish brown.

The protoconch whorls are sculptured with very fine granules, surface dull. The surface of the teleoconch is shining, finely granulated and sculptured by a few low radial stripes (which may be stronger in some populations). On the last whorl, a few closely spaced spiral furrows can be observed (high magnification required). Sometimes, the apex is mammillate. The last whorl reaches 1.6–2.1 the size of the penultimate whorl and



Textfig. 4. *Superba skipetarica skipetarica* (SUBAI 1995). — a) whole body extracted from the shell; b) situs of the genital organs; c) dart; d) lumen of the distal genital organs showing AST, penial papilla and vagina. Albania, Tomor Mts., Kar N Çuka Partizan, eastern slope.

bends slightly towards the aperture. Suture of medium depth, slightly indentate; umbilicus deep and funnel-shaped, reaching a diameter of 3.1–4.4 mm. Aperture spherical to oval, the insertions with a distance of 2.6–4.7 mm and connected by a thin, almost invisible callus; apertural rim sharp, regularly extended reaching 0.6–1 mm, inconspicuously enlarged towards the umbilicus.

Shell measurements ($n = 165$): H: 7.9–11; D: 17–23.7; AH: 7–10.3; AD: 8.5–12.

The animal's body (after 5 specimens from Kar N Çuka Partizan, eastern slope) is uniformly brown to brownish greyish; the sole of foot cream with bright greyish fringes. Usually, the mantle without pigments, but in a few specimens there is a pattern of grey pigment around the lung venation. The secondary ureter reaches a length

of 22–25 mm, is completely open and splits terminally in two canals of 1.5 and 2.5–3 mm length, respectively. The mandible is opaque to reddish brown and has 4–5 ridges.

Characters of genital organs: Internally, many parts of the genital organs with grey pigment.

Female part: glandulae elongate, greyish, somewhat narrow at the tip, reaching four times the length of the dart sac; usually, the glandulae are not divided, but in a few specimens there are subdivided glandulae (split at 25–30 % of their absolute length). Stem of bursa copulatrix short, reaching 20–25 % of the vesicular stem; the diverticulum is as long as or only slightly longer than the combined length of vesicular stem + vesicle. The vagina is short, reaches 30–50 % of the length of the dart sac and may be narrowed by a transverse folds. Dart short,

somewhat clumsy, 2.3–2.7 mm long, slightly curved; crown slightly funnel-shaped, narrow in the middle.

The AST with a broad and flat stem part, strongly up-raised and in a slightly oblique position in the centre of the atrium. The penial arm of the AST long and reaches approximately half of the penial lumen; it becomes flat at its end.

Male part: The penial papilla is elongate conical with slightly sunken transverse folds. Laterally, there is a furrow reaching from the base to the tip of the papilla; the pore is situated in this furrow at the base of the papilla. The flagellum reaches 1.5 the size of penis+epiphallus and is slightly looped in its basal part.

Differential diagnosis: for differences to *S. s. asketa* n. ssp. refer to the respective paragraph under this taxon. *S. skipetarica* differs from all other species of *Superba* by the presence of pigmentation of the genital organs (grey in *S. s. skipetarica* and grey to dark grey in *S. s. asketa*).

The shell of *S. reischuetzi* is more depressed and has flat whorls with a more faint pattern of yellowish-brownish spiral bands, the lowest band is situated more close to the periphery of the shell and narrower, and the radial stripes are much weaker; the granulation of the protoconch is coarser; the glandulae are cylindrical (not narrowed at the tip), the AST is larger with a vaginal arm; the dart is more slender with a smaller tip. The shell of *S. kulmakana* is larger on average with bands of almost the same width; the umbilicus is relatively larger, and the apertural insertions are closer and the apertural rim is larger; the glandulae are deeply subdivided. The shell of *S. grisea* is usually larger, greyish, and the bands are much weaker; the shell surface is smooth, with a whitish surface layer and blunt riblets; the diverticulum is much shorter. The shell of *S. vikosensis* is almost discoidal with low whorls and a relatively larger umbilicus; the aperture is more transversely dilated, and the apertural rim narrow; the bands of *S. vikosensis* are weaker, and the radial stripes less developed; the glandulae are relatively shorter and cylindrical, the AST is broader and situated at the genital opening; the dart is more slender.

Distribution: *S. s. skipetarica* lives in southern Albania in the northern part of the Tomor Mts, around the Çuka Partizan peak. It occurs in an altitudinal range of 1330–2240 m.

Remarks: In contrast to previous idea as pointed out in the original description, *S. skipetarica* is not closely related to *S. reischuetzi* from Greece. The nominotypical subspecies displays some remarkable variation of shell morphology. North and east of the Çuka Partizan peak, an almost smooth and more narrowly umbilicate form can be found, where the lower band is quite broad, fading in the periomphalic area and often interrupted by radial stripes of basic shell colour. Recently, this species was found south of the Çuka Partizan peak, too, where the shell's umbilicus is wider, the lower band narrower

and more distinct. On the teleoconch, the radial stripes are stronger, a regular pattern of narrow riblets can be observed and traces of a spiral threads can be found. This population is here taken as being transitional to *S. s. asketa*.

Superba skipetarica asketa n. ssp.

Plate 2, fig. 6; textfigs 5, 7–8

Types and locus typicus: Holotype HNHM 95544. Paratypes: HNHM 95466/5; Albania, Periferi Berat, Mali i Tomorrit, 4.5 Km N von Maja e Tomorrit, on limestone rocks below the ridge, western slope, 2060 m alt., UTM DL 20, leg. FEHÉR, 10.8.2004. — Additional paratypes: coniferous forest 2 Km N of Maja e Tomorrit, on limestone rocks below the ridge, eastern slope, 2050 m alt., UTM DL 20, 10.8.2004, leg. FEHÉR, HNHM 95464/6; HNHM 95462/8 +2 (alk.), SMF 328956/1, S 20213/1, 1 km N of Maja e Tomorrit, on limestone rocks below the ridge, eastern slope, 2230 m alt., UTM DK 29, leg. FEHÉR, 10.8.2004; HNHM 95460/10 +2 (alk.), S 20212/1, 700 m N of Maja e Tomorrit, on limestone rocks below the ridge, 2375 m alt., UTM DK 29, leg. FEHÉR, 10.8.2004; HNHM 95982/34, H/34, ditto, leg. FEHÉR, HUNYADI, HUSZÁR & MURÁNYI; HNHM 95458/2, 2 Km S of Maja e Tomorrit, on limestone rocks, 2100 m alt., UTM DK 29, 10.8.2004, leg. FEHÉR.

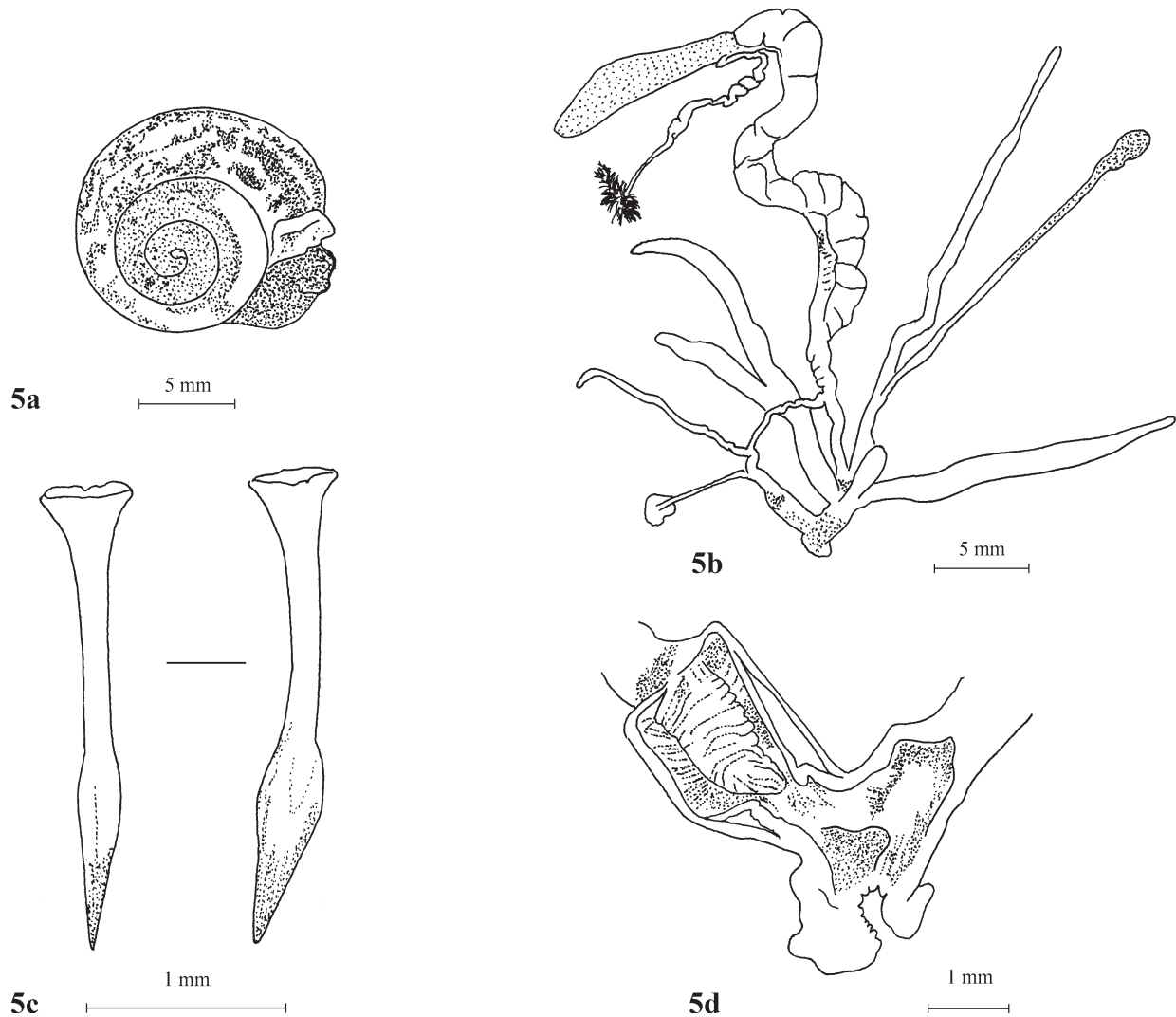
Additional material from the above mentioned localities (not considered as type specimens): HNHM 95467/2 (juv); HNHM 95465/2 (juv); HNHM 95463/15 (juv. + fragments); HNHM 95461/8 (juv. + fragments); HNHM 95459/1 (juv.), HNHM 95983/3 (juv.).

Diagnosis: Shell small to medium sized, depressed conical, greyish brown; spiral bands indistinct, surface of teleoconch sculptured with strong ribs and spiral threads.

Description: The shell is depressed conical to almost flat with 4–5 regularly increasing whorls, whitish to greyish with three chestnut brown spiral bands. The upper two bands are narrow reaching a width of ca. 0.5–1 mm each, the lower band is situated below the periphery and can reach up to 2 mm width. Usually, the initial 2 whorls are yellowish-brownish. The apex is sometimes mammillate.

The protoconch consists of 1.5–1.75 finely granulated whorls. Initially, the surface of the teleoconch is finely granulated and displays low riblets which became stronger with the increase of the whorls. On the last whorls, these ribs are strong and accompanied by a sculpture of fine spiral threads.

The last whorl reaches 1.6–2.1 the size of the penultimate whorl, weakly to strongly descending before the aperture. Suture of medium depth and slightly undulating. Umbilicus deep, perspective; it increases regularly from the initial whorl, and increases rapidly in size in the last whorl almost reaching the double width of the penultimate whorl (ca. 2.6–4.8 mm). Aperture spherical to oval, the insertions with a distance of 2.3–3.9 mm and



Textfig. 5. *Superba skipetarica asketa* n. ssp. — a) whole body extracted from the shell; b) situs of the genital organs showing AST, penial papilla and vagina. a)–b) from: Albania, Periferi Berat, Mali i Tomorrit, 700 m N of Maja e Tomorrit, on limestone rocks below the ridge, 2375 m alt. c)–d) from: Periferi Berat, 1 km N of Maja e Tomorrit, on limestone rocks below the ridge, eastern slope, 2230 m alt.

connected by a thin but callus; apertural rim sharp, laterally and basally somewhat extended (0.8–1.25 mm).

Shell measurements ($n = 35$): H: 6.5–10.3; D: 14.4–24; AH: 6.5–11; AD: 7.5–12.8.

The animal's body (after 4 specimens from "700 m N" and "1 Km N of Maja e Tomorrit") is uniformly brown, grey to dark grey with a brownish hue; sole of the foot cream to whitish with a brownish fringe; mantle with weak and irregularly placed spots of pigment, which become less numerous in the upper whorls. The secondary ureter reaches a length of 10.5–20 mm, at the end it is subdivided in two separate ducts of 1 and 1.5–2 mm length, respectively. The mandible is medium brown and has 3 ridges.

Characters of genital organs: Internally, many parts of the genital organs with greyish-brownish pigment.

Female part: glandulae elongate, somewhat narrow at the tip, with brownish pigmentation, reaching five to six times the length of the dart sac; usually, the glandulae are simple, but in a few specimens, subdivided glandulae split at 50 % of their absolute length. Stem of bursa copulatrix short, reaching 20–25 % of the vesicular stem; diverticulum as long as or up to 25 % longer than vesicular stem + vesicle. Vagina as long as or only half the length of the dart sac. Distally, the vaginal lumen is narrowed by a \pm broad and flat transverse fold. Dart short, somewhat clumsy, 1.9–2.35 mm long, with a narrow stem, slightly curved; crown funnel-shaped.

The AST as in *S. s. skipetarica*.

Male part: Distal penial lumen lacks any folds or pilasters, but there are fine transverse fold on the penial wall close the penial papilla. The papilla and flagellum as in *S. s. skipetarica*, but flagellum slightly longer.

Etymology: We would like to dedicate this new subspecies to three young Hungarian botanists: ZOLTÁN BARINA, CSABA NÉMETH and DÁNIEL PIFKÓ, who accompanied the second author on his collecting trip in 2004 to southern Albania. The name “asketa” is derived from their nickname „the ascetics”.

Differential diagnosis: *Superba s. asketa* differs from the nominotypical subspecies by the less distinct spiral colour bands, and the presence of ribs and widely spaced spiral threads on the teleoconch whorls. If present in other species (*S. s. skipetarica*, *S. kulmakana* or sometimes in *S. grisea*), these spiral threads are always very narrow, seldom deep and restricted to the lower whorl. The shell of *S. vikosensis* is more depressed, its surface lacks any spiral threads, and the radial riblets are less distinct; its aperture is more transversely dilated, and the umbilicus wider. The morphology of the genital organs is similar, but it differs in the form of its more cylindrical glandulae, the larger AST and the more slender dart.

Distribution: *Superba s. asketa* is hitherto only recorded from the Tomor peak in the southern part of the Tomor Mts. in a vertical range between 2050–2375 m altitude.

***Superba vikosensis* (SUBAI 1990)**

Plate 2, fig. 7; textfigs 6, 7–8

- 1990 *Chilostoma vikosensis* SUBAI, – Annalen des Naturhistorischen Museums in Wien, **91** (B): 245, Taf. 1 Fig. 4–6 (shell), Abb. 2 (genital organs) [Locus typicus: “Griechenland, Epirus, Vikos-Schlucht 50–100 m vom Kloster Ag. Paraskevi bei Monodendri (UTM DK 71)”, Holotype: NMW 84365/1].
- 1990 *Chilostoma vikosensis*, – REISCHÜTZ & SATTMANN, Annalen des Naturhistorischen Museums in Wien, **91** (B): 258, Abb. 13 (genital organs).

Types and locus typicus: Holotype NMW 84365/1. Paratypes: NMW 84366/2, REI/2, STU/5; Greece, Ípiros, Vikos Gorge, 50–100 m from the monastery Agía Paraskeví at Monodéndri, UTM DK 71, 15.7.1987, leg. REISCHÜTZ & STUMMER. — Additional paratypes: IZPAN/18, NNM/2, SMF 328992/2, S 10727/22 + 27 (juv., fragments + 1 alk.), 150–200 m from the monastery Agía Paraskeví at Monodéndri, UTM DK 71, 11.4.1988, leg. RIEDEL & SUBAI; STU/4, Vikos Gorge at the monastery Ágios Profitis Iliás (N of Monodéndri), UTM DK 71, 15.7.1987, leg. REISCHÜTZ & STUMMER.

Additional material: F/5 (+ 1 alk.), S 11671/12 + 4 (juv.), Greece, Ípiros, Vikos Gorge, 50–100 m from the monastery Agía Paraskeví at Monodéndri, UTM DK 71, 27.9.1989, leg. FAUER & SUBAI; HNHM 91015/7, ditto, 10.8.1996, leg. ERÖSS & FEHÉR; NEUB/4 + 6 (juv.), Vikos Gorge, vantage point at Monodéndri, UTM DK 71, 19.7.1990, leg. NEUBERT; S 11772/3 + 6 (juv.), 7.2 Km S of Kepéssovo, in direction to Asfáka at the Turkish bridge, on limestone rocks, 700 m alt., UTM DK 81, 23.5.1991, leg. SUBAI.

Diagnosis: Shell small, almost discoidal, strongly depressed whorls; three indistinct spiral colour bands;

surface of the teleoconch with strong radial stripes; umbilicus wide, aperture transversely depressed; glandulae short, dart slender.

Description: The shell is depressed conical to almost discoidal with 4–4.5 regularly increasing, bluntly keeled whorls. The basic shell colour is whitish with three narrow spiral bands of light to medium brown colour. The two upper spirals are narrow and reach a width of ca. 0.5 mm. The third spiral is always situated below the periphery of the shell. The upper 2–2.5 whorls are sometimes yellowish brown.

The protoconch whorls consist of 1.5–1.75 whorls which are sculptured with minute granules. The surface of the teleoconch is shiny with very fine granules on the first two whorls, its sculpture consists of irregularly spaced radial riblets. The last whorl reaches 1.6–2.4 the size of the penultimate whorl and bends slightly towards the aperture. Suture of medium depth, slightly indentate; umbilicus funnel-shaped, regularly increasing in width. In the last whorl, its diameter increases 1.5 times if compared to the penultimate whorl. It reaches a diameter of 3.4–4.2 mm. Aperture transversally depressed, the insertions with a distance of 2.8–4.1 mm and connected by a thin almost invisible callus; apertural rim sharp, upper part flattened; laterally and basally enlarged reaching 0.5–0.6 mm, somewhat enlarged towards the umbilicus.

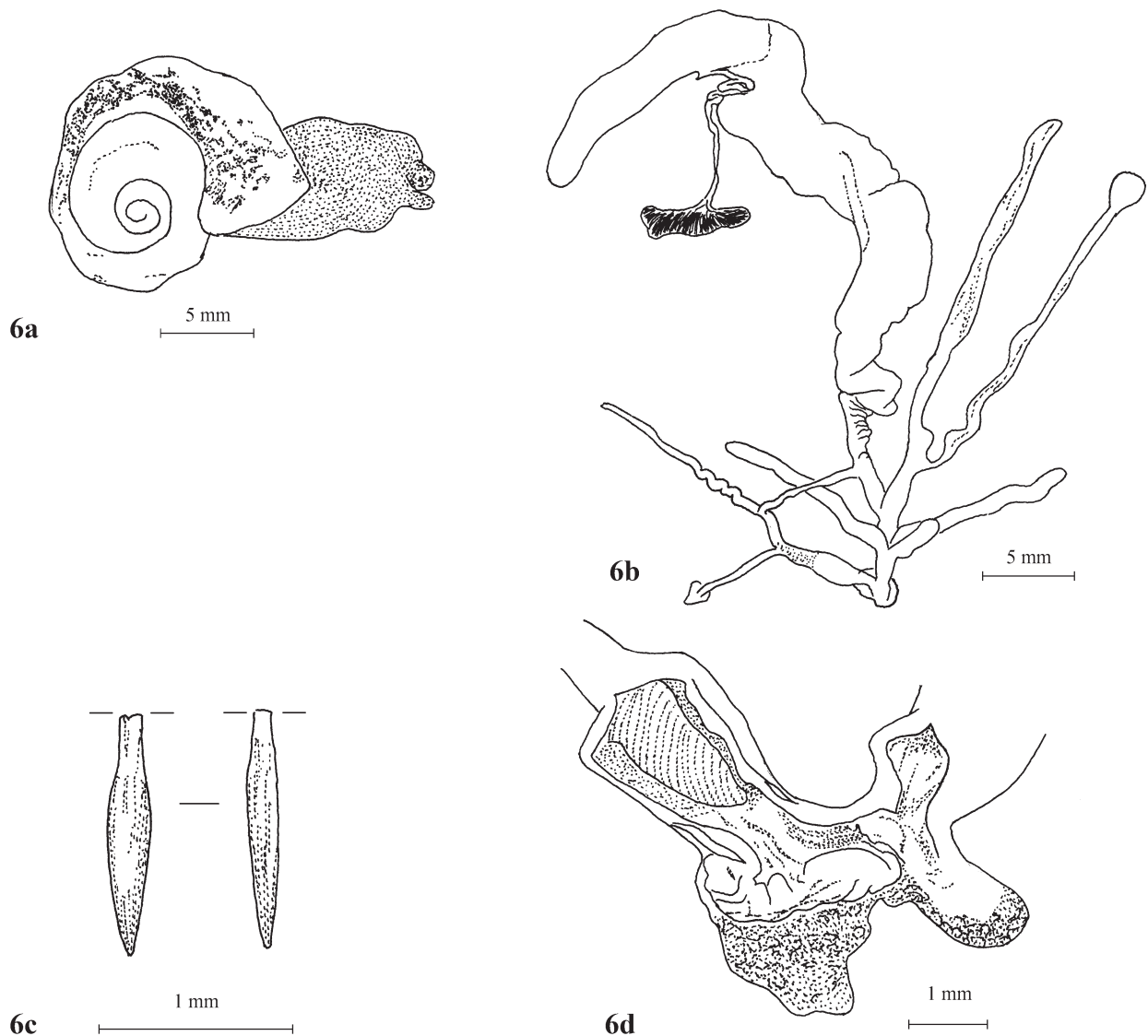
Shell measurements (n = 37): H: 6–7.5; D: 16–20.3; AH: 5.8–8; AD: 6.8–10.1.

The animal’s head and body (after a single specimen from the Vikos Gorge, 50–100 m vom Kloster Agía Paraskeví at Monodéndri and after REISCHÜTZ & SATTMANN (1990: Abb. 13)) are grey to brownish, the tail and flanks somewhat brighter; the mantle with a pattern of irregularly arranged, blurred light-grey spots. On the upper whorls, these spots are only few but their density increases on the lower whorl. The secondary ureter reaches a length of 16 mm, is completely open and splits terminally in two canals of 1 and 2 mm length, respectively. The mandible is medium brown and has 4 ridges.

Characters of genital organs: female part: glandulae simple, reaching four times the length of the dart sac; stem of bursa copulatrix short, reaching 20 % of the vesicular stem; the diverticulum is as long as the combined length of vesicular stem + vesicle. The vagina reaches the same length of the dart sac; distally, it is narrowed by a large transverse fold, while the interior is sculptured by longitudinal pilasters; dart slender, elongate.

The AST is situated close to the genital opening. It forms a strongly upraised transverse pad and reaches its maximum height in the centre of the atrium. The penial arm of the AST reaches the penial papilla (or is even longer); it becomes flat at its end. The vaginal arm is short pointing towards the boundary between atrium and vagina.

Male part: The penial lumen is filled with broad pilasters. There are narrow transverse folds in the proximal part of the penis around the papilla. The penial papilla is elongate conical. Laterally, there is a deep furrow reaching from the base almost to the tip of the papilla; the pore



Textfig. 6. *Superba vikosensis* (SUBAI 1990). — a) whole body extracted from the shell; b) situs of the genital organs; c) dart; d) lumen of the distal genital organs showing AST, penial papilla and vagina. Greece, Ípiros, Vikos Gorge, 50–100 m from the monastery Agia Paraskevi at Monodéndri.

is situated in this furrow at the base of the papilla. The flagellum reaches 1.3–1.5 the size of penis+epiphallus; it has up to four loops in its basal part.

Differential diagnosis: The shell of *S. reischuetzi* (which is geographically close) is more conical with more distinct spiral bands; the surface of its teleoconch is sculptured by finer radial stripes; the aperture is more spherical, and the umbilicus narrower; glandula sometimes subdivided, AST with two arms. The shell of *S.*

asketa is more conical with, sculptured strong white riblets and sunken spiral threads; its aperture is more spherical, the apertural rim more dilated, and the umbilicus narrower; the glandulae are relatively longer and acute at the tip, the AST smaller, and the dart more clumsy.

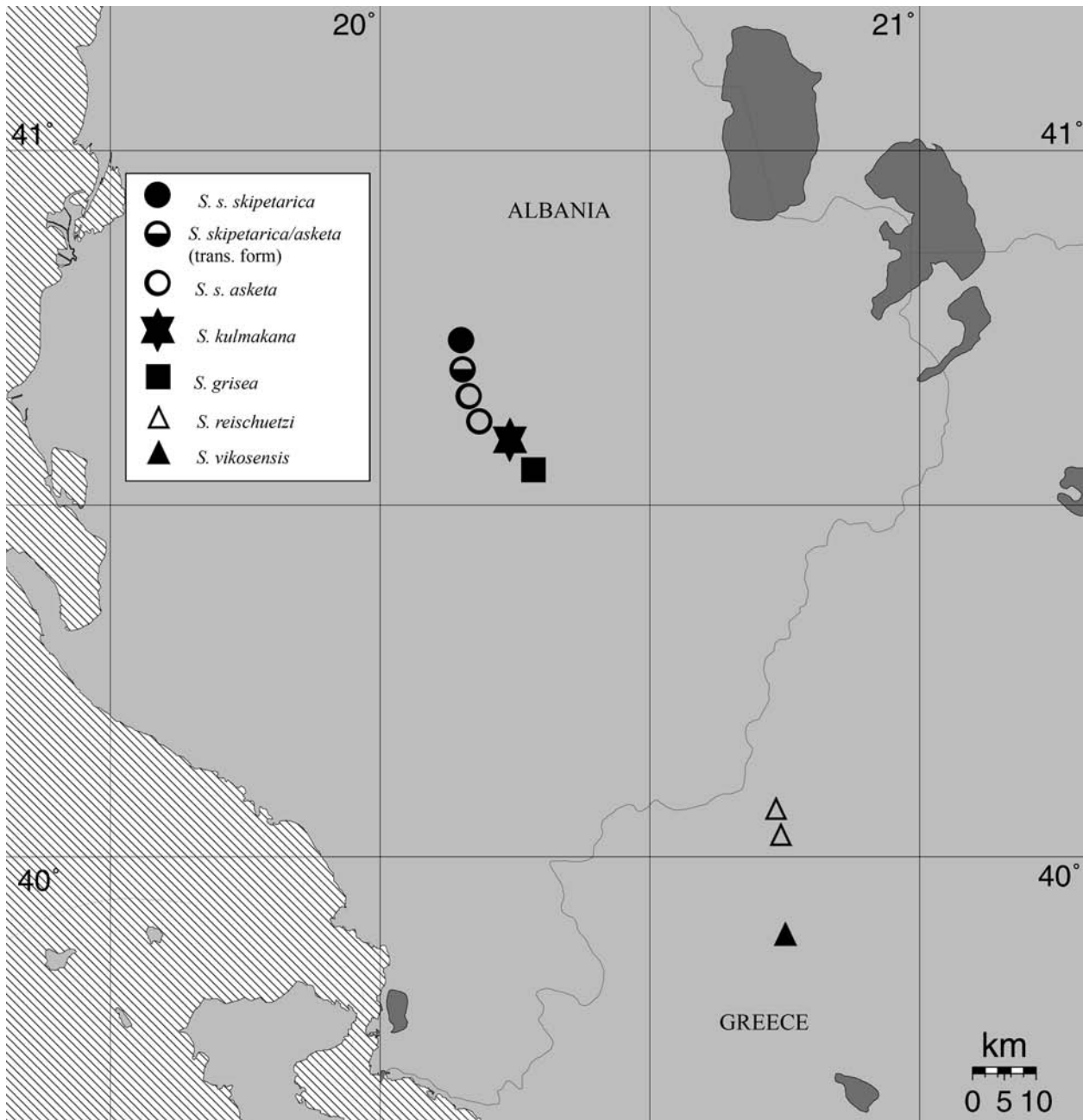
Distribution: All hitherto known records are focused on a small area in the uppermost reach of the Vikos gorge in northern Ípiros.

Remarks: The stem part of the single dart is lost; for this reason, only the tip of the dart could be illustrated.

Discussion

The species of *Superba* n. gen. can be subdivided in two groups. The first contains the species from southern Albania, *S. s. skipetarica*, *S. s. asketa*, *S. grisea* and *S. kul-*

makana. They are found in the neighbouring mountain ranges of the Tomor and the Kulmak and inhabit the alpine ranges. The only exception is *S. grisea* which was found



Textfig. 7. Distribution of species of *Superba*.

in a gorge at 1150 m altitude (textfig. 8). On average, their shells are larger and less depressed than in their relatives from Greece. The darts of the Albanian species are shorter with a longer tip, and the AST is low.

In contrast, the two species from Greece, *S. reischuetzi* and *S. vikosensis*, turned out to live in lower altitudes (although the type locality of *S. vikosensis* is at 1100 m altitude) (textfig 7). On average, their shells are smaller, more delicate and depressed if compared to the Albanian species. Their AST is more elevated, and the dart is longer and more slender.

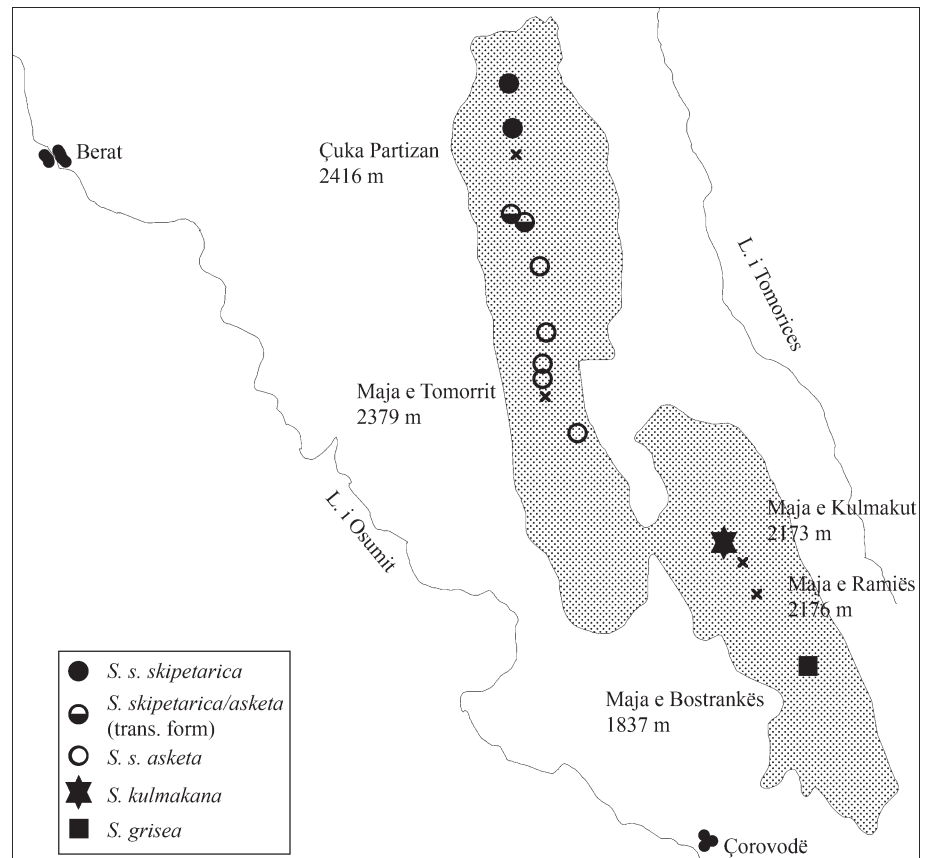
It should be stressed that the distribution areas of all species of *Superba* n. sp. are remarkably small. Often, it

is limited to a range with a diameter of 100 m to a few kilometres and covers each a mountain summit or ridge or a small valley. In comparison, the distribution ranges of species of the more closely related genus *Josephinella* usually cover 50 km or more, and species of the genera *Cattania* and *Liburnica* inhabit even larger areas.

Acknowledgements

We are grateful to Dr H. SCHÜTT (Düsseldorf) for linguistic revision of the German text, Dr. E. NEUBERT (Badenweiler) for translation, the photos and the arrangement of the figures used in this work.

Textfig. 8. Distribution of the Albanian species of *Superba* in the Tomor and Kulmakës Mountains.



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Plate 1

All figures $\times 3$, phot. E. NEUBERT

- Fig. 1. *Superba grisea* n. sp.
Holotype HNHM 95542, Albania, Periferi Skrapar, Qafa e Dëvris,
NE of Radesh along the Çorovodë-Zaloshnje road, limestone rocks,
1150 m alt., D = 22.7 mm.
- Fig. 2. *Superba reischuetzi* (SUBAI 1990).
Paratype SMF 328991; Greece, Epirus, rocks at the Turkish bridge
crossing the Aóos river at Kónitsa, D = 16.9 mm.
- Fig. 3. *Superba kulmakana* n. sp.
Holotype HNHM 95543, Albania, Periferi Skrapar, small canyon
1 Km NW of Maja e Kulmakut, on limestone rocks, 2070 m alt.,
D = 22.25 mm.

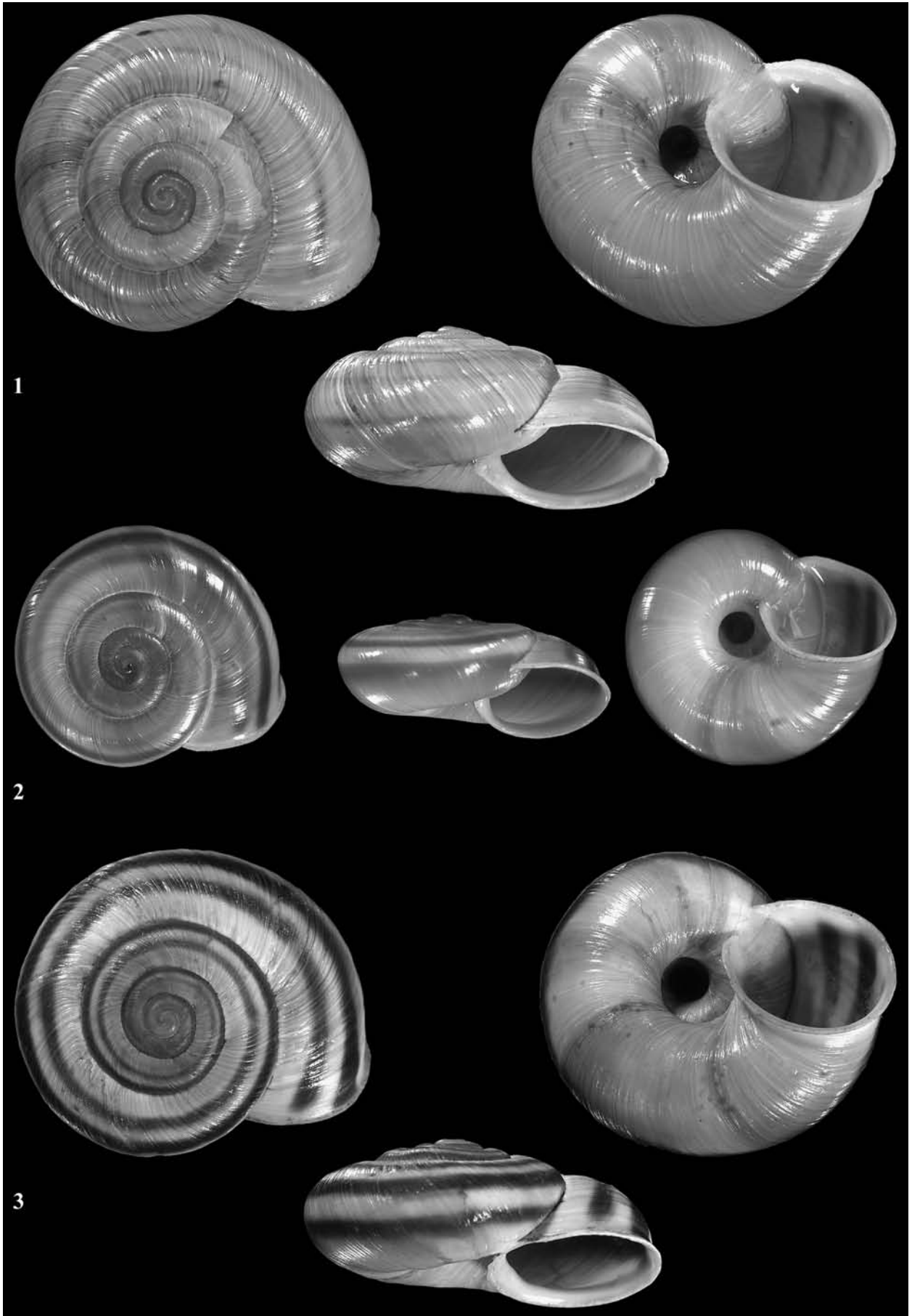


Plate 2

All figures $\times 3$, phot. E. NEUBERT

- Fig. 4–5 *Superba skipetarica skipetarica* (SUBAI 1995).
4) Paratype ex coll. SUBAI, Albania, Kar N Çuka Partizan, eastern slope, limestone rocks, 1850 m alt., D = 18.95 mm.
5) SMF 328955, transitional form of *S. s. skipetarica* to *S. s. asketa* n. ssp.; Periferi Berat, Mali i Tomorrit, 6 Km N of Maja e Tomorrit, on limestone rocks below the western slope of the mountain ridge, 2060 m alt., D = 20.1 mm.
- Fig. 6. *Superba skipetarica asketa* n. ssp.
Holotype HNHM 95544; Albania, Periferi Berat, Mali i Tomorrit, 4.5 Km N von Maja e Tomorrit, on limestone rocks below the ridge, western slope, 2060 m, D = 20.1 mm.
- Fig. 7. *Superba vikosensis* (SUBAI 1990).
Paratype SMF 328992, Greece, Ípiros, Vikos Gorge, 50–100 m from the monastery Agía Paraskeví at Monodéndri, D = 18.75 mm.

