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***Allium* sect. *Acanthoprason* (*Alliaceae*) in southern Transcaucasia: a survey, with the description of two new species**

Abstract

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Five species of *Allium* sect. *Acanthoprason* occur in the area studied (Armenia and Nahičevan). Two of them, *A. egorovae* and *A. vasilevskajae*, are described as new to science. All are illustrated, their S Transcaucasian distribution is mapped, and their relationships are discussed.

Introduction

While preparing the treatment of *Allium* for the forthcoming tenth volume of 'Flora of Armenia' we re-examined all representatives of that genus that are found in southern Transcaucasia. The taxa of *A. sect. Acanthoprason* Wendelbo were found to be of special interest due to the difficulty of their delimitation.

Allium sect. *Acanthoprason* as presently understood comprises c. 10 species centred on Iraq, Turkey, Iran, Afghanistan and Tadjikistan (Wendelbo 1969). Three of them were known to occur in southern Transcaucasia: *A. akaka* S. G. Gmel. ex Roem. & Schult., *A. derderianum* Regel, and *A. materculae* Bordz. (Gabrieljan & Tamanjan 1982, Pogosjan 1983, 1985a-b). Their occurrence in central and S Armenia and Nahičevan is situated on the northern edge of the section's distributional range. *A. derderianum*, accepted as a member of the flora of Armenia (Nahičevan) by Grossgejm (1928: 216), was later by the same author (Grossgejm 1940: 1939) placed in the synonymy of *A. woronowii* Miscz. ex Grossh., which, according to the original description, is a quite different plant whose type locality is now situated in easternmost Turkey, vil. Ağrı, and which has probably never been collected again (see Kollmann 1984). *A. materculae*, described from Nahičevan and accepted as distinct by Grossgejm (1928, 1940), has been sunk into synonymy under *A. akaka* by Tahtadžjan & Fedorov (1972), then redeemed by A. Seisums in his so far unpublished PhD thesis, which we have consulted in St Petersburg (LE).

Our own study is based on the herbarium material held at B, ERE, LE, and P. It confirms that the three species *Allium akaka*, *A. derderianum*, and *A. materculae* are distinct and do grow in

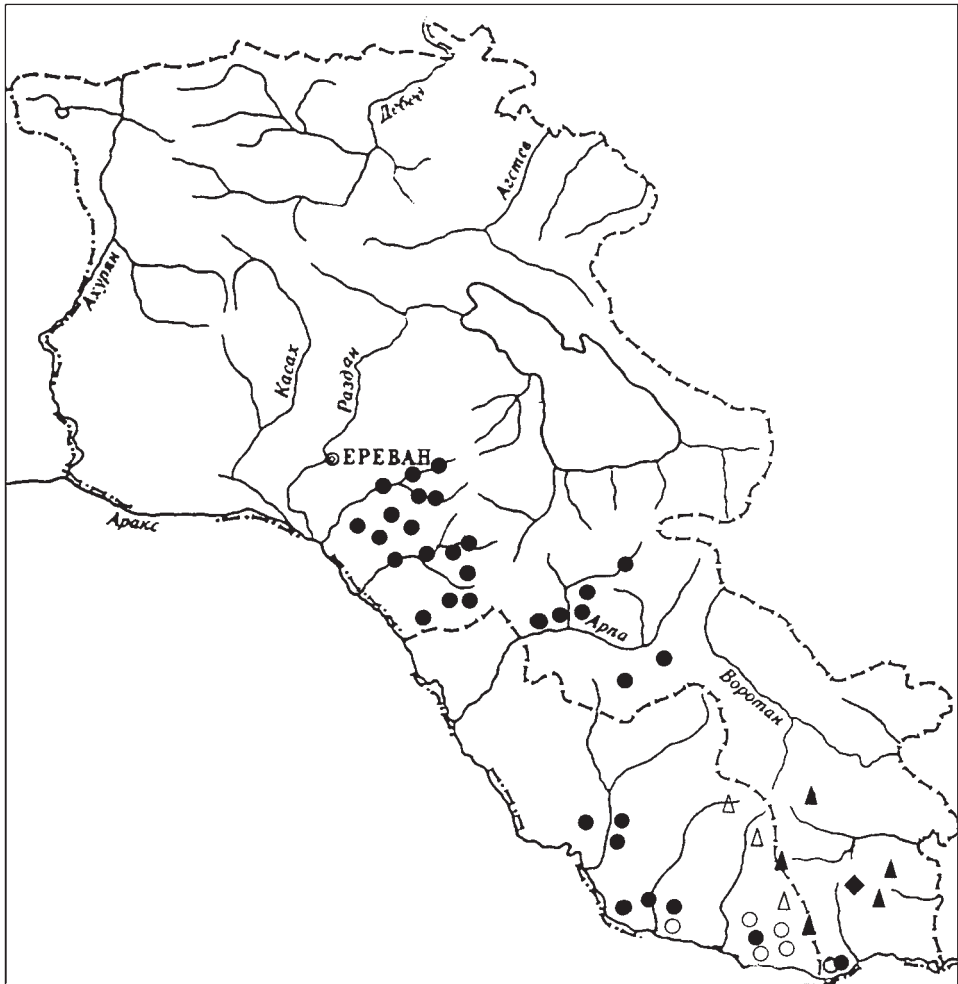


Fig. 1. Distribution of the species of *Allium* sect. *Acanthoprason* in S Transcaucasia – *A. egorovae* (Δ); *A. vasilevskajae* (\blacklozenge); *A. materculae* (\bullet); *A. akaka* (\circ); *A. derderianum* (\blacktriangle).

southern Transcaucasia. In addition we found herbarium specimens of very characteristic plants that we could not identify with any of the taxa known and described so far. We recognise them as two new species, described and named below.

Results

Allium sect. *Acanthoprason* Wendelbo in Bot. Not. 122: 27. 1969. – Typus: *A. akaka* S. G. Gmel. ex Roem. & Schult.

1. *Allium materculae* Bordz. in Zap. Kievsk. Obšč. Estestvoisp. 25: 73. 1915. – Lectotypus (*A. Seisums* ms., confirm. hoc loco): Transcaucasia, “Azerbaidžan, prope oppidum Nahičevan”, 14./27.4.1914, *Roop* (LE!) – Fig. 2.

= *Allium materculae* var. *albiflorum* Bordz. in Zap. Kievsk. Obšč. Estestvoisp. 25: 74. 1915.
 = *Allium akaka* var. *regale* Tamamsch. in Repert. Spec. Nov. Regni Veg. 38: 63. 1935.
 – “*Allium akaka*” auct. mult., non S. G. Gmel. ex Schult. & Schult. f.

Habitat: Dry stony and clay slopes, screes, sandy and rocky deserts. Foothills, lower and middle montane belts, 700-2000 m alt. Fl. April-May, fr. May-June.

Distribution: S Transcaucasia, E Anatolia, NW and N Iran.

2. *Allium akaka* S. G. Gmel. ex Schult. & Schult. f. in Roemer & Schultes, Syst. Veg. 7: 1132. 1830. – Typus: “Ghilan”, Pallas (B-W 6511!) – Fig. 3.

Habitat: Dry stony slopes, screes, rocks, rocky deserts. Foothills and lower montane belt, 600-1200 m alt. – Fl. April-May, fr. May.

Distribution: S Transcaucasia (extreme S part of the Zangezur ridge), Talysh, E Anatolia, NW and N Iran.

3. *Allium egorovae* M. V. Agab. & Ogan., **sp. nova** – Fig. 4.

Holotypus: “Nah. ASSR, vyše s. Aravsja, bassejn verhnego pritoka Alindža-čaj. Raznotrav’e”, 1700-2200 m, 28.6.1963, *Mulkiđžanian* (ERE 81409; isotypi: B, ERE 81410, 81416).

Bulbus globosus vel ovoideus, 2-3 cm diam., tunicis chartaceis, exterioribus nigrescentibus, interioribus albidis. *Scapus* 7-20 cm altus, 1.5-4 mm diam., rectus vel flexuosus, validus, in sicco costatus, glabriusculus vel sparsim minute papillosus. *Folia* (2-)3(-4), vaginis subterraneis, lamina scapum superantibus, (10-)15-30(-40) cm longis et 0.8-3 cm latis, planis, anguste- vel lineari-lanceolatis, in apicem cucullatum sensim angustatis, glabriusculis vel sparsim minute papillosis, margine stria angusta alba notatis, laevibus vel scabriusculis, leviter undulatis, reflexis. *Spatha* pedicellis plus minusve aequilonga, paleacea, laciniata, laciniis 2-3 late ovatis acutis. *Umbella* hemisphaerica, multiflora, densa, 4-5 cm diam. *Pedicelli* subaequilongi, 1.2-2 cm longi, purpurei. *Perianthii* stellati late infundibuliformis phylla complicata, inter se et cum filamentis ad 1 mm connata, (6-)8-9 mm longa, linearia vel lanceolato-linearia, apice obtusa vel rotundata, paulum cucullata, applanata nonnusquam oblique emarginata, marginibus involutis, sordide albida vel rosea, nervo mediano distincto purpureo-violaceo vel purpureo-roseo, tenui apicem phylli haud attingente percursa. *Filamenta* anguste triangulari-lanceolata, in coronulam 1.5-2 mm coalita, 1/2-2/3 perianthii longitudinis attingentia, (3-)4-5 mm longa, interiora exterioribus 1.2-1.5plo latiora et sublongiora, in parte basali albida, in parte superiore purpureo-violacea. *Antherae* 1-1.5 mm longae, purpureo-violaceae. *Ovarium* 2 mm altum, viride. *Stylus* filamenta non excedens, 1.5-3 mm longus, albidus vel roseus; stigmata punctiformia. *Umbella fructifera* plus minusve sphaerica, 4-5 cm diam., pedicellis aequilongis, 1.2-2 cm longis, firmis, basi incrassatis. *Perianthium in statu fructifero* late infundibuliforme, phyllis capsulam superantibus, erectis, apice paulum concavis vel reflexis, nervo leviter incrassato rigescente percursis. *Capsulae* virides vel ochraceae, 5-6 mm altae, ovoideo-pyriformes valvis apice productis. *Stylus in statu fructifero* 1 mm longus. *Semina* 1-2.5 × 1.5-3 mm, irregulariter reniformia, applanato-globosa, nigra, minute tuberculata, hilo parvo laterali albedo.

Allium derderianum Regel nostri proximum differt foliis 2(-3) circinatis linearibus, 0.4-1.2(-1.5) cm tantum latis, margine valde undulatis; scapo tenui 5-10(-15) cm tantum alto; umbella fasciculata (fructifera dein hemisphaerica), pauciflora, 2-3(-4) cm tantum diam.; capsulis pyriformi-cordatis, valvis apice rotundatis. Species in honorem Tatjanae Egorovae, inter botanicos Rossiae praestantissimae nomenclaturae summopere peritae mulieris nominatur.

Habitat: Stony slopes, screes. Subalpine belt, 2200-2300 m alt. Fl. May, fr. May-June.

Distribution: S Transcaucasia (Nahičevan, S part of Zangezur ridge). Endemic?

Specimina alia visa: PROV. NAHIČEVAN: Circa Ordubad, mons Sič-Jurdy, 3150 m, 22.6.1929, *Šelkovnikov* & *Kara-Murza* (ERE); supra pagum Aravsya, systema affluxionis superior fluminis Alindža, herbetum mixtum, 1700-2000 m, 22.6.1963, *Pogosian* (ERE); distr. Ordubad, supra pagum Nasirvaz (Mesropavan), ad pedes montis Karadaš, brachium montis Kaputdžuh, 5.6.1982, *Pogosian* (ERE); ibid., 2000-2500 m, 5.6.1982, *Gabrielian* (ERE); ibid., mons Gamygaja, 5.6.1982, *Chandžian* (ERE).

4. *Allium vasilevskajae* Ogan., sp. nova – Fig. 5.

Holotypus: “Jugo-Zap. Zangezur, bassejn reki Megraget, vost. otrog gory Hašli-dag, nad verhnjej opuškoj lesa”, 2200-2300 m, 30.5.1947, *Aslanian* (ERE 39675).

Bulbus globosus, 3-4 cm diam., tunicis chartaceis, exterioribus fuscis, mediis subroseis, interioribus albidis. *Scapus* 10-15 cm altus, 2-5 mm in diam., rectus, validus, in sicco costatus, sparsim minute papillosus. *Folia* 2(?), vaginis subterraneis, laminis scapum superantibus, ad c. 20 cm longis et 0.8-2 cm latis, planis, linearibus, in apicem cucullatum sensim angustatis, sparsim minute papillosis, margine stria angusta alba notatis, scabriusculis, leviter undulatis, reflexis. *Spatha* pedicellos superans, paleacea, laciniata, laciniis 2-3 late ovatis acutis. *Umbella* hemisphaerica, multiflora, densa, 3.5-5 cm diam. *Pedicelli* subaequilongi, circa 1 cm longi, firmi, purpurei(?). *Perianthii* late infundibuliformi-campanulati phylla complicata, inter se et cum filamentis per 1 mm connata, anguste lanceolata, apice acuta, reflexa, marginibus involutis, exteriora 6-7 mm longa, interiora 7-7.5 mm longa exterioribus subbrevia et sublata, omnia sordide albida vel rosea, nervo mediano crassiusculo purpureo-violaceo (?) apicem phyllii haud attingente percursa. *Filamenta* anguste triangularia vel anguste triangulari-lanceolata, in coronulam per 1.5 mm coalita, ad 2/3 perianthii longitudinis attingentia, exteriora 4-4.5 mm longa, interiora 4-4.5 mm longa, interiora exterioribus sublongiora et sublata, omnia in parte basali albida, in parte superiore purpureo-violacea. *Antherae* 1.2 mm longae, purpureo-violaceae. *Ovarium* 2 mm altum, subglobosum, viride. *Stylus* 3-4 mm longus, filamentis sublongior, stigmatibus breviter trilobis. *Umbella* fructifera hemisphaerica, pedicellis leviter inaequalibus, 1-1.5 cm longis, crassiusculis, firmis. *Perianthium* in statu fructifero late campanulatum, phyllis capsulam superantibus, apice reflexis, nervo valde incrassato rigescente percursis. *Capsula* viridiuscula 5-7 mm alta, subovoidea, apice umbilicata, valvis apice rotundis. *Stylus* in statu fructifero 2-3 mm longus. *Semina* 2 × 3 mm, irregulariter semiorbicularia vel irregulariter reniformia, applanato-globosa, nigra, minute tuberculata, hilo parvo laterali albido.

Allium akaka nostro maxime affine differt foliis (oblongo-)ellipticis, in apicem mucronatum rotundatum vel retusum angustatis, perigonio stellatim expanso sub fructu infundibuliformi, phyllis omnibus aequae magnitudinis (elliptico-)linearibus, apice rotundatis vel emarginatis (raro acuminatis) nonnunquam cucullatis, antheris rite flavis, stylo filamentis aequilongo sub fructu 1 mm longo stigmatibus punctiformibus, capsula pyriformi-cordata. Species haec insignis in memoriam Veronicæ Vasilevskajae nominata est.

Habitat: Screes. Middle and upper montane belts, 1700-2700(-3400) m alt. Fl. May-June, fr. June.

Distribution: S Transcaucasia (Armenia, Meghry ridge, Mt Khashly). Endemic, known only from the type specimen.

5. *Allium derderianum* Regel in Trudy Imp. S.-Peterburgsk. Bot. Sada 3: 242. 1875. – Lectotypus (hoc loco designatus): “Persia borealis”, *Derderian* (LE!). – Paralectotypi: “In l. schistosis m. Elburs pr. Derbend”, 15.5.1843, *Kotschy 150* (P!); “Persia”, *Jenisch* (LE!). – Fig. 6.

– “*A. woronowii*” sensu Grossgejm, Fl. Kavk., ed. 2, 2: 139. 1940, p. max. p.; Grossgejm, *Opred. Rast. Kavk.*: 617. 1949; non Miscz. ex Grossh.

Habitat: Screes, rocks, stony slopes. Alpine belt, 2700-3400 m alt. Fl. June-July, fr. July-August.

Distribution: S Transcaucasia (S part of Zangezur ridge with its spurs), N Iran (Elburs ridge), W Iran (Zagros ridge, according to Seisums ms.).

Discussion

In spite of the notorious difficulty of identifying *Allium* material in general and representatives of *A.* sect. *Acanthoprason* in particular, it appears that all species recognised here can be separated from each other by reliable features that are easily seen even in the dry state (see also Table 1). *A. materculae*, a widespread species, differs from all others by very uneven pedicel length, especially in the fruiting stage, by the narrowly fasciculate shape of the umbel, and by its long filaments. *A. akaka* is characterised by very broad leaves and a dense umbel. *A. derderianum* is a relatively small plant with narrowly linear leaves that are twisted or coiled in a very peculiar way. These three species also occur in adjacent regions of Iran, and the two former, of Turkey. No Iranian or Turkish material of *A. vasilevskajae* or *A. egorovae* is known to us, but future may well bring to light further localities, outside of Armenia and Nahičevan, along the Zangezur ridge. Morphologically, *A. egorovae* is well distinct by having three narrowly lanceolate leaves, and *A. vasilevskajae* by the different length of its inner and outer tepals.

Acknowledgement

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Table 1. Comparison between the five Transcaucasian species of *Allium* sect. *Acanthoprason*.

Characters (all measurements in cm): 1. scape length; 2. scape shape; 3. leaf number; 4. leaf width; 5. leaf shape; 6. leaf apex; 7. leaf margin; 8. umbel shape; 9. umbel diam.; 10. flower number; 11. pedicels; 12. pedicel length; 13. perigon shape; 14. perigon colour; 15. tepal mid-vein colour; 16. tepal mid-vein; 17. tepals, inner vs. outer; 18. tepal length; 19. tepal shape; 20. tepal apex; 21. filament shape; 22. filament length / tepal length; 23. filament colour in upper part; 24. anther colour; 25. style to filament length; 26. stigma shape; 27. fructiferous umbel shape; 28. fructiferous umbel diam.; 29. fructiferous pedicel length (rel.); 30. fructiferous pedicel length; 31. fructiferous perigon shape; 32. tepal mid-vein at fruiting; 33. capsule height; 34. capsule shape; 35. upper part of capsule valves.

Character	<i>A. materculae</i>	<i>A. akaka</i>	<i>A. vasilevskajae</i>	<i>A. egorovae</i>	<i>A. derderianum</i>
1.	(5)10-30(40)	5-20	10-15	7-20	5-10(15)
2.	straight	straight	straight	straight or curved	curved
3.	2-5	2-3(4)	2(?)	3(4)	2(3)
4.	(0.5)1-6	1-5	0.8-2	0.8-3	0.4-1.2(1.5)
5.	oblong-elliptic to linear-lanceolate, twisted or coiled	(oblong) elliptic, curved	linear-lanceolate, curved	(narrowly) lanceolate, curved	linear, twisted to coiled
6.	acuminate	rounded or emarginate, mucronate	acuminate	acuminate	acuminate
7.	undulate	slightly undulate	very slightly undulate	very slightly undulate	undulate
8.	(narrowly) fasciculate	hemispherical	hemispherical	hemispherical	(broadly) fasciculate
9.	2-7	4-6	3.5-5	4-5	2-3(4)
10.	many	many	many	many	few
11.	unequal	subequal	subequal	subequal	subequal
12.	2-6	1-1.5	c. 1	1.2-2	0.7-1
13.	stellate-infundibuliform	(infundibuliform) stellate	campanulate	stellate-infundibuliform	stellate-infundibuliform
14.	whitish to lilac-pinkish	whitish to lilac-pinkish	whitish to pinkish	whitish to pinkish	whitish to pinkish
15.	dark pink, sometimes green	purple-violet, sometimes green	purple-violet(?)	purple-violet	purple-violet
16.	indistinct	distinct	distinct	distinct	distinct
17.	equal	equal	unequal	equal	equal
18.	0.7-1	0.6-0.8	outer 0.6-0.7, inner 0.7-7.5	(0.6)0.8-0.9	0.6-0.8(0.9)
19.	narrowly triangular or linear-lanceolate	elliptic-linear	narrowly lanceolate	(lanceolate-) linear	(elliptic-) linear
20.	acute	rounded, obtuse or emarginate, sometimes acuminate, or cucullate	acute, curved	obtuse, rounded or emarginate, often cucullate	obtuse, rounded or emarginate, often cucullate
21.	narrowly triangular-subulate	narrowly triangular-lanceolate or narrowly triangular	narrowly triangular	narrowly triangular or narrowly triangular-lanceolate	narrowly triangular

Table 2 (continued).

Character	<i>A. materculae</i>	<i>A. akaka</i>	<i>A. vasilevskajae</i>	<i>A. egorovae</i>	<i>A. derderianum</i>
22.	2/3-1	1/2-2/3	2/3	1/2-2/3	1/2-2/3
23.	lilac-pinkish	purple-violet	purple-violet	purple-violet	purple-violet
24.	yellow	yellow, seldom purple	purple-violet	purple-violet	purple-violet
25.	equal	equal	slightly longer	equal	equal
26.	shortly 3-lobed	punctiform	shortly 3-lobed	punctiform	punctiform
27.	spherical	spherical or hemispherical	hemispherical	spherical (rarely hemispherical)	broadly fasciculate or hemispherical
28.	6-10(15)	5-7	3.5-5	4-5	2.5-5
29.	very unequal	subequal	slightly unequal	subequal	subequal
30.	3-7	1.5-2	1-1.5	1.2-2	1-2
31.	infundibuliform	(broadly) infundibuliform	campanulate	infundibuliform	infundibuliform
32.	very thick and rigid	very thick and rigid	very thick and rigid	slightly thick and rigid	slightly thickened and rigid
33.	0.3-0.6	0-5-0.6	0.6	0.5-0.6	0.4-0.6
34.	cordate	pyriform-cordate	ovoid	pyriform	pyriform-cordate

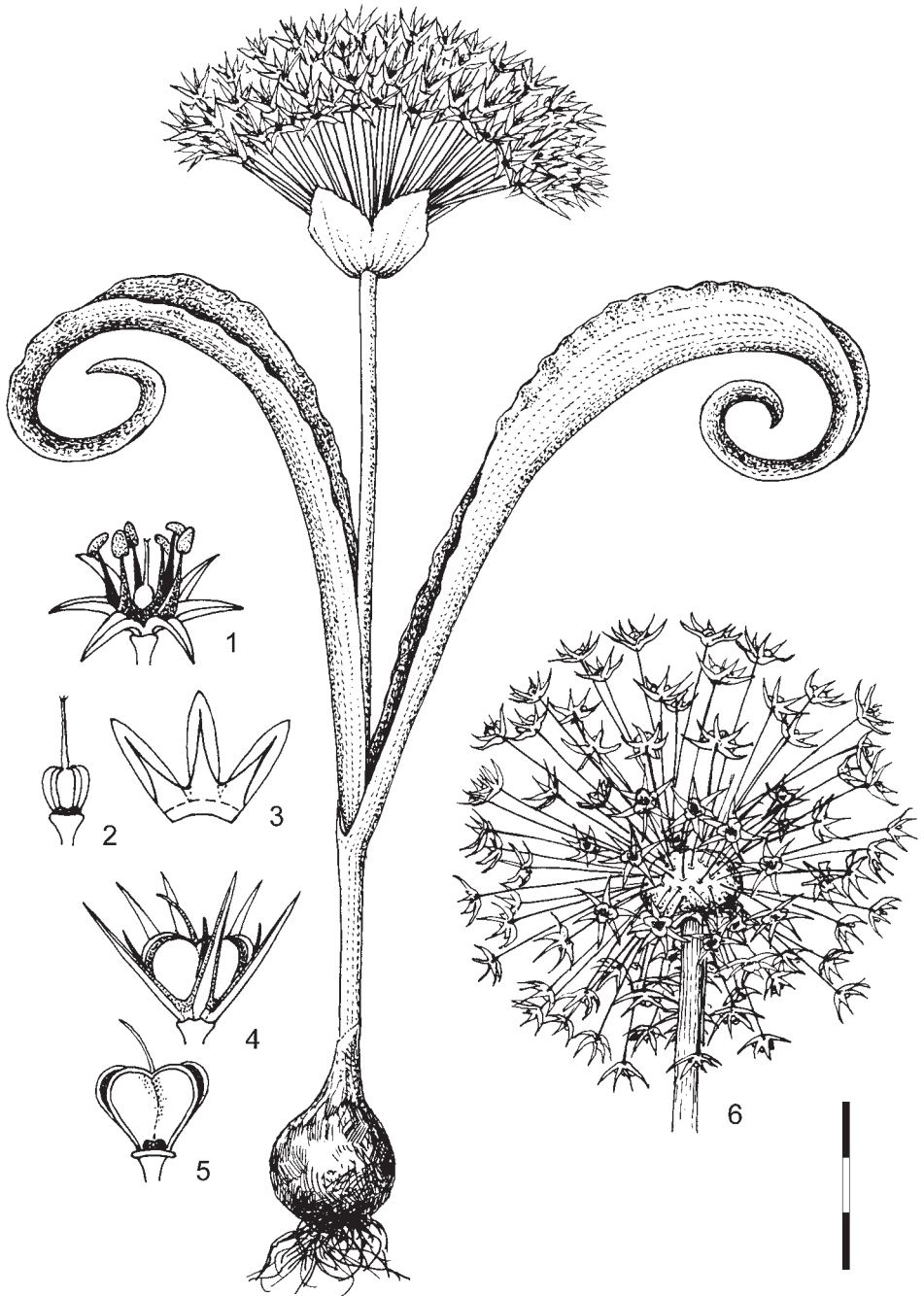


Fig. 2. *Allium materculae*, general habit and details – 1: flower; 2: pistil; 3: filaments and tepals; 4: flower in fruiting stage; 5: capsule; 6: umbel in fruiting stage. – Scale bar: 3 cm for habit, 1 cm for details.

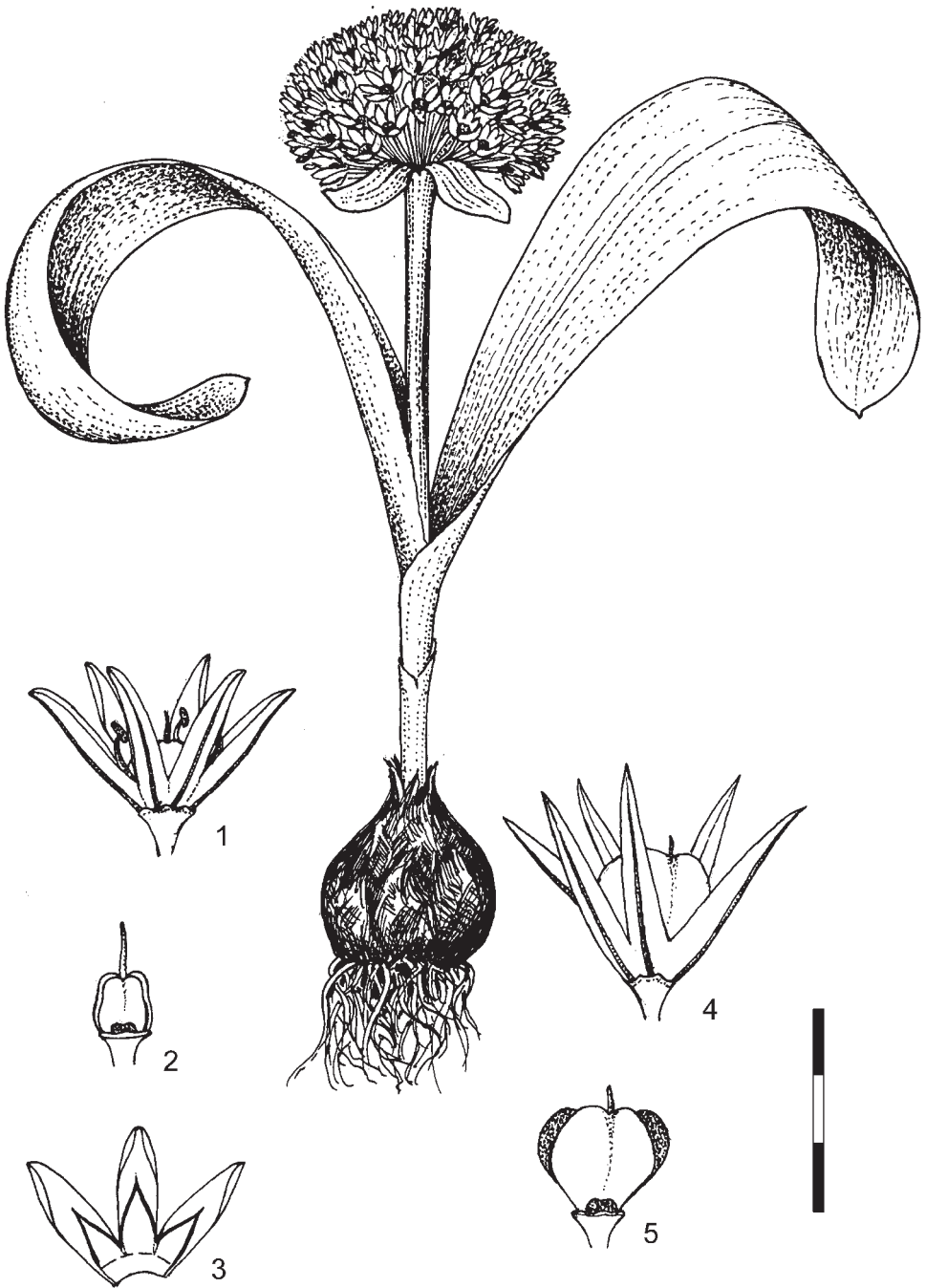


Fig. 3. *Allium akaka*, general habit and details – 1: flower; 2: pistil; 3: filaments and tepals; 4: flower in fruiting stage; 5: capsule. – Scale bar: 3 cm for habit, 1 cm for details.

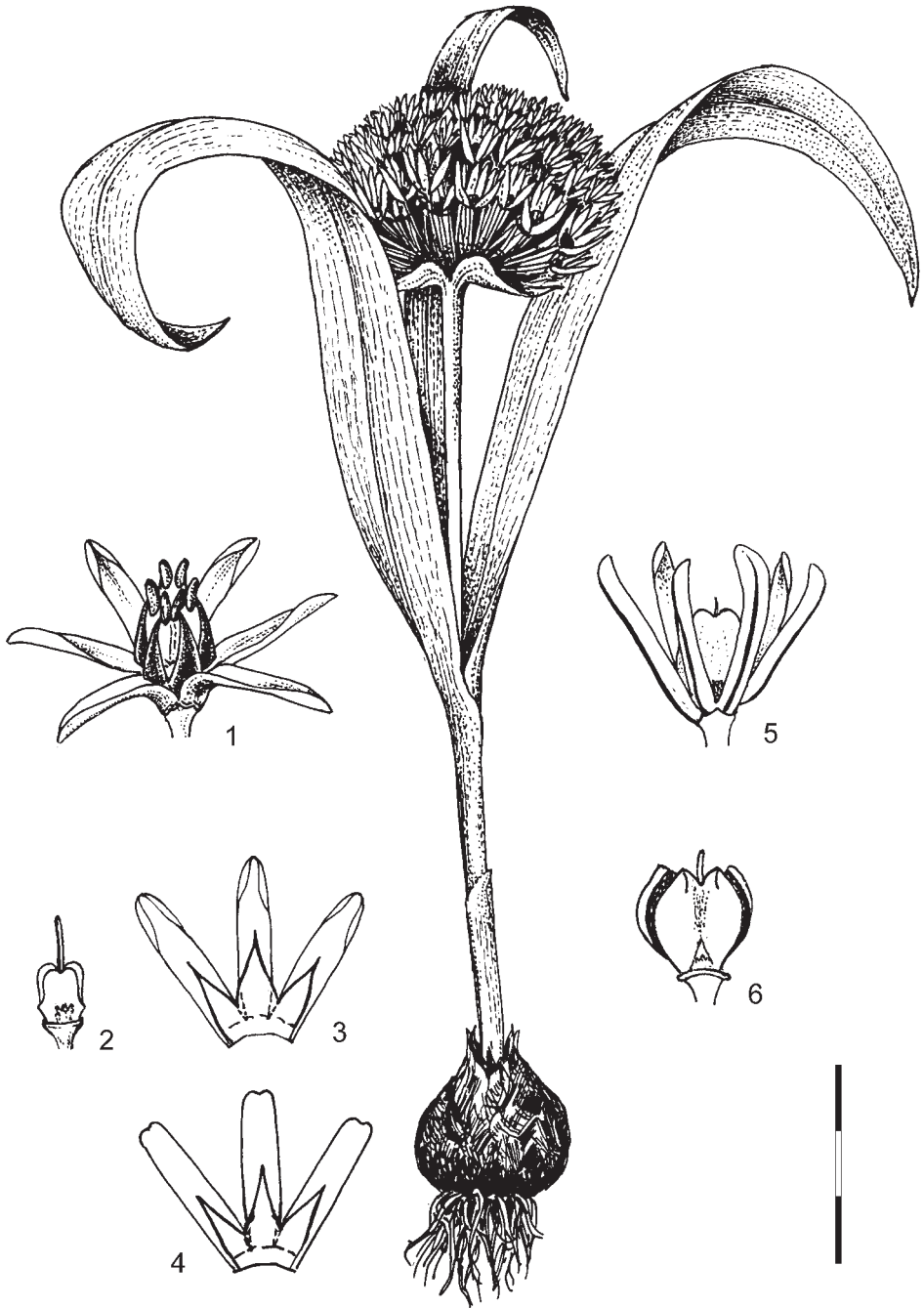


Fig. 4. *Allium egorovae*, general habit and details – 1: flower; 2: pistil; 3, 4: filaments and tepals; 5: flower in fruiting stage; 6: capsule. – Scale bar: 3 cm for habit, 1 cm for details.

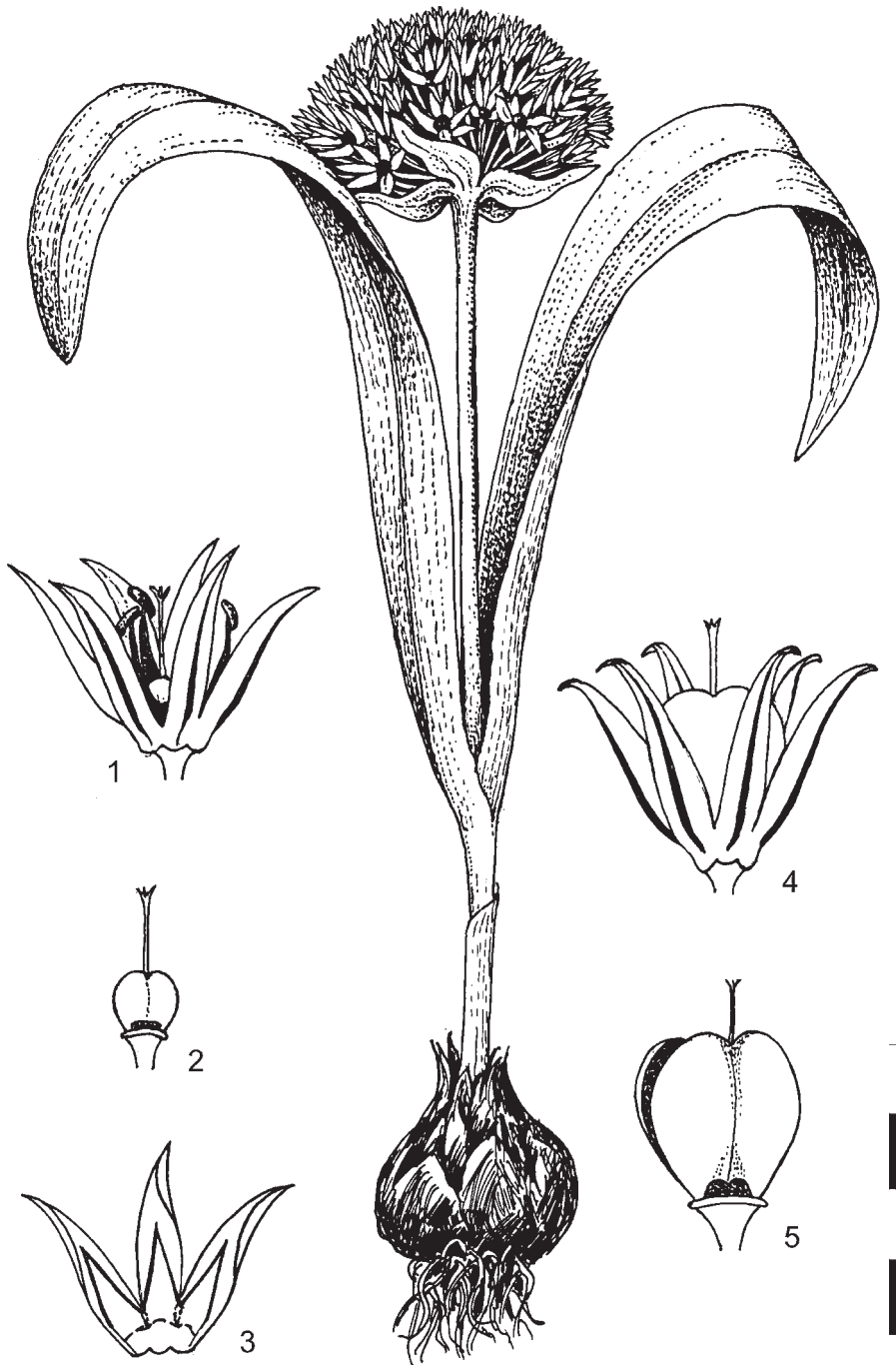


Fig. 5. *Allium vasilevskajae*, general habit and details – 1: flower; 2: pistil; 3: filaments and tepals; 4: flower in fruiting stage; 5: capsule. – Scale bar: 4 cm for habit, 1 cm for details.

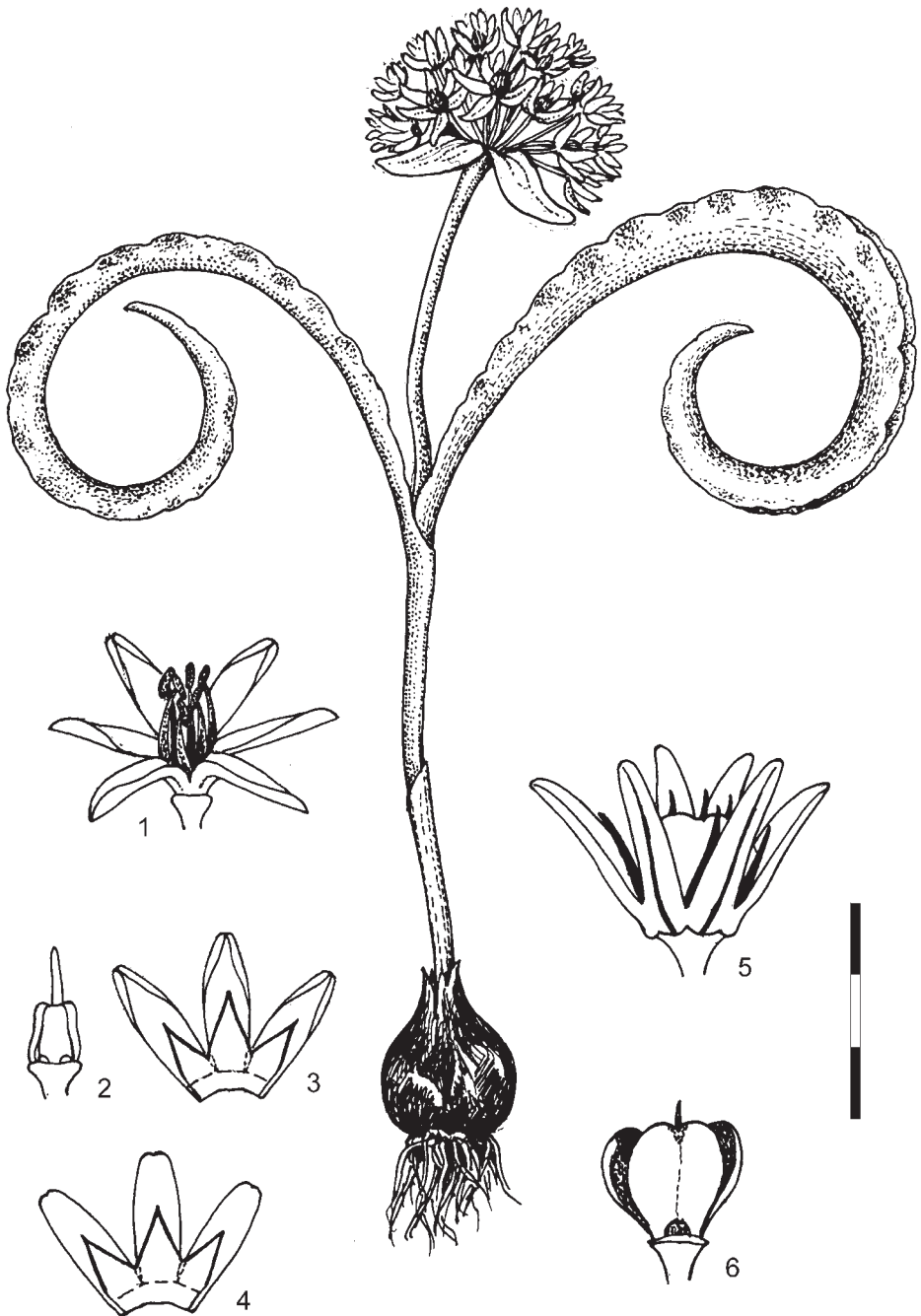


Fig. 6. *Allium derderianum*, general habit and details – 1: flower; 2: pistil; 3, 4: filaments and tepals; 5: flower in fruiting stage; 6: capsule. – Scale bar: 3 cm for habit, 1 cm for details.

