



Notes on two new *Allium* species for Greece: *A. kofinae* from South Central and *A. albanicum* from Northwest and North Central Greece

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Abstract

Allium kofinae from Sterea Ellas (South Central Greece) is described and illustrated as a species new to science. It belongs to *Allium* sect. *Pseudoscorodon* of subgen. *Allium* and is closely related to three other members of this group, viz., *A. meteoricum*, *A. lagarophyllum* and *A. albanicum* by virtue of its spathe features, inflorescence and floral parts. It is a Greek endemic restricted to stony or rocky serpentine slopes in nomos Fthiotidos where it exists in moderately large populations. *Allium albanicum* is a recently described taxon from Albania which had been confused with *A. meteoricum*. It is now reported as new for Greece, occurring on the serpentine massifs of Smolikas and Vasilitsa (N Pindos in northwest Greece) and Vourinos (in N Central Greece). *Allium meteoricum* is considered a Greek endemic described from the sandstone area of the Meteora monasteries in S Pindos. The discovery of *A. arampatzisii* in the southern foothills of Mt Olimbos (N Central Greece) extends its previously known occurrence in nomos Kilkis (NE Greece) ca. 120 km southwards.

Keywords:

Allium, Albania, Greece, new species, new records, taxonomy

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Introduction

Numerous species of *Allium* have been described from the Mediterranean area in recent decades. According to our personal knowledge, more than 100 species are now known in Greece, with nearly 50% of them endemic or restricted in distribution. In the Balkans there are several taxa belonging to *Allium* sect. *Pseudoscorodon*, a section recently created by Brullo & al. (2019) as separate from *A.* sect. *Scorodon* Koch. Some of these species are rather similar in appearance and the name *A. meteoricum* Helder. & Hausskn. ex Halácsy has been applied to them. Closer study, however, reveals that they are distinct entities.

Material and methods

The serpentine area in nomos (prefecture) Fthiotidos is one of the most interesting areas in Greece from a floristic and phytogeographical perspective due to its geographical position and geological substrate. An *Allium* collected in June 2025 by Arne Strid and Per Hartvig proved conspecific with one collected 37 years ago by Peter Laulund, a student at the University of Copenhagen working on the flora of Mt Kallidromo. That *Allium* had been identified as *A. meteoricum*. Plants were also independently collected in May 2025 by Giannis Kofinas



Fig. 1. *Allium kofinae* holotype (Strid & Hartvig 63097, reproduced with permission of the Natural History Museum Denmark).



Fig. 1a. *Allium kofinae* inflorescences from holotype (Strid & Hartvig 63097).

who sent photos and specimens to Kit Tan, and by Kostas Polymenakos who sent photos together with Vasilis Pantavos. The description of the new species was based on living material collected in the wild and no material has been cultivated.

For morphological comparisons with the other very similar species, herbarium material and photos were examined and checked against the characters considered as diagnostic for *Allium* (Table 1). Material which had been cited in the original descriptions was also investigated.

Results and discussion

Allium kofinae Kit Tan & Strid, **sp. nov.** (Figs. 1 & 1a)

Bulb solitary, ovoid to subglobose, 15-20 × 12-20 mm; outer tunics fibrous-coriaceous, blackish-brown; inner membranous, pale pink. Stem erect, (20-)30-37 cm, slender, 1-2 mm diam., finely striate, glabrous, remaining bright green at anthesis, sheathed 1/3 to less than 1/2 its length. Leaves on flowering stem 2-3, shorter than stem, linear, flat, *ca.* 1 mm broad, green, glabrous, ± withered at anthesis. Spathe persistent, almost free (joined for 2 mm at base), with unequal valves; larger valve (including 2-4 mm appendage) 8-12 mm long, 5-veined; the smaller and narrower valve 6-9 mm long, 3-veined. Inflorescence lax to moderately dense, hemispherical, 2-5 cm diam., ma-

ny-flowered. Pedicels unequal, 10-30 mm long, glabrous. Perianth cylindrical-urceolate; segments ± equal, pale to deep pink, with greenish-purple midvein; outer segments oblong-lanceolate, 5.5-8.5 × 2.5-3.0 mm, obtuse-rounded; inner elliptic, 5.5-9.0 mm, obtuse-rounded. Stamens included. Filaments all simple, white, dilated and flattened at base, connate below into an annulus 0.5 mm high; outer 4-5 mm long; inner 5-6 mm long. Anthers ellipsoid, 0.8-1.0 mm long, yellow to pale yellow, apically obtuse. Ovary ovoid-subglobose, *ca.* 3 × 2 mm, cream, smooth at apex; nectariferous pores 1/3 length of ovary. Style slender, white, 2.5-3.5 mm long; stigma capitate. Capsule 3-locular, globose-obovoid, (3.0-)3.5-4.0 × 4-5 mm. Seeds angular-obpyramidal, 2.5-3.0 × 1.9-2.1 mm, matt-black.

Type. Nomos & Eparchia Fthiotidos: rocky serpentine slopes W of the village of Trilofos, with macchie of *Arbutus andrachne*, 600-700 m, 39°01'N, 22°13'E, 12 June 2025, Strid & Hartvig 63097 (holotype C; isotypes B, LD, UPA).

Other material cited

Nomos Fthiotidos, Eparchia Lokridos: Mt Kallidromo, 4-5 km N of the village of Modhion, towards Reginion, macchie dominated by *Arbutus andrachne*, *A. unedo* and *Juniperus oxycedrus*, serpentine, 600-800 m, 38°42'N, 22°41'E, 18 June 1988, Laulund 769 (C, sub *A. meteoricum*); 2.1 km NE of Modi, stony serpentine slope with phrygana, 580 m, 38°41'N, 22°41'E, 17 May 2025, Polymenakos & Pantavos s.n. (ATH, sub *A. meteoricum*); after the village of Modi along road to Reginion, phrygana and serpentine gravel, 600 m, 38°40'N, 22°41'E, 23 May 2025, *Kofinas* s.n. (herb. Kit).

Nomos Fthiotidos, Eparchia Domokou: *ca.* 5 km S of Ekkara village along road to Ano Agoriani village, stony slopes and roadsides, ophiolithic substrate, 460 m, 39°07'N, 22°12'E, 26 June 1997, Constantinidis 26304 (UPA, sub *A. meteoricum*).

Habitat. In phrygana and macchie of *Arbutus* and *Juniperus*, on stony or rocky serpentine slopes at moderate altitudes of 460-800 m.

Phenology. Flowering and fruiting from mid-May to June.

Eponymy. Named after Giannis Kofinas (Athens) in honour of his valuable contributions to the Greek flora.

Taxonomic relationships

Allium kofinae belongs to *Allium* subgen. *Allium* sect. *Pseudoscorodon* Brullo & al. of which the type is *Allium obtusiflorum* DC in Redouté (1805). The characteristics of this section are as follows:

Bulb solitary or bulbiferous, leaves never filiform, spathe valves persistent and usually shorter than inflorescence, larger valve at least 3-veined, stamens included, staminal filaments simple, flattened and dilated towards

Table 1. Comparison of *Allium kofinae* with three other species of *A.* sect. *Pseudoscorodon*.

Characters	<i>A. kofinae</i>	<i>A. meteoricum</i>	<i>A. albanicum</i>	<i>A. lagarophyllum</i>
Bulb size (mm)	15-20 × 12-20	10-14 × 8-12	8-15(-20) × (5-) 8-15	8-12 × 7-10
Outer bulb tunics	blackish-brown	blackish-brown	brown to blackish-brown	brown
Stem	rigid	rigid	rigid to flexuous	flexuous
Stem height (cm)	(20-)30-37	10-25	15-30	9-15
Leaf sheath coverage on stem	1/3	1/3-1/2	1/4-1/3	1/3
Leaf number on flowering stem	2-3	3-4	2-3	1
Spathe valves	unequal ± free	unequal free	unequal, ± free or fused to 1/3	subequal fused to 1/2
Length of larger valve (mm)	8-12	7-11	7-12	5-7
Number of veins	5	5	3-5	3
Length of smaller valve (mm)	6-9	5-9	7-10	4-5
Number of veins	3	3-5	3	1
Inflorescence	lax to moderately dense, many- flowered	moderately dense, many-flowered	lax, many-flowered (more than 13 flowers)	lax, few- flowered
Perianth shape	cylindrical-urceolate	cylindrical- urceolate	cylindrical-urceolate	cylindrical- urceolate
Perianth colour	pale to dark pink	purplish-pink	white to pale pink	pale pink suffused darker
Midvein	greenish-purple	pinkish-purple	green to pinkish- purple	green to pinkish- purple
Length of outer segments (mm)	5.5-8.5	5.5-7.5	5.5-6.0	5.5-6.0
Length of inner segments (mm)	5.5-9.0	5.5-7.5	5.5-6.0	5.0-5.5
Staminal annulus height (mm)	0.5	0.7-0.9	0.5-0.6	0.6-0.7
Length of outer filaments (mm)	4-5	2.7-3.3	1.7-3.5(-4.0)	1.5-1.9
Length of inner filaments (mm)	5-6	3.5-4.0	2.5-3.2(-4.5)	2.0-2.5
Anthers	yellow	yellow	yellow	pale yellow
	obtuse-rounded	apiculate	obtuse-rounded	apiculate
Nectariferous pores	1/3 length of ovary	1/4 length of ovary	1/2-2/3 length of ovary	1/3 length of ovary
Ovary	cream, smooth at apex	green, smooth at apex	yellow, smooth at apex	green
Style length (mm)	(1.5-)2.5-3.5	1.5-2.0	(1.5-)2.3-2.8	ca. 1.0
Capsule length (mm)	(3.0-)3.5-4.0	(2.5-)3.0-3.5	4.0-4.5	–
Seeds (mm)	2.5-3.0 × 1.9-2.1	2.2-2.5 × 1.0-1.8	3.5-4.5 × (2.0-)2.4-2.5	–

base, ovary with distinct nectariferous pores.

Within the section it is most closely related to *A. meteoricum*, a species described from sandstone area around the Meteora monasteries in S Pindos. The latter, a Greek endemic with a narrow distribution, is distinguished by a less robust habit with floral parts proportionally lessened in size - lower stature, smaller bulbs, shorter staminal filaments,

apiculate anthers, nectariferous pores ¼ length of ovary, shorter style, smaller capsules and seeds. The characters of the two species together with *A. albanicum* Brullo & al. and *A. lagarophyllum* Brullo & al. are listed in Table 1 and the distribution of all four species in Greece mapped (Fig. 2).

In addition to *A. meteoricum*, *A. lagarophyllum* and *A. albanicum*, *A. kofinae* also has some affinities with

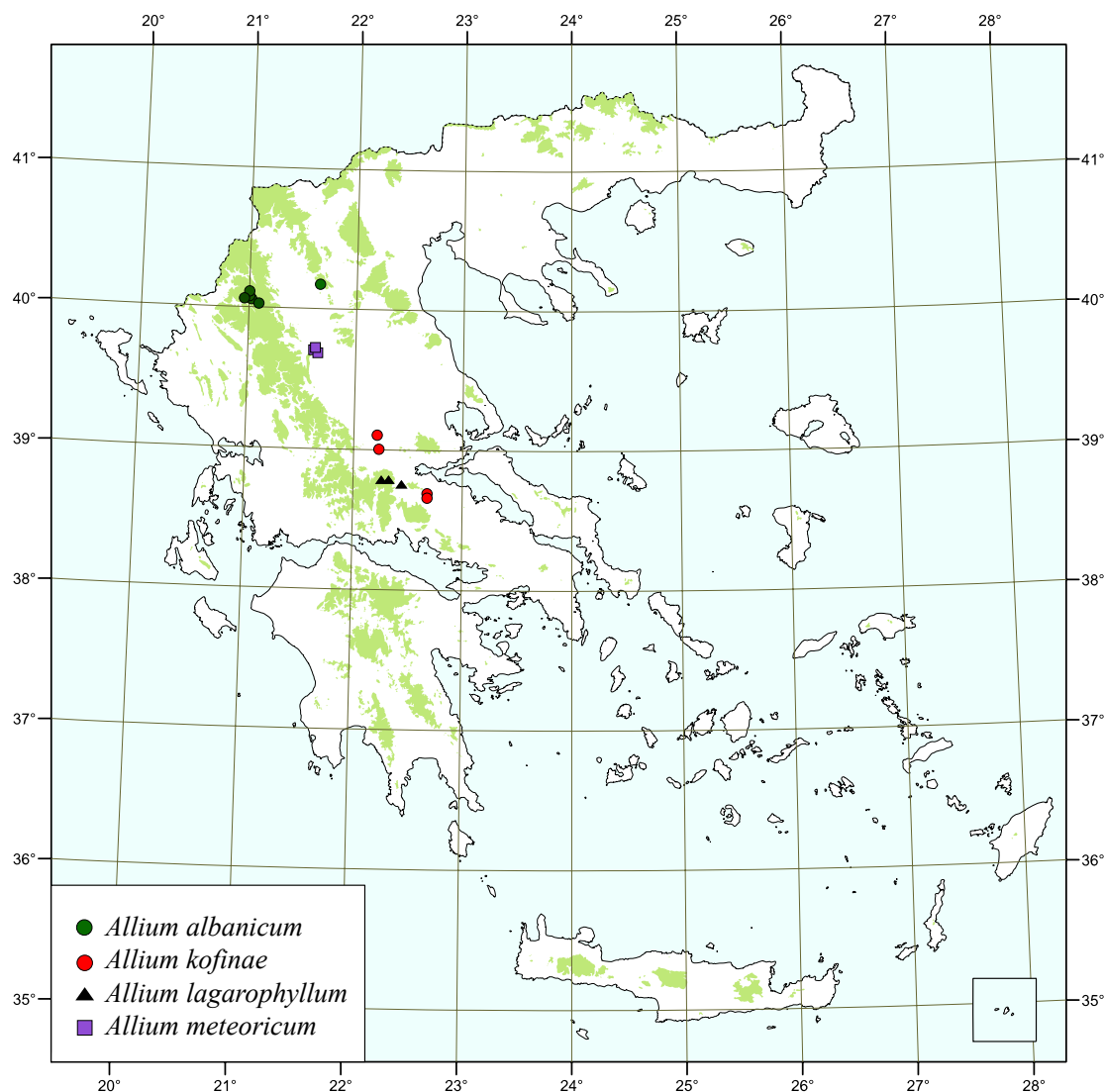


Fig. 2. Distribution of *Allium albanicum*, *A. kofinae*, *A. lagarophyllum* and *A. meteoricum* in Greece.

the more recently described *A. arampatzisii* Ioannidis & Tzanoud. The last-mentioned differs in the morphology of the inflorescence and the smaller size and shape of the perianth (3.0-3.5 mm long and cupulate) and notably in the short, stout style (long and slender in *A. kofinae*). *Allium arampatzisii* was known from only a few localities in nomos Kilkis in NE Greece but it had already been collected on 15 June 1976 at the southern foothills of Mt Olimbos near the village of Sparmos (Strid & al. 11430, BM, herb. Strid). However, it was identified as *A. meteoricum*, as has all the species mentioned in this article. Its presence was confirmed nearly 50 years later, on 14 June 2025, in the southeastern foothills of Mt Olimbos, near the village of Kallithea, on dry calcareous grassland at an altitude of 550 m. Although the anthers were described and depicted as purplish in material from Kilkis (Ioannidis & Tzanoudakis 2020) the photos from Mt Olimbos indicate pale cream (Fig. 3).

Allium lagarophyllum occurs in the same area as *A. kofinae* but is clearly recognizable by its few-flowered

inflorescence, spathe morphology, shorter filaments and style (see Table 1). Both species exist in a region of Greece where many species are still actively evolving; there are also relict elements of an old Aegean and Mediterranean flora (Tzanoudakis & Vosa 1988). *Allium kofinae* is locally common west of Trilofo and NE of Arhani (ca. 20 km WNW of Lamia), growing on dry rocky serpentine slopes in macchie dominated by *Arbutus andrachne* at altitudes of 450-700 m. It is also abundant north and northeast of the village of Modi. Several interesting species in this serpentine area of nomos Fthiotidos represent new and considerable extensions of a previously known distribution. They include *Bupleurum apiculatum* (Strid & Hartvig 63112, B, UPA), *Centaurea euboica* (Strid & Hartvig 63105, UPA, herb. Strid; first record outside Evvia), *Centaurea thracica* (Strid & Hartvig 63114, UPA), *Johrenia distans* (Strid & Hartvig 63098, UPA) and *Scorzoneria hispanica* (Strid, photo). Other noteworthy species in the area are *Cachrys cristata*, *Centaurea alba* subsp. *deusta*, *Centaurea zuccariniana*, *Convolvulus holosericeus*,



Fig. 3. *Allium arampatzisii* from foothills of Mt Olimbos.

Leptoplax emarginata, *Podocytisus caramanicus*, *Reseda tymphaea* and *Silene fabaria* subsp. *domokina*. A white or pale rose-pink form of *Dianthus pinifolius* (Strid & Hartvig 63109, B, UPA, herb. Strid) is locally common on rocky road embankments; it is considered to fall within the range of variation of *D. p.* subsp. *lilacinus*.

Allium albanicum Brullo & al.

This species was described from Albania where it seems to have a scattered distribution mainly on serpentine (Brullo & al. 2019). Plants from Albania have also been referred to *A. meteoricum*. Both species are included in *Allium* sect. *Pseudoscorodon* and show similarities, particularly regarding inflorescence and floral morphology. They also share the same diploid chromosome number $2n=16$ and have a similar karyotype (Brullo & al. 2019). However, they can be distinguished by their style length, size of nectariferous pore, capsule and seed (see Table 1).

The presence of *A. albanicum* in Greece has not pre-

viously been reported. While examining material from northern Greece ascribed to *A. meteoricum*, it was found that several populations from serpentine mountains fit the circumscription of *A. albanicum*. The descriptions together with examination of material cited in the original description (paratypes) left no doubt that the following Greek plants are conspecific with the Albanian species. In particular, Hartvig & Seberg 4322 and 5052 from Mt Smolikas have very large nectariferous pores 1/2 to nearly 2/3 the length of ovary and thus cannot be mistaken for *A. meteoricum* which have small pores only 1/4 the length of ovary.

Material examined from Greece

Northern Pindos

Nomos Ioanninon, Eparchia Konitsis: Mt Smolikas, SE of Epta Vrises, at Karamitso, 1800-1850 m, 26 July 1971, Stamatiadou 13544 (ATH).

Nomos & Eparchia Grevenon: Mt Smolikas, E ridge by Liakoura, 2.5 km S of Samarina, SE-facing rocky serpentine slopes with *Pinus heldreichii* and *Buxus sempervirens*, 1700 m, 15 August 1975, Hartvig & Seberg 4322 (C, herb. Strid); 2 km NW of Samarina, narrow ravine and rocky serpentine slopes, 1700-1800 m, 29 August 1975, Hartvig & Seberg 4941 (C, G, herb. Strid); great SE ravine, c. 3 km SW of Samarina, SW-facing steep rocky serpentine slopes and ravines in *Pinus nigra* woodland, 1300-1550 m, 31 August 1975, Hartvig & Seberg 5052 (C); 2 km NW of Samarina, rocky serpentine slopes, 1725-1800 m, 09 July 1976, Hartvig & al. 5685 (C, herb. Strid).

Nomos Grevenon/Ioanninon, Eparchia Grevenon/Konitsis: Mt Vasilitsa, von Kataphygon des Alpine Club Grevenon zum Teich an der zwischen Vasilitsa und Baltumis nach Distraton führende Strasse, serpentine, 11 July 1982, Lippert 18652 (herb. Strid).

North Central Greece

Nomos & Eparchia Grevenon: Mt Vourinos, SW slopes of the valley NE of Exarchos, rocky serpentine slopes with *Juniperus oxycedrus* and *Buxus sempervirens*, 1200-1700 m, 25 July 1979, Hartvig & al. 8363 (herb. Strid).

Acknowledgements

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