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Allium ritsii (Alliaceae) a New Autumn-Flowering Species from S. Peloponnisos (Greece)

By

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With 3 Figures

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Summary

IATROU G. & TZANOUDAKIS D.1995. *Allium ritsii* (*Alliaceae*) a new autumn-flowering species from S. Peloponnisos (Greece). – Phyton (Horn, Austria) 35 (2): 247–253, 3 figures. – English with German summary.

Allium ritsii IATROU & TZANOUDAKIS from the area of Monemvasia in S. Peloponnisos is described as a new species. It is an autumn-flowering species closely related to *Allium cupani* RAFIN. subsp. *hirtovaginatum* (KUNTH) STEARN (*A.* sect. *Brevispatha*), but well differentiated ecologically, morphologically and cytologically from the other Mediterranean taxa of this group.

Zusammenfassung

IATROU G. & TZANOUDAKIS D. 1995. *Allium ritsii* (*Alliaceae*) eine neue herbstblühende Art vom S-Peloponnes (Griechenland). – Phyton (Horn, Austria) 35 (2): 247–253, 3 Abbildungen. – Englisch mit deutscher Zusammenfassung.

Allium ritsii IATROU G. & TZANOUDAKIS aus dem Monemvasia-Gebiet im S-Peloponnes wird als neue Art beschrieben. Die herbstblühende Art ist nahe verwandt mit *Allium cupani* RAFIN. subsp. *hirtovaginatum* (KUNTH) STEARN (*A.* sect. *Brevispatha*), aber in den ökologischen, morphologischen und zytologischen Merkmalen, von den anderen mediterranen Taxa dieser Gruppe deutlich verschieden.

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The group of *Allium cupani*, in which this new species belongs, reflects the inadequate attention given to the plant biodiversity of Greece and particularly Peloponnisos. GARBARI & al. 1979 included in this group only two taxa (*Allium cupani* and *A. hirtoraginatum*) in the area of Mediterranean. Today fifteen years later, in this group many more taxa have been added, five of which have been found in Greece, which are well distinguished from each other by a number of morphological, cytological and ecological characters (BRULLO & al. 1983, 1989, MICELI & GARBARI 1987, TZANOUDAKIS & KOLLMAN 1991, KARAVOKYROU & al. 1994).

The new taxon was collected for the first time by one of the authors in October 1989 and was cultivated in the experimental garden of the Botanical Institute of Patras and recollected on October 14, 1994.

Allium ritsii IATROU & TZANOUDAKIS, spec. nova. (Fig. 1)

Diagnosis: Bulbus ovoideus 15–20 × 8–15 mm, tunicis externis brunneis, reticulato-fibrosis ad basin bulbi non adhaerentibus, tunicis internis membranaceis, stramineis. Scapus gracilis 12–15 cm altus, teres, glaber, erectus, vaginis foliorum usque ad apicem tectus. Folia 3–5, filiformia, subcylindrica glabra, rarior pilosa, suprema scapo longiora, inflorescentiam saepe basi expletantia. Spatha persistens, univalvis, lanceolata, acuminata, erecta, basi vaginata, inflorescentiam aequilonga vel hac longiora. Inflorescentia laxa, fastigiata, 6–10 flora, pedicellis inaequalibus (15–35 mm longis) floriferis flexuosis, fructiferis erectis. Perigonium urceolatum 5,5–6,5 mm longum tepalis aequilongis, ovato-oblongis vel oblongis, venis medianis viridis, undulatis ad apicem, obtusis vel subacutis. Stamina tepalis breviora, filamentis omnibus simplicibus, inferne cum tepalis per c. 1 mm in annulum connatis, antheris luteolis. Ovarium sessile subglobosum c. 1,2 mm in diametro, foveis nectariferis basi. Stylus albus, c. 2,5–3 mm longis. Stigma trilobum. Capsula c. 3,5 mm in diametro.

Chromosomatum numerus: 2n = 14. – Floret ad initio Octobris ad medium Novembrium.

Holotypus: Flora Hellenica, Peloponnisos, Prov. Lakonias, ca. 1 km prope vicum Monemvasia, alt. ca. 20 m; in argilosis. 2.X.1989, leg. IATROU 3951 (UPA) (Fig. 1).

Habitat: The collection site is a stony calcareous area mixed with clay on the peninsula of Malea in the southern part of Lakonia province, about 1 km North of Monemvasia at about 10–50 m above sea level.

The surrounding vegetation consists of clusters of reduced macchia, mixed with phrygana, where *Allium ritsii* grows in open spots. Partly the area has been degraded by fire and there is this taxon more abundant, though hardly seen due its small size. The type locality lies in the Thermo-Mediterranean zone and is characterized by an Oleo-Ceratonion, more precisely Oleo-Lentiscetum, as climax vegetation. The following

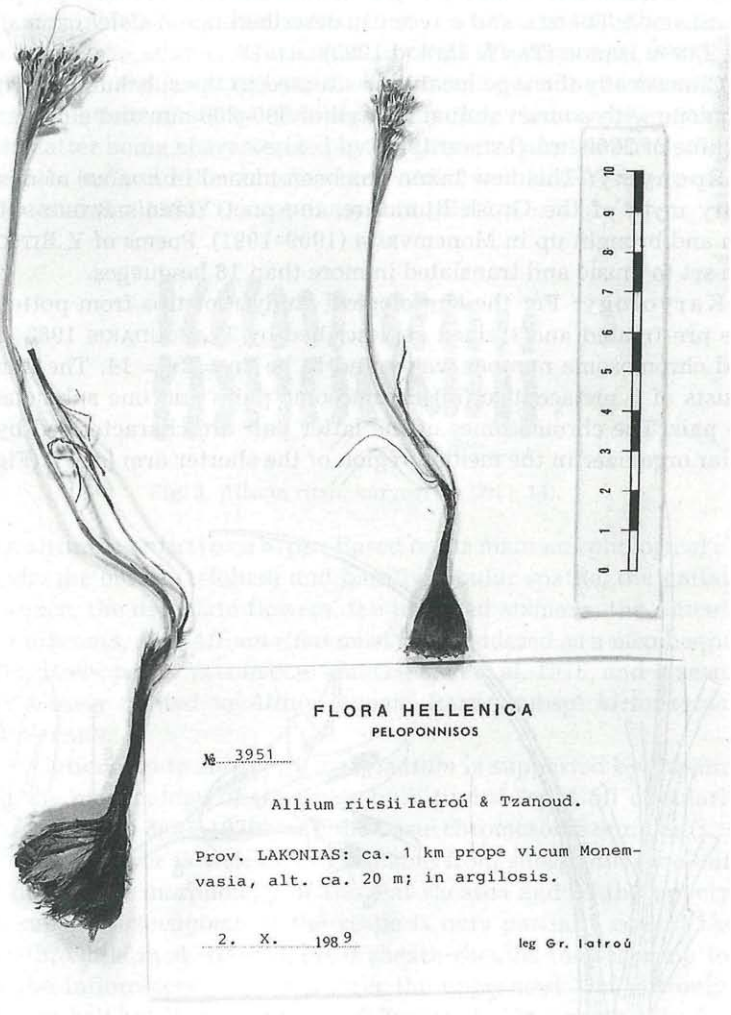

Fig. 1. *Allium ritsii* IATROU & TZANOUDAKIS, holotype.

plant taxa predominate in the area: *Pistacia lentiscus* L., *Arbutus andrachne* L., *Olea europaea* L. subsp. *oleaster* (HOFFMANNS & LINK) NEGOTI, *Genista acanthoclada* DC., *Phlomis fruticosa* L., *Cistus creticus* L., *Sarcopoterium spinosum* (L.) Spach., *Euphorbia characias* L., *Ballota acetabulosa* (L.) BENTH., *Helichrysum barrelieri* (TEN.) GREUTER, *Hypericum empetrifolium* WILLD., *Coridothymus capitatus* (L.) REICHENB. f., *Teucrium divaricatum* SIEB. It is interesting to see that the flora of this area includes many Greek endemic bulbous plant species: *Allium callimischon* LINK

subsp. *callimischon*, *Allium gomphrenoides* BOISS. & HELDR., *Tulipa goulimyi* SEALY & TURRILL and a recently described taxon *Colchicum sfikasianum* TAN & IATROU (TAN & IATROU 1995).

Climatically the type locality is situated in the sub-humid Mediterranean zone with a mean annual rainfall of 600–800 mm and a mean annual sunshine of 2800 hrs. (IATROU 1986).

Eponymy: This new taxon has been named in honour of a contemporary myth of the Greek literature, the poet Yiannis RITSOS who was born and brought up in Monemvasia (1909–1991). Poems of Y. RITSOS have been set to music and translated in more than 18 languages.

Karyology: For the karyological study root tips from potted bulbs were pre-treated and stained as described by TZANOUDAKIS 1983. The diploid chromosome number was found to be 2n = 2x = 14. The karyotype consists of 6 metacentric (m) chromosome pairs and one submetacentric (sm) pair. The chromosomes of the latter pair are characterized by a nucleolar organizer in the median region of the shorter arm (sm^B). (Fig. 3).

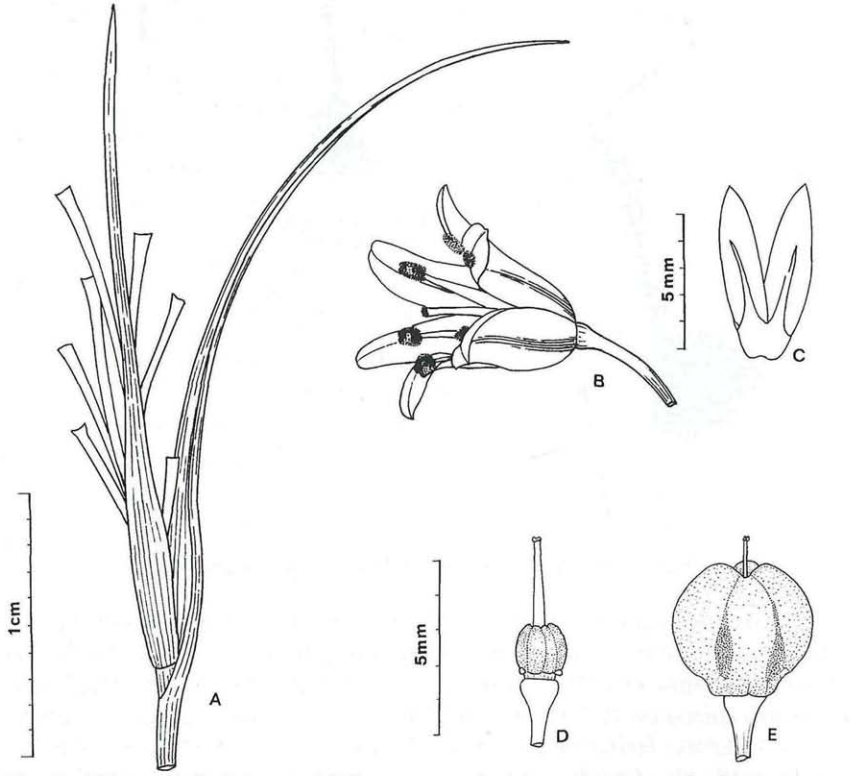

Fig. 2. *Allium ritsii*. A base of inflorescence showing upper most leaf attenuation, spathe and pendicels. – B flower. – C inner and outer perianth segments. – D ovary. – E capsule.

The same basic chromosome number (x = 7) has been found in *Allium cupani* subsp. *hirtovaginatum,* a taxon very common in Peloponnisos and the Greek Aegean islands (GARBARI & al. 1979, TZANOUDAKIS 1983). It is noteworthy that the karyotype of *A. ritsii* is more similar to those of the Aegean populations of subsp. *hirtovaginatum* than to those from Peloponnisos, the latter being characterized by the presence of a second SAT-chromosome pair (m^B) and the subtelocentric anisobrachial SAT-chromosomes (st^C) (TZANOUDAKIS 1983, TZANOUDAKIS & al. 1991).

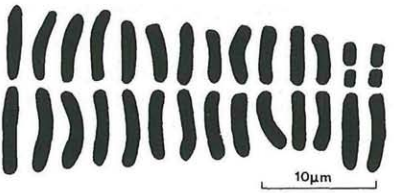

Fig. 3. *Allium ritsii;* karyogram (2n = 14).

Taxonomic relationships: Based on its main morphological characters [viz. the entire (1–lobed) and basally tubular spathe, the unilateral inflorescence, the urceolate flowers, the included stamens, the reticulate-fibrous bulbcoats, etc.] *Allium ritsii* must be considered as a member of *Allium* sect. *Brevispatha* VALCHECCHI em. GARBARI & al. 1979, and it seems to be more closely related to *Allium cupani* RAFIN. subsp. *hirtovaginatum* (KUNTH) STEARN.

The relationship to subsp. *hirtovaginatum* is supported by the similarities in the morphology of the outer bulb tunics "split off circularly at the base" (GARBARI & al. 1979), and the basic chromosome number (x = 7).

A. ritsii however is well distinguishable from subsp. *hirtovaginatum*, mainly due to the morphology of the leaf sheaths and of the uppermost leaf. In subsp. *hirtovaginatum* the scape is only partially coverd by the leaf sheath, while in *A. ritsii* the leaf sheath sheaths the scape up to the base of the inflorescence and moreover the uppermost leaf not only exceeds the umbell but its upper part is differentiated in a spathe like formation which surrounds the base of the spathe of the inflorescence. (Fig. 2).

This differentiation of the leaf sheath of *A. ritsii* seems to be correlated to the flowering season (autumn), since a similar structure characterizes more or less all the known autumn-flowering *Allium* species of the Greek flora (cf. *A. callimischon, A. chamaespathum, A. tardans, A. dilatatum*); it could be consequently considered as an adaptation in the life cycle of the species concerned (TZANOUDAKIS & KYPRIOTAKIS 1993).

The leaf sheath morphology of *A. ritsii* recalls that of *A. greuteri* (BRULLO & PAVONE 1983), a spring-flowering taxon described from Cyrenaica, but the latter taxon has a 2–lobed spathe, morphologically differen-

tiated outer and inner perianth, ovate ovary and a basic chromosome number x = 8 (2n = 16).

A. ritsii also differs from *A. eivissanum* (MICELI & GARBARI 1987) and *A. pentadactyli* (BRULLO & al. 1989), two late flowering Mediterranean taxa (August–September), mainly in the leaf sheath morphology, which resembles that of subsp. *hirtovaginatum,* moreover the perianth segments of both these latter taxa are longer than those of *A. ritsii* and their chromosome numbers are different (*A. eivissanum* 2n = 30, MICELI & GARBARI 1987 and *A. pentadaktyli* 2n = 16 , BRULLO & al. 1989).

Finally *A. ritsii* is well distinguishable from two other recently described taxa of the *A. cupani* group s.l., from Greece, *A. chalkii* (TZANOUDAKIS & KOLLMANN 1991), and *A. rhodiacum* (BRULLO & al. 1992), due to the membranous outer bulb tunics, the 2–lobed spathe and the basic chromosome number (x = 8).

Discussion

As it is suggested by its morphological and cytological characters *Allium ritsii* is a member of *Allium cupani* group. There is no doubt however that it is a distinct biological entity, since due to its flowering period (late September to mid November) it remains reproductively isolated from related taxa of the *A. cupani* group occuring in the same area s.l., namely *Allium cupani* subsp. *hirtovaginatum.* The flowering period is not the only ecological differentiation shown by these two taxa. Peloponnesian populations of subsp. *hirtovaginatum* have been mentioned only from high altitudes (GARBARI & al. 1979, TZANOUDAKIS 1983), while *A. ritsii* has been found almost at the sea level (10–50 m.). Moreover the karyotype of *A. ritsii* differs from those of the peloponnesian populations of subsp. *hirtovaginatum.* Consequently *A. ritsii* seems to be well differentiated regarding its morphology, karyology and ecological requirements.

It is very important observation, from a biogeographical point of view, that the karyotype of this new taxon seems to be more close to those of the central Aegean populations of subsp. *hirtovaginatum* than those of Peloponnisos from the high altitudes.

Since south Peloponnisos and central Aegean area have been remained isolated geographically since million years ago, *A. ritsii* could be considered as a remnant of an old flora widespread in the "Aegean continent" prior to its fragmentation (cf. TZANOUDAKIS & VOSA 1988). The existence of such an old *Allium* flora has also been suggested by BRULLO & al. 1989, and it is further supported by the development of similar morphological characters observed in the *A. ritsii* from S. Peloponnisos, the *A. greuteri* from Cyrenaica and the *A. pentadactyli* and *A. eivissanum* from the West Mediterranean area. As has been noticed by BRULLO & al., 1989 and TZANOUDAKIS & KYPRIOTAKIS 1993, some morphological and ecological charac-

ters of these taxa seems to reflect to the arid climatological conditions prevailing during the late Tertiary (Messinian) in the Mediterranean area.

Finally it should be pointed out that in its locus classicus *A. ritsii* coexists with an other well known relict autumn-flowering taxon of the Greek flora *A. callimischon* (TZANOUDAKIS & VOSA 1988) and also that Peloponnisos and Crete are home for all the autumn-flowering *Allium* taxa of the Greek flora.

References

BRULLO S. & PAVONE P. 1983. *Allium greuteri* sp. nova *(Liliaceae)* from Cyrenaica and its relationships with the Allium cupanii group. – Willd. 13: 115–122.

— & SPAMPINATO G. 1989. *Allium pentadactyli (Liliaceae)* a new species from S. Italy. – Willdenowia 19: 115–120.

— & SALMERI C. 1992. *Allium rhodiacum (Liliaceae)* a new species from Rhodos (Greece). – Willdenowia 22: 89–95.

GARBARI F., GREUTER W. & MICELI P. 1979. The *"Allium cupanii"* group: a preliminary taxonomic, cytological and leaf anatomical study. – Webbia, 34: 459–480.

IATROU G. 1986. Contribution to the study of endemism of the Flora of Peloponnisos. – Thesis, Univ. of Patras, 310 pp. – In Greek with English summary.

KARAVOKYROU E., KYPRIOTAKIS Z., PANITSA M. & TZANOUDAKIS D. 1994. Contribution to the study of the Greek insular flora. – Proceedings of the 5th Symposium of the Hellenic Botanical Society. Delphi – Greece, p. 195–200.

MICELI P. & GARBARI F. 1987. *Allium eivissanum (Alliaceae)*, a new species from Eivissa (Balearic Isles, Spain). – Willdenowia 16: 383–390.

TAN KIT & IATROU G. 1995. A new *Colchicum* from the southern Peloponnese. – Rock Garden 24 (3/96): 255–259.

TZANOUDAKIS D. 1983. Karyotypes of ten taxa of *Allium* section *Scorodon* from Greece. – Caryologia 36: 259–284.

— & VOSA C. G. 1988. The cytogeographical distribution pattern of *Allium (Alliaceae)* in the Greek Peninsula and Islands. – Pl. Syst. Evol. 159: 193–215.

— & KOLLMANN F. 1991. *Allium chalkii (Liliaceae)*, a new species from the eastern Aegean island of Chalki (Greece). – Israel J. Bot. 40: 61–64.

— & KYPRIOTAKIS Z. 1993. *Allium platakisii* a new species of the Greek insular flora. – Fl. Medit. 3: 309–314