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Sesleria autumnalis (*Gramineae*) a new addition to the flora of Greece

Abstract

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Populations of *Sesleria autumnalis* (Scop.) F. W. Schultz have been found in the Aoos gorge, situated in the Pindhos mountain range (N.E. Greece). The species is new to Greece. Morphological description, chromosome number and habitat features are given.

Introduction

The genus *Sesleria* is notoriously controversial with respect to the status and delimitation of the taxa. According to Deyl (1946; 1980), the genus *Sesleria* is represented by eight species in Greece; the same number is accepted by Gustavsson (1991) although the reported taxa are different (the status of *S. bielzii* Schur and *S. korabensis* (Kümmerle & Jáv.) Deyl, is considered to be uncertain). Five of these taxa (*S. tenerrima* (Fritsch) Hayek, *S. rigida* Heuffel ex Reichenb. subsp. *achtarovii* (Deyl) Deyl, *S. coerulans* Friv., *S. vaginalis* Boiss. & Orph. and *S. robusta* Schott & al.) occur in mainland Greece, while the other three are restricted to small areas in the Peloponnisos (*S. taygetea* Hayek), Crete (*S. doerfleri* Hayek) and the East Aegean island of Samos (*S. anatolica* Deyl, more widespread in Anatolia). Three species, namely *S. robusta, S. tenerrima* and *S. vaginalis*, have been reported from the Timfi area in northern Pindhos, at altitudes ranging from (1100-)1600 to 2400 m (A. Strid, pers. inf.). *S. albicans* subsp. *angustifolia* (Hackel & Beck) Deyl and *S. latifolia* (Adamović) Degen have been recently reported from Mt. Vermion in North Central Greece (Cochliouros & Georgiadis 1997). Finally, in a floristic inventory of the lowland zones of Vikos-Aoos Park (Hanlidou & Kokkini 1997) no *Sesleria* species were mentioned.

During the 13th European Vegetation Survey meeting held in Ioannina (April 2004) several specimens of an interesting *Sesleria* population were collected in the Vikos-Aoos National Park. On the basis of taxonomic, cytological and coenological considerations these specimens refer to *S. autumnalis*, being a new record for the flora of both Vikos-Aoos National Park, and Greece.

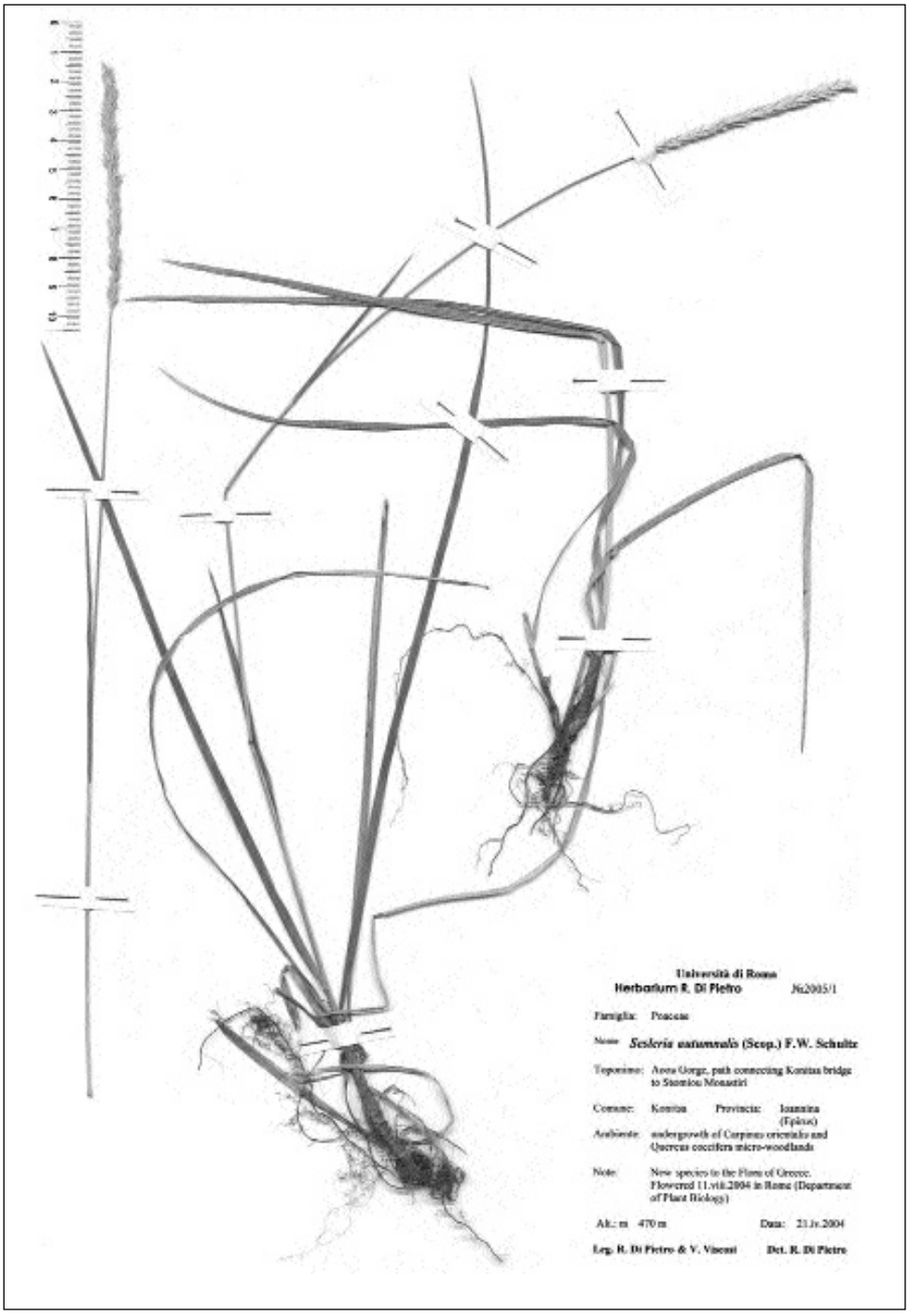

Fig. 1. *Sesleria autumnalis* specimen collected in Aoos Gorge and deposited in RO.

Study area

The Aoos river gorge belongs to the National Park of Northern Pindos, located in NW Greece (prefecture of Ioannina), which also includes the Vikos gorge and a part of Mount Timfi. The Aoos gorge runs from east to west, between the mountains Timfi and Trapezitsa. The studied area is mainly composed of hard limestone rocks. As regards its bioclimate (Mavrommatis 1980), the area is considered as transitional between the temperate (continental) and the Mediterranean climates with a mean annual temperature of 14-15°C and rainfall ranging between 737 mm (Konitsa) and 1100 mm (Ioannina).

Material and methods

Live material collected by R. Di Pietro and V. Viscosi (21.04.2004) in the Aoos gorge was compared with living plants of *Sesleria autumnalis* collected by the first author in many localities of the Italian peninsula, as well as to *Sesleria* specimens in the herbaria of RM, FI, BP, P, WU. All Greek specimens (which were collected in a period in which only the vegetative parts of the plants were evident) were further transferred in pots in the Botanical Garden of the "La Sapienza" University of Rome (20 m a.s.l., meso-Mediterranean thermotype, subhumid ombrotype), where the specimens flowered in mid-August. The exsiccata in their complete form (including both vegetative and reproductive parts) are deposited in the Herbarium of the Department of Plant Biology of that University (RO) and in other Herbaria (B, PAL, FI, IS, APP). The chromosome number was counted on root tip mitoses pre-treated in 0.002 M 8-hydroxiquinoline, fixed in acetic acid ethanol mixture and stained in acid carmine.

Results

***Sesleria autumnalis* (Scop.) F. W. Schultz** in Arch. Fl.: 269 (1858)
Phleum autumnale Scop., Fl. Carniol., ed. 2, 1: 56 (1772)
S. elongata Host, Icon. Descr. Gram. Austriac. 2: 69 (1802)

Greek specimens seen Aoos Gorge, path connecting Konitsa bridge to Stomiou Monastery, undergrowth of *Carpinus orientalis* and *Quercus coccifera* pseudomacchia; alt. 470 m, 19.04.2004. Di Pietro & Viscosi (PAL, RO).

Description Plant tufted. Culms up to 60 cm tall, erect. Leaf sheaths yellowish, membranous, glabrous, showing typical thickened rings. Ligule 0.1-0.3 mm long. Blade flat, suberect, glabrous, green to somewhat pruinose, with a very scabrid sclerenchymatic margin. Spikes cylindrical, (7.5-)8-8.5(-9,2) cm long, 2-4 mm wide, dense. Spikelets bearing 2-3 florets. Glumes unequal, the outer 3.0-3.5, the inner 4-4.5 long, glabrous, membranous, hyaline, ciliate at the margin, typically acuminate and always awned; awns (1.8-)2.5-3.5(4.3) mm long. Lemma with few, short hairs on the back, 3-toothed at the apex, each tooth with awn; lateral awns 0.3-0.6 mm, median awn 1.3-1.8 mm long. Palea 2-toothed, sometimes with a bluish-violet tinge, covered with 0.2-0.4 mm long hairs along the margin. Anthers (2.3-)2.5-2.8(-3) mm long.

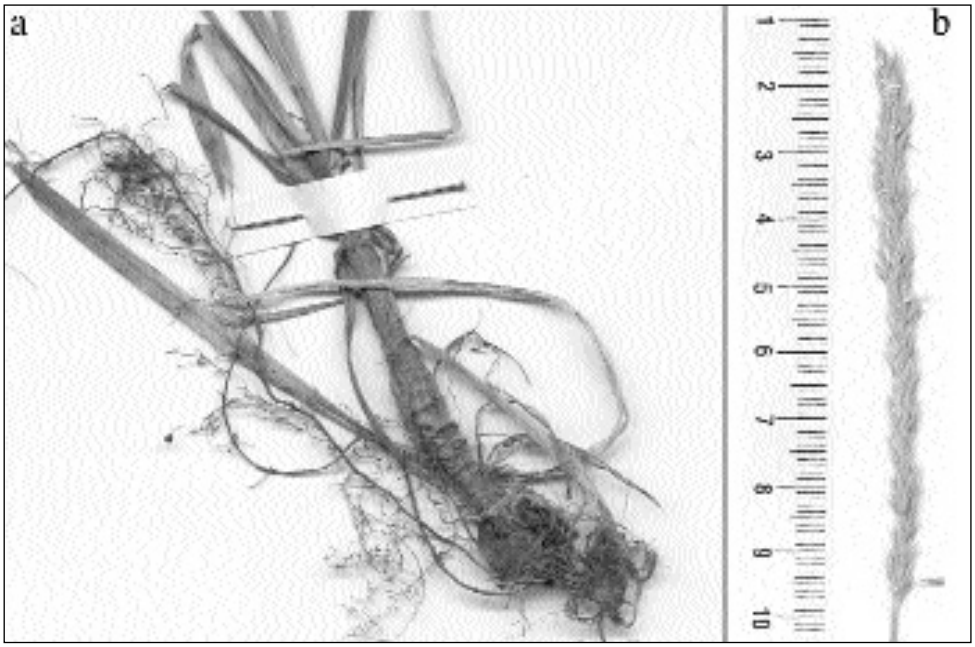

Fig. 2. *S. autumnalis*: a) spike; b) leaf-sheaths.

Chromosome number 2*n* = 28.

Sesleria autumnalis is known from numerous localities both in Italy and former Yugoslavia, and several previous counts from specimens collected in these countries have been reported. A first count of 2n = 14 was reported in Avdulov (1928) and confirmed in Deyl (1946). This number, however, has not been confirmed more recently and is probably erroneous, perhaps referring to the gametic number. In further published counts (Ujhelyi 1959; Conert 1992) and many unpublished ones (Di Pietro & al. in press), the number 2n=28 was consistently found, and the Greek material (Fig. 3) agrees with these results. The karyotype consists of 28 metacentric, submetacentric and subtelocentric chromosomes. As in all studied species of this genus, this tetraploid complement shows an unimodal structure. In some chromosomes one can see a secondary constriction with a characteristic, large satellite.

Ecology *Sesleria autumnalis* was found in the western part of the Aoos gorge, along the path along the right side of the Aoos river, that connects Konitsa to Moni Stomiou (altitude: 450-500 m a.s.l.). The species grows in the undergrowth of woodlands dominated by *Carpinus orientalis* and *Quercus coccifera*, on shallow and rocky soil of SW exposed slopes at the foot of Mt. Trapezitsa.

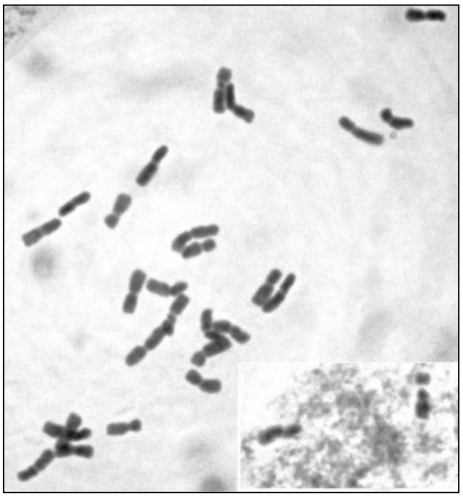

Fig. 3. Metaphasic plate of a *S. autumnalis* specimen collected in Aoos Gorge.

Discussion

The distribution area of *Sesleria autumnalis* (Fig. 4) is typically amphi-Adriatic. According to Pignatti (1982), *S. autumnalis* occurs in northern Italy, from Veneto to Friuli Venezia-Giulia, and in the Apennines from Liguria to Calabria. In the Balkans, it extends from Istria throughout western Croatia, Bosnia-Herzegovina and Montenegro to Albania (Deyl 1946; 1980). The new Greek record considerably extends the distribution range of this species in the Balkan peninsula southward. Although *S. autumnalis* is rather variable in many characters such as spike size, culm height, and leaf dimensions, all the specimens collected in the Aoos Gorge exhibit constantly some morphological features that are highly diagnostic for *S. autumnalis* such as thin spikes, more than 8 cm long and but 3-4 mm wide, and the presence of annular thickenings on the leaf sheaths. Moreover, the form and dimensions of stem, leaf and spikelet characters agree with those found elsewhere in *S. autumnalis*. The phytocoenological "behaviour" of the *S. autumnalis* population in the Aoos Gorge also coincides with the ecological preferences of this species elsewhere. S. autumnalis is probably the only *Sesleria* species that generally occurs in wooded areas. It exhibits a wide ecological amplitude, ranging from mixed evergreen to thermophilous beech woods, but has its coenological optimum in woodlands of *Ostrya carpinifolia*, *Quercus pubescens,* and/or *Carpinus orientalis*, belonging to the thermophilous fringe of the alliance *Carpinion orientalis* (Horvat 1959; Horvat & al. 1974; Lakušić & al. 1982; Poldini 1982, 1988; Trinajstić 1990; Blasi & al. 2004). The Greek population of *S. autumnalis* is found in a woodland habitat that matches precisely the above-mentioned syntaxon. The floristic and physiognomic features of the Aoos Gorge community suggests its preliminary inclusion in the association *Carpino orientalis-Quercetum cocciferae*, although the presence of several thermophilous, deciduous species such as *Acer monspessulanum*,

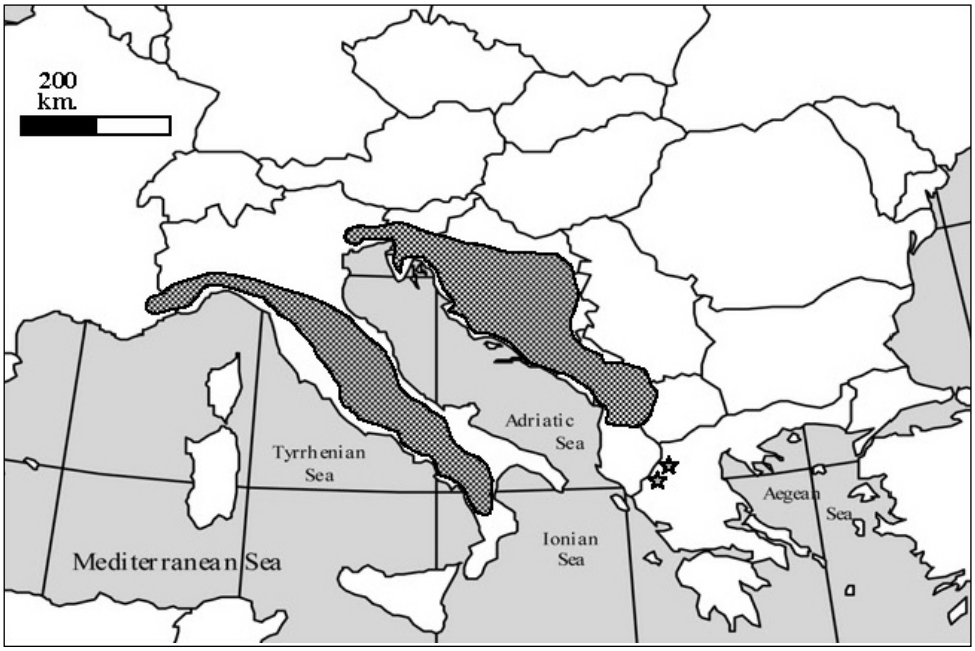

Fig. 4. Geographical range of *S. autumnalis* (grey colour) with the star indicating the location of the new record to Greece.

Ostrya carpinifolia, Fraxinus ornus, Pistacia terebinthus and *Cornus mas* clearly suggest a transition towards *Quercetalia pubescentis* woodland communities. The coenological situation of this community is very similar to the one that prevails in the sub-coastal limestone mountain district of central Italy (Blasi & Di Pietro 1998; Di Pietro & Blasi 1998; Blasi & al. 2001), the only difference being the substitution of *Quercus coccifera* by *Q. ilex*.

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References

Avdulov, N. P. 1928: Sistematiceskaja kariologija sem. *Gramineae*. — Dnevn. Vsesojuznogo S"erda Bot. 1928: 65-67.

Blasi, C. & Di Pietro, R. 1998: Two new phytosociological types of *Quercus pubescens* s.l. woodland community in southern Latium. — Pl. Biosyst. **132:** 207-223.

— , — & Filesi L. 2004: Syntaxonomical revision of *Quercetalia pubescenti-petraeae* in the Italian peninsula. — Fitosociologia **41:** 87-164.

— , — , — & Fortini P. 2001: Syntaxonomy, chorology and syndynamics of *Carpinus orientalis* communities in Central Italy. — Phytocoenologia **31:** 33-62.

Cochliouros, S. & Georgiadis, T. 1997: Additions to the flora of Mount Vermion (N Central Greece). — Willdenowia **27:** 101-112.

Conert, H. J. 1992: *Sesleria* Scop. — Pp. 473-486 in: Hegi, G. (ed.), Illustrierte Flora von Mitteleuropa, ed. 2, **1(3).** — Berlin.

Deyl, M. 1946: Study of the genus *Sesleria*. — Opera Bot. Čech. **3:** 1-246.

— 1980: 36. *Sesleria* Scop. — Pp. 173-177 in: Tutin, T. G. & al. (ed.): Flora europaea, **5.** — Cambridge.

Di Pietro, R., Blasi, C. 1998: Gli ostrieti mesofili dei Monti Ausoni (Lazio meridionale). — Arch. Geobot. **3:** 19-40.

— , D'Amato G., Trombetta, B. 2004: Karyology and Distribution of *Sesleria tenuifolia* complex (*Poaceae*) in the Italian Peninsula. — Nord. J. Bot. **23(5-6)** (in press).

Gustavsson L. A., 1991: Sesleria Scop. — Pp. 777-783 in: Strid, A. & Tan, K. (ed.) Mountain Flora of Greece, **2.** — Edinburgh.

Hanlidou, E. & Kokkini, S. 1997: On the flora of the Vikos-Aoos National Park (NW Greece). — Willdenowia **27:** 81-100.

Horvat, I. 1959: Sistematski odnosi termofilnih hrastovih i borovih suma Jugoistočne Europe (Wärmeliebende Eichen- und Kiefernwälder Südosteuropas in systematischer Betrachtung). — Biol. Glasn. **12:** 1-40.

— , Glavac, V. & Ellemberg, H. 1974: Vegetation Südosteuropas. — Stuttgart.

Lakušić , R., Pavlović, D. & Redžić, S. 1982: Horološko-ekološka i floristička diferencijacija šuma i šikara sa bjelograbićem (*Carpinus orientalis* Mill.) i crnim grabom (*Ostrya carpinifolia* Scop.) na prostoru Jugoslavije. — Glasn. Republ. Zavoda Zaštitu Prir. Prirodnjačke Zbirke Titogradu **15:** 103-116.

Mavrommatis, G. 1980: Le bioclimat de la Grèce. Relations entre le climat et la végétation naturelles. — Cartes Bioclimatiques, Institut des Recherches Forestales d'Athènes, **1:** 1-63.

Pignatti, S. 1982: Flora d'Italia, **3.** — Bologna.

Poldini, L. 1982: *Ostrya carpinifolia*-rich woods and bushes of Friuli-Venezia Giulia (NE-Italy) and neighbouring territories. — Stud. Geobot. **2:** 69-122.

— 1988: Übersicht des Verbandes *Ostryo-Carpinion orientalis* (*Quercetalia pubescentis*) in SO-Europa. — Phytocoenologia **16:** 125-143.

Trinajstić, I. 1990: Sulla sintassonomia delle vegetazioni termofile caducifoglie dell'ordine *Quercetalia pubescentis* BR.-Bl. del litorale adriatico jugoslavo. — Not. Fitosoc. **23:** 21-28.

Ujhelyi, J. 1959: Species *Sesleriae* generis novae. — Feddes Repert. Spec. Nov. Regni Veg. **62:** 59-70.

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