

Additions to *Allium* sect. *Allium* (*Alliaceae*) from North Africa

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A new species of *Allium* sect. *Allium* is described and one species is removed from the synonymy of *A. ampeloprasum* after revision of herbarium specimens at BM. *A. altoatlanticum* Seregin sp. nova is based on a specimen collected by Bocquet in 1971 in the High Atlas (Morocco, Africa). It closely resembles *A. bourgeaui* Rech.f. from the Eastern Mediterranean but differs chiefly in the colour of the perianth segments – mostly greenish but dark-purple at the base and along midvein and whitish along margin (not uniformly pale green, or whitish-green, or purple). Revision of the specimens representing the subspecies of *A. bourgeaui* and their distribution led me to the conclusion that the *A. bourgeaui*-complex unites three separate species: *A. bourgeaui* s. str., *A. cycladicum* (Bothmer) Seregin comb. et stat. nov., and *A. creticum* (Bothmer) Seregin comb. et stat. nov. An identification key to the four species allied to *A. bourgeaui* is given. *A. multiflorum* Desf. (Morocco, Algeria, and ?Tunisia) is excluded from the synonymy of *A. ampeloprasum* L. s. l., from which it differs in the smoothness of the leaves, the shape and length of the perianth segments and the proportions of the inner filaments. The botanists of the 19th century definitely separated *A. multiflorum* and *A. ampeloprasum* but later the *A. ampeloprasum*-complex was treated broadly as a single widely distributed and polymorphic species.

The taxonomy of the genus *Allium* L. (*Alliaceae*), the largest genus of petaloid monocots (excluding *Orchidaceae*), is complicated. According to the recent monograph (Mathew 1996), section *Allium*, the largest section of this genus, includes 114 species of a total 750 (Stearn 1992).

In July – August 2003 I had an opportunity to visit the Herbarium of the British Museum (the Museum of Natural History) in London (BM). During this visit I came across several specimens from North Africa, which were identified as *Allium ampeloprasum* L. s. l.

1. *Allium altoatlanticum* Seregin sp. nova

A specimen from Morocco (Bocquet 11004) closely resembles *A. bourgeaui* Rech.f. primarily due to its densely minutely papillose perianth. However, *A. bourgeaui*, which consists, according to Mathew (1996), of three subspecies, was known only from Eastern Mediterranean (Greece and Turkey). Careful observation of the perianth segment colour and structure led me to the conclusion that Bocquet collected in 1971 a new species known only from a single collection. The validating description of this species is given below.

***Allium altoatlanticum* Seregin sp. nova** (sect. *Allium*)

Bulbus ovoideus, ca 2 cm in diam.; tunicae exteriores membranaceae, cinerascens; bulbilli sat magni, ad 2 cm lg., flavescens, sub tunicis exterioribus evolventes. Scapus (?–)100–120(–?) cm lg., usque ad tertiam partem vel ad dimidium foliorum vaginis laevibus tectus. Folia 5–6, scapo breviora, linearia, non fistulosa, carinata, ad 1 cm lt., margine dense papillosa. Spatha univalvis, caduca. Umbella sphaerica, ad 4.5 cm in diam., densa. Pedicelli 1–2.2 cm lg., laevi, juveniles

purpurei; bracteolae breves, argenteo-albae. Perianthium late campanulatum; perianthii phylla viridia, prope nervum et basin atro-purpurea, margine cinerascens, 3–3.5 mm lg., papillosa, papillis parvis uniformibus; exteriora lanceolata, acuta vel obtusa, interiora anguste oblonga, obtusa vel truncata. Stamina antheris profunde exsertis; filamenta non ciliata vel basi sparse ciliata, exteriora integra, anguste triangulata, interiora tricuspidata, eis cuspis mediana antherifera parte basali indivisa duplo brevior et cuspidibus lateralibus triplo–quadruplo brevior, cuspides laterales perianthii phyllis multo longiores; antherae flavae. Stylus conspicue exsertus. Capsula ovoideoglobosa, ca 4 mm lg., perianthio persistenti longior; semina nigra, ad 3.5 mm lg.

A. altoatlanticum habitu *A. bourgeaui* Rech.f. et *A. cycladico* (Bothmer) Seregin imitatur; ab *A. bourgeaui* perianthii phyllis viridibus, prope nervum et basin atro-purpureis, margine cinerascens (nec pallide viridibus vel albido-viridibus) differt; ab *A. cycladico* perianthii phyllis viridibus, prope nervum et basin atro-purpureis, margine cinerascens (nec purpureis); antheris flavis (nec purpureis) differt; ab *A. commutato* Guss. filamentis exterioribus integris (nec tricuspidatis) differt.

Bulb ovoid, about 2 cm diam.; outer tunics membranous, cinereous; bulbills rather large, up to 2 cm long, yellowish, developing beneath the bulb tunics. Stem (?–)100–120(?) cm high. Leaves 5–6, shorter than the inflorescence, sheathing the lower third to half of the stem, linear, non-fistulose, keeled, up to 1 cm wide, densely scabrid on margin; sheaths glabrous. Spathe 1-valved, caducous. Umbel spherical, up to 4.5 cm diam., dense. Pedicels 1–2.2 cm long, smooth, usually purple when young; bracteoles small, silvery-white. Perianth broadly campanulate; segments mostly greenish but dark-purple at the base and along midvein and whitish along margin, 3–3.5 mm long, papillose, with uniform small papillae on the outer side; the outer segments lanceolate, acute to obtuse, the inner segments narrowly oblong, obtuse to truncate. Stamens with anthers well-exserted; filaments non-ciliate or very sparsely ciliate at the base, the outer simple, narrowly triangular, the inner tricuspidate, with the medium anther-bearing cusp half as long as the expanded undivided basal part and a quarter or a third as long as the lateral cusps; lateral cusps much exceeding the perianth segments; anthers yellow. Style conspicuously exserted. Capsule ovoid-globose, about 4 mm long, longer than perianth segments; seeds black, up to 3.5 mm long.

A. altoatlanticum resembles *A. bourgeaui* Rech.f. and *A. cycladicum* (Bothmer) Seregin. It differs from *A. bourgeaui* in perianth segments greenish but dark-purple at the base and along midvein and whitish along margin (not pale green or whitish-green), from *A. cycladicum* in perianth segments greenish but dark-purple at the base and along midvein and whitish along margin (not purple) and yellow (not purple) anthers, from *A. commutatum* Guss. in simple (not tricuspidate) outer filaments.

Type: [Africa, Morocco] Plantae Mograbinæ. Haut Atlas: gorge de Moulay Brahim, près de Asni, à 42 km au sud-ouest de Marrakech. Extrêmement abondant dans un secteur des rocailles où se trouvent des talus rocaillieux terreux [High Atlas: Moulay Brahim Gorge, near Asni, 42 km to SW from Marrakech. Steep slope with talus in rocky sector]. Alt. 1100 m, 27.06.1971, G. Bocquet 11004 (BM!, holotype; iso – ZT).

Careful studies of specimens representing the subspecies of *A. bourgeaui* (BM!, K!) and their distribution led me to conclusion that the *A. bourgeaui*-complex unites three separate vicarious species. The relationships between them are more obvious with addition of *A. altoatlanticum*:

Allium bourgeaui Rech.f., Ann. Naturhist. Mus. Wien 47: 150. 1936.

Type: Greece: Insula Karpathos (Scarpanto), in fissuris calc. ad Phiniki, 18.06.1935, *Rechinger fil.* 8300 (W, lectotype, selected by von Bothmer 1974: 22; iso – BM!, K!, LD).

Distribution: E Aegean Isles (Rhodes, Karpathos, Kasos); SW Turkey (Burdur province).

Allium cycladicum (Bothmer) Seregin **comb. et stat. nov.** — *Allium bourgeaui* subsp. *cycladicum*
Bothmer, Opera Bot. 34: 23. 1974.

Type: Greece: Nom. Kikladhes, the island of Paros, 2–2.5 km SE Leukas, on limestone cliffs facing W and on terraces below the cliffs, alt. ca 250 m, 30.06.1964, von Bothmer & Strid B75 (LD, holotype).

Distribution: Greece (E Peloponnese, Cyclades, Ikaria); SW Turkey (Muğla and Denizli provinces).

Allium creticum (Bothmer) Seregin **comb. et stat. nov.** — *Allium bourgeaui* subsp. *creticum*
Bothmer, Mitt. Bot. Staatssamml. München 12: 272. 1975.

Type: Greece: Nomos Lasithion, Epirus Sitia, 1 km SSW of Tourloti, in NW-exposed limestone cliff, ca 200 m s. m., 22.05.1974, von Bothmer B857 (LD, holotype).

Distribution: Greece (Crete).

Key to species allied to Allium bourgeaui:

1. Perianth segments reddish or pinkish; outer segments 4–5 mm long, with small and large papillae on the outer side; anthers purple *A. creticum*
– Outer perianth segments 2.5–4 mm long, with uniform small papillae on the outer side; anthers yellow or purple 2.
2. Perianth segments completely purple; outer segments 2.5–4 mm long; anthers purple *A. cycladicum*
– Perianth segments pale green, whitish-green or mostly greenish but dark-purple at the base and along midvein and whitish along margin; anthers yellow 3.
3. Perianth segments completely pale green or whitish-green; outer segments 2.5–4 mm long *A. bourgeaui*
– Perianth segments mostly greenish but dark-purple at the base and along midvein and whitish along margin; outer segments 3–3.5 mm long *A. altoatlanticum*

2. *Allium multiflorum* Desf.

Henry Nielsen annotated in 1986 some specimens of *A. ampeloprasum* L. s. l. at BM as ‘species A’. I have found an attached letter from Henry Nielsen (Copenhagen) to Roy Vickery (BM) dated 13 September 1989 among specimens from the Azores at BM. The Danish botanist explained in that letter what his concept of ‘species A’ meant:

‘Species A’ was a practical convention, used only in the yet (as far as I know) unpublished *Allium*-report made by the Economics and Conservation Section of RBG Kew for the IBPGR in Rome.

Herbarium material of *A. ampeloprasum* seemed to me initially to consist of two groups of specimens, just as different as some of the other closely related species accepted in Flora Europaea: e.g. *A. pardoi* Loscos and *A. polyanthum* Schultes et Schultes f. The species *A. commutatum* Gussone, *A. bourgeaui* Rech. fil., *A. acutiflorum* Lois. and *A. pyrenaicum* Costa et Vayreda were apparently clearly distinct from, though closely related to *A. ampeloprasum* L. I then assumed *A. ampeloprasum* L. to be the commoner kind, known to me from Greece, while the rarer kind might be something different.

I then used the term ‘species A’ for some *A. ampeloprasum* s. l., characterised by few or no bulblets and by more acute tepals, and mainly collected from natural habitats in the West Mediterranean. They are mostly found in herbaria under the name *A. ampeloprasum* or under *A. polyanthum*. Both these taxa in a narrow sense seem to be distinct from ‘species A’, although it (as a concept) admittedly “bridges the morphological gap” between them. Later I realised, that ‘species A’ included *some rather different narrow-tepalled specimens from North Africa, which should be kept aside* (italics mine – A.S.); and that many authors used the name *A. polyanthum* for a concept close to (maybe identical to) my ‘species A’, but apparently not the *A. polyanthum* sensu Stearn in Flora Europea (1980) etc. By that time, I had no possibility of starting all over again, and I had to cite many of the West Mediterranean specimens as *A. ampeloprasum* s. lato. The commoner kind of

A. ampeloprasum with many bulblets is mainly East Mediterranean (though *A. pardoi* from Spain might be identical?).

Even the type of *A. ampeloprasum* L. (Steep Holme Island in the Bristol Channel) seems to belong within my concept of ‘species A’, thereby crushing the names in the *Allium*-report, and, if specifically distinct, possibly unsettling a lot of literature. Maybe it is a subspecies of *A. ampeloprasum* L. (or rather: the East Mediterranean kind is a subspecies of *A. ampeloprasum*), as may be *A. babingtonii* Borrer from Britain, *A. alibile* A.Rich. from Ethiopia, *A. dregeanum* Kunth from South Africa and at least one (unnamed?) from Arabia.

I am sorry not to be able to offer more than a problem without solution. Furthermore, the single specimen from Madeira seen by me (*d’Ohevo* 1855 in herb. BM) raises another problem. It appears identical to *A. ampeloprasum* var. *bulbiferum* Syme from the Channel Islands – a taxon closely resembling *A. dregeanum* Kunth from South Africa. Perhaps these are bulbiferous forms of ‘species A’? But the distribution seems impossible – unless they are old cultivars introduced and naturalized in early historic times.

The letter is cited here almost completely, because it is full of important and fresh ideas for the taxonomy of section *Allium* species. Unfortunately, Nielsen has not published any papers on this question.

“Some rather different narrow-tepalled specimens from North Africa, which should be kept aside” represent another species, which is in fact not very close to *A. ampeloprasum*.

It is definitely clear to me that botanists of 19th century already treated this taxon as a separate species, *A. multiflorum* Desf. This species was forgotten in 20th century and treated as a synonym of *A. ampeloprasum* s. l., a polymorphic species. This point of view was followed by de Wilde-Duyfjes (1976), and Mathew (1996), who accepted *A. ampeloprasum* s. l.

A. multiflorum is a distinct species, which is readily distinguished from *A. ampeloprasum* by leaves smooth on the margin and keel (not scabrid); perianth segments (5–)5.5–6 mm long, narrowly lanceolate or almost linear, acute, twice as long as capsule (not (3.5–)4–5.5 mm long, oblong-lanceolate to elliptic-ovate, subacute, shortly mucronate, slightly longer than capsule); and the anther-bearing cusp about half to two thirds as long as the lateral cusps (not a third to half as long as the lateral cusps). *A. multiflorum* and *A. ampeloprasum* both grow in North Africa.

A nomenclatural citation and full description of *A. multiflorum* are given below. However, I have to mention that the synonymy is provisional because I have not studied types. Type citations are according Mathew (1996).

Allium multiflorum Desf., Fl. Atlant. 1: 288. 1798.

Type: Algeria, *Desfontaines* (P, holotype).

= *Allium mogadorese* Willd. in Schult. & Schult.f., Syst. Veg. 7: 1004. 1829. — Type: Morocco, near Mogador, *Broussonet* (B – Herb. Willdenow, holotype).

= *Allium getulum* Batt. et Trabut, Bull. Soc. Bot. France 39: 75. 1892. — Type: Algeria, Djebel Mzi, *Battandier* (MPU, holotype).

= *Allium tortifolium* Batt. et Trabut, Bull. Soc. Bot. France 39: 338. 1892. — Type: Algeria, Ain M’lila, *Battandier* (MPU, holotype).

= *Allium ampeloprasum* L. var. *combazianum* Maire, Bull. Soc. Hist. Nat. Afrique N. 25: 230. 1935. — Type: Algeria, near Chateaneuf, *Combaz* (MPU – Herb. Maire, holotype).

Bulb ovoid to globose, 2–3.5 cm in diam.; outer tunics membraneous, greyish; bulbills apparently absent. Stem 60–105 cm, stout. Leaves 4–10, shorter than the inflorescence, sheathing the lower (1/4) 1/3–1/2 of the stem, linear, non-fistulose, keeled, 4–11 mm wide, smooth on the margin and keel. Spathe 1-valved, ovate at the base, abruptly narrowed to a long neck up to 5 cm long, usually caducous. Umbel spherical, 4–7 cm in diam., dense. Pedicels unequal, up to 5 cm long, smooth, usually purple; bracteoles present, silvery white. Perianth narrowly campanulate in flower; segments whitish, pink or purplish-pink, always with a wide dark-purple midvein, (5) 5.5–

6 mm long, with large sparse papillae on the outer surface, especially on the keel, narrowly lanceolate or almost linear, acute, twice as long as the capsule, the inner equalling the outer. Stamens with anthers equalling the segments; filaments white, ciliate along margin at the base, strongly arching outwards; the outer simple, narrowly triangular, the inner with the anther-bearing cusp about a half to two thirds as long as the lateral cusps and a third to a half as long as the undivided basal part; lateral cusps slightly exceeding the segments; anthers dark-yellow. Style exserted. Capsule subglobose, up to 3.5 mm long; seeds black, up to 2.5 (3) mm long.

Flowering time: May – June.

Distribution: lowland regions along the sea shore in Morocco, Algeria, and ?Tunisia.

Specimens studied:

Morocco: Melilla, massif du Gurngu, 11.05.1933, *F. Sennen & Hno. Mauricio* s. n. (BM!); Rabat, rout de Zaen. 150 m. Bord de champ argileus, 19.05.1984, *J. Lewalle* 10962 (BM!, BR); Mohemedias oued Mefitik. 80 m. Brounaille, 25.05.1986, *J. Lewalle* 11521 (BM!, BR).

Algeria: Flora Algeriensis exsiccata № 632. In ditone urbis Alger, loco dicto Kouba, 1879, *M. Gandoger* (BM!); K1: E. of Fondouk (El Arba – Palestro). 150 m. Dry shaley banks (non-calcareous), 5.06.1971, *Davis* 53206 (BM!); K1: Oued Sebaou between Tizi Ouzou and Makouda. 50–100 m. Steep schist slopes of river valley, 17.06.1975, *Davis* 59141 (BM!).

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