

## *Allium oleraceum* (L.) Chevall

### Field Garlic

*Allium oleraceum* has light-green stems, two very long, pointed valves surrounding the inflorescence and flowers on long, untoothed pedicels. It is associated with dry, free-draining calcareous or weakly acid soils of low fertility, and found within both sunny grassland slopes, dune systems, roadside and arable verges, rocky outcrops and also in seasonally inundated meadow and riverbank habitat. It is widely scattered across south-west, central and northern England, more thinly so elsewhere, is rare in Wales and Scotland, and absent as a native from Ireland. *Allium oleraceum* is assessed as Vulnerable in Great Britain.



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#### IDENTIFICATION

*Allium oleraceum* has light-green stems (~80 cm) and filiform-linear leaves (2-4) that are ribbed, flat to semi-cylindrical, 2-4 mm wide × 15-30 cm long and fistular in the lower part, sheathing ± the bottom half of the stem. Leaf veins are usually scabrid with minute teeth (Sell & Murrell 1996; Poland & Clement 2009; Stace 2010).

The lax inflorescence comprises bulbils and hermaphrodite, protandrous flowers enclosed by a large greenish bract (spathe) that is split into two persistent unequal parts (valves). Each valve is very long (~20 cm) and contracted into an extended point much longer than the basal part (Stace 2010).

Each segment of the perianth is bell-shaped, c.5-7 × 2.5-3 mm with colouration ranging from pinkish-green to brownish-



Close-up of an *Allium oleraceum* inflorescence at Borstal, Kent.  
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white and is held on long, untoothed pedicels (15-60 mm) that curve downwards at anthesis. The light green colour of *A. oleraceum* stems stand out early in the flowering season but are soon enveloped by the surrounding sward, and so plants are best searched for in June or early July.

#### SIMILAR SPECIES

*Allium oleraceum* can be separated from *A. vineale* by examination of the spathe. The former species has 2 persistent valves, whereas the latter has one ± deciduous valve with the extended point about as long as the basal part (Stace 2010). *Allium scorodoprasum* has much wider (10-24 mm) dull-green leaves (Poland & Clement 2009).

Sell & Murrell (1996) separate *A. oleraceum* into var. *oleraceum* and var. *complanatum*. The former variety is distinguished as having usually hollow leaves that are 2-3 mm wide and semi-terete, whereas the latter variety has flat leaves 3-4 mm wide and is only found near to rivers in the north of the country.

#### HABITATS

In Britain *Allium oleraceum* is found on calcareous or weakly acid soils subject to summer drought on steep dry south-facing grassy slopes or outcrops, in floodplain meadows or on open sunny and sandy riverbanks (Taylor 2002). The species has also been recorded from sand dunes, freely-draining banks on roadside verges, arable margins, woodland edge and grassy field borders (Metherell 2011; Boon 2011; Sanford 2010).

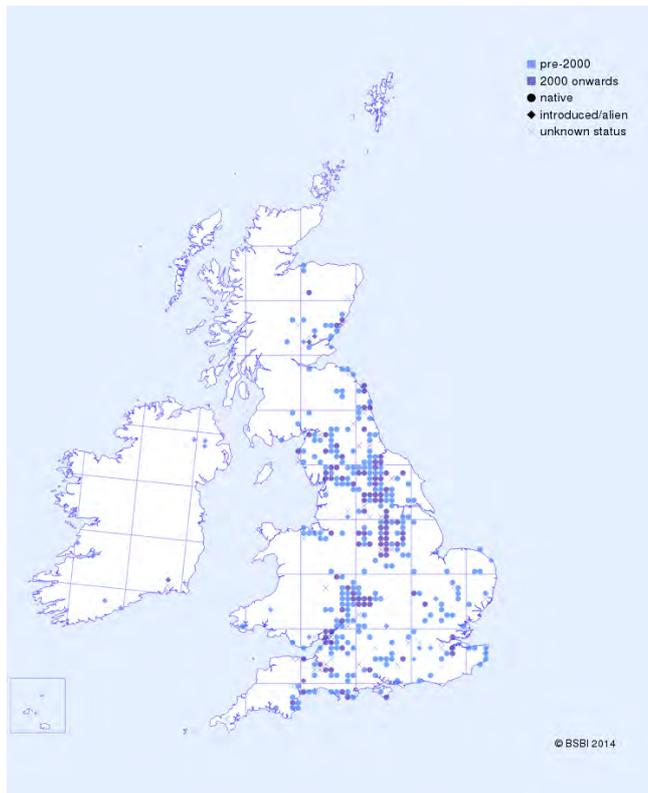
# *Allium oleraceum* L.

## BIOGEOGRAPHY

*Allium oleraceum* is widely distributed throughout western, central and eastern Europe from Scandinavia and northern Russia to northern Spain, Corsica, central Italy, the former Yugoslavia, Bulgaria and the Caucasus (Stace & Dixon 1994).

In England its core distribution extends from South Devon, North Somerset and the Lower Severn valley, north to Derbyshire, Nottinghamshire and Yorkshire, and north-west to Cumberland. Elsewhere it is thinly scattered and often persists in low numbers at single sites, with outliers as far east as Kent and as far north as North Northumberland. It is a rare species in Scotland, with a handful of recent records from coastal woodland and cliff-top paths in Angus and Kincardineshire, a single record from crags above Straloch, east Perthshire, and a small number of plants on a cliff above the Bridge of Avon in Banffshire. It is equally rare in Wales, where it is only extant at a very few localities in Monmouthshire. In Ireland *A. oleraceum* occurs as an introduction.

In the UK its altitudinal range is 0-365 m, but it is found at higher altitudes in Europe e.g. 300-500 m in the Czech Republic (Duchoslav et al. 2010). *Allium oleraceum* is naturalised in a number of countries including eastern North America and south-eastern Australia, and a number of naturalised populations have also been recorded from across Britain and Ireland.



Distribution of *Allium oleraceum* in Great Britain and Ireland.

## ECOLOGY

*Allium oleraceum* is a perennial bulbous geophyte capable of reproducing by seed, bulbils and by subterranean bulbs. It is closely related to species in the *Allium paniculatum* group (e.g. *A. paniculatum*, *A. fuscum*, *A. fusii*, *A. pallens* and *A. podolicum*) but differs from these taxa in having bulbils on the inflorescence (Šafářová et al. 2011).

Below ground the parent bulb is replaced by the terminal bulb in non-flowering plants and the major offset bulb in flowering plants at the end of the growing season, with plants rarely producing non-dormant daughter bulbs (Duchoslav 2010; Karpavičienė & Karanauskaitė 2010). Bulbs produce roots in the autumn from which short green overwintering leaf sheaths are produced in some winters. Bulbils and flower buds develop in the spring, with flower pedicels elongating and eventually bursting between the spathe, standing out at various angles between the bulbils. As the green foliage begins to wither the pedicels curve downwards with anthesis taking up to two weeks (Aström & Hæggröm 2004).

Each flower can produce up to six seeds but seed production varies greatly and appears dependent on insect pollination. *A. oleraceum* is frequently visited by wasps of the family *Vespidae* and Aström & Hæggröm (2004) consider the species to be a “wasp blossom” (characterized by a perianth with dull, brown colours). Seed ripening appears to rely on warm but not too dry summers (Aström & Hæggröm 2004). Reproduction occurs more frequently in pentaploid plants than in tetraploids, and can result in several fruit capsules per plant and a high seed production (Codd 2005). However, seeds rarely persist for more than a year in seed bank (Thompson et al. 1997), seedling establishment is often low (Karpavičienė & Karanauskaitė 2010) and consequently across much of the species range, including Britain, the primary mode of propagation is asexual via bulbils and side-bulbs, the latter of which have weak runners.

In riparian environments, the primary mode of dispersal is winter flooding and the displacement downstream of bulbils or bulbs to new open areas. In Slovakia, Šafářová et al. (2011) detected clear differences in the distribution and ecological preference of *A. oleraceum* cytotypes, with tetraploids more frequent at higher altitudes and pentaploids and hexaploids more common at lower altitudes. The authors suggest that there are two different types of tetraploid in central Europe based on altitudinal differences of sampled populations in the Carpathians and the Bohemian Massif (see also Mráz et al. 2008).

Four ploidy levels have been determined for *A. oleraceum* across its range: tetraploid ( $2n = 32$ ), pentaploid ( $2n = 40$ ), triploid ( $2n = 24$ ) and hexaploid ( $2n = 48$ ) (Aström & Hæggröm 2004). Populations in Britain, central Europe and Scandinavia contain a mixture of tetraploid and pentaploid individuals (Karpavičienė 2007; Šafářová et al. 2011) but where overlap occurs, cytotypes are usually in balanced proportions. Aström & Hæggröm (2004) state that tetraploid and pentaploid cytotypes are morphologically discernible, but studies by Karpavičienė (2012) investigating morphological and karyological features of the two cytotypes

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showed that chromosome counting is still necessary to determine ploidy level.

Triploid forms appear to be the rarest cytotype and so far are only reported from southern Slovakia, northern Hungary and the Ukraine. They are all located at the northern extremity of one of the assumed diploid progenitors, *A. paniculatum*, although their extreme rarity suggests that it is unlikely that they form a bridge between diploid and tetraploid populations (M. Fialová & M. Duchoslav, unpublished material).

### THREATS

In Britain, potential threats include the shading-out of populations due to a lack of grazing, cutting or the planting of trees (e.g. Boon 2011) or a lack of hedgerow management (e.g. Lockton & Whild 2005), eutrophication, habitat fragmentation and alteration to natural hydrological regimes.

### MANAGEMENT

*Allium oleraceum* plants prefer open, sunny sites but they can tolerate partial shade (Hill et al. 2004). More research is required regarding optimum management for this species, but it seems likely that specific grassland management should focus on the removal of coarse vegetation by the end of the growing season in perhaps one out of every two years. This would allow the natural dispersal of viable bulbils and/or seeds in uncut/ungrazed years and also ensure that there are open conditions for plant growth in alternate years.

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### AUTHOR VERSION

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