Orchis militaris L.
Military Orchid

*Orchis militaris* is one of four ‘anthropomorphic’ orchids found in England, with the flower structure said to resemble a soldier complete with helmet (converging sepals), arms (labellum lobes) and tunic resplendent with buttons (purple papillae on the labellum). It is a plant of unimproved grassland, scrub edge and woodland glades on free-draining calcareous soils and is restricted to a single site in Suffolk and two locations in Buckinghamshire, although it was formerly much more widely scattered across the Chilterns. The species has been assessed as Vulnerable in Great Britain and England due to the small number of extant locations and restricted population size.

**IDENTIFICATION**

*Orchis militaris* is the type species of the type genus of the orchid family. It has 3-6 oblong-lanceolate unsotted basal leaves 8-18 cm long and 2-5 cm wide that are shiny yellow green on the upper side, paler beneath and with an obtuse to acute tip. Smaller sheathing leaves (1-4) also surround the lower part of the stem.

The inflorescence, borne on a stem 20-60 cm tall and often violet-tinged, is at first a fairly dense ovoid or cylindrical spike up to 14 cm long, becoming more lax as flowering progresses and containing large, faintly scented pinkish-reddish purple flowers (Foley & Clarke, 2005; Stace, 2010). Each flower has five pointed sepals (outer perianth segments, each 10-15 mm) that are a distinctive light ash-grey or pale rose-pink on the outside, whitish with purple lines on the inside. The sepals converge to resemble a helmet. Sometimes called the ‘Soldier’ orchid, its anthropomorphic attributes are completed by a trilobed labellum which has short (up to 8 mm) lateral lobes (‘arms’), a longer bilobed middle lobe (legs) with a short tooth between the lobes, and purple papillae that are said to look like the buttons on a soldier’s tunic, although others see more of a resemblance with baggy pink pyjamas (Brooke & Bone, 1950).

**SIMILAR SPECIES**

*Orchis militaris* is closely related and can readily hybridise with *O. simia* and *O. purpurea* (e.g. Fay et al., 2007). A herbarium sheet bearing a specimen collected from Hartslock Wood near Goring, Oxfordshire in 1831 is thought to be that of the hybrid between *O. militaris* and *O. simia* (*O. × beyrichii*; Bateman et al., 2008). However, *O. militaris* no longer occurs close to its relatives in the Chilterns, thus limiting the chances of hybridisation. For differences between the three species and their hybrids, see Stace (2010), pp. 877-878 and Stace et al. (2015), p. 356.
Orchis militaris L.

HABITATS

In England this is a plant of freely draining calcareous soils with a pH of more than 7.5 (Farrell, 1985). The three native English populations occur in open unimproved chalk grassland, the margins of scrubland and within woodland glades. Frequent associates at the more open grassland communities include Brachypodium sylvaticum s.l., Briza media, Bromopsis erecta, Carex flacca, Festuca ovina, Lotus corniculatus and Poterium sanguisorba, with Rodwell in Farrell (1985) assigning the community to the NVC type CG2 Festuca ovina-Avenula pratensis grassland.

Where tree cover and scrub are more prevalent associates include Brachypodium sylvaticum, Fragaria vesca, Mercurialis perennis, Rubus fruticosus agg., Viola riviniana and the pleurocarpous moss Rhytidiadelphus triquetrus. Vegetation at these localities has been equated with the Geranium robertianum subcommunity of Fraxinus excelsior-Acer campestre-Mercurialis perennis woodland (NVC W8c). However, the chalk pit habitat in Suffolk supports noticeably different associates to those of Buckinghamshire, and includes Daphne mezereum, Inula conyzae, Ligustrum vulgare, Mycelis muralis, Poa pratensis, Torilis japonica and a bryophyte ground cover with a abundant Pseudoscleropodium purum (Farrell, 1985). O. militaris occurs across a wider edaphic range outside of England; see Farrell (1985) for details.

BIOGEOGRAPHY

O. militaris has a Eurosiberian Temperate floristic element (Continental in Europe; Preston & Hill, 1997), extending from south-eastern Sweden and Russia in the north through central Europe to northern Spain, central Italy, the Balkans and Turkey to the south, and eastwards to Mongolia and Siberia (Kretzschmar et al., 2007). It benefits from mild winters and warm springs and summers (Sumpter et al., 2004) but is not tolerant of hot, dry summers and consequently is absent from lowland regions of the Mediterranean. Its altitudinal distribution ranges from sea level in Gotland to ca. 2000 m in the French Alps.

In Britain and Ireland O. militaris is on the edge of its global north-western range limit. It was thought to be extinct by the turn of the twentieth century until it was famously refound in 1947 at Homefield Wood in Buckinghamshire (Lousley, 1950). Historically O. militaris was present at sites within Berkshire, Hertfordshire, Middlesex, Oxfordshire and Surrey, but it is now restricted to three native locations in England; one at the Rex Graham Reserve in Suffolk, where recent population counts (inclusive of flowering and vegetative rosettes) have been as high as ca. 1,500 but in recent years number ca. 300 (Neal Armour-Chelu, pers. comm.; see also Waite & Farrell, 1998, for a detailed demographic study of this population), and two in the Chilterns in Buckinghamshire, where a combined total of ca. 450 flowering plants have been recently recorded at Homefield Wood (see also Hutchings et al. 1998) and a private reserve nearby (Phillip Pratt, pers. comm.). An introduction to a fourth location in the Oxfordshire Chilterns at Warburg Nature Reserve is not thought to have been successful, with a last known record of a single flowering plant in 2005 (Giles Alder, pers. comm.).

ECOLOGY

Orchis militaris is a long-lived tuberous perennial capable of periods of dormancy below ground in common with other temperate orchid species (Waite & Farrell, 1998). The tips of new shoots usually appear above ground by early January. Young plants and seedlings are sensitive to late-winter frosts and mid-spring droughts (Möller, 1980; Sumpter et al., 2004), but mild winters, which are predicted to become more frequent in England based on climate change models, can result in higher numbers of flowering plants (Willems & Bik, 1991).

Slow growth in the winter and early spring means that leaves do not turn green and unfurl until April. There then follows a rapid growth spurt in May when the flower stalk elongates. Flowering generally commences by mid-May with flowers opening from the base of the spike upwards (see photo above). Following pollination, seed capsules are fully ripe by late August or early September (Farrell, 1991). In common with all orchids the seeds of O. militaris are minute and are dispersed by wind. Germination is thought to take place soon after dispersal, with the resulting plants capable of reaching flowering size within three years (Farrell, 1985).
Orchis militaris L.

Two underground tubers are present at the time of flowering, the first of which is wrinkled and brown, formed in the previous spring and responsible for the current year's growth. The second - new, fleshy and white – is formed in the current season and is capable of producing new plants the following spring. Vegetative reproduction, thought to be the main mode of regeneration in English populations, occurs when two new tubers are formed in the same season (Farrell, 1985).

Flowers are visited by a range of generalist pollinators, including Diptera, Lepidoptera, Syrpheids and Hymenoptera. In the Netherlands small-bodied bees such as Andrena, Apis, Eucera and Halictus have been observed on flowers of O. militaris by Claessens & Kleyen (2011). At the Homefield Wood site in Buckinghamshire, Bateman & Rudall (2014) recorded B. vestalis and B. pratorum inadvertently transporting pollinia whilst foraging for pollen, and speculated that the bees must have pollinated at least some orchids (see also Fay & Salazar, 2001). However, there was also likely to be considerable wastage through pollinates being placed on non-viable parts of the orchid or deposited on other species in the vicinity.

O. militaris flowers are nectarless (i.e. nectarless) and allogamous and rely on food deceit to guarantee successful pollination. This strategy tends to result in poor fruit-set when compared with nectar-producing orchids. In a global review of reproductive success among nectariferous and nectarless orchids, Nelland & Wilcox (1998) found that there was a significant positive association between orchid rarity and lack of nectar reward, a theory first expounded by Darwin (1862) and later partially quantified by Gill (1989). However, an assessment of orchid populations in the Netherlands and Belgium by Jacquemyn et al. (2005) concluded that habitat loss, fragmentation and deterioration were more important determinants of orchid persistence.

O. militaris is a mycorrhizal generalist. Jacquemyn et al. (2010; 2011), for example, detected multiple and simultaneous fungal associations with O. militaris, particularly with the family Tulasnellaceae. The authors hypothesise that an ability to associate with multiple partners allows plants to maximise nutrient uptake in stressful conditions and so cope better by having a broad range of ecological options for survival.

In England two varieties have been described, with Suffolk plants conforming to the type var. militaris and the Buckinghamshire plants determined by Sell & Murrell (1996) as var. tenuifrons, a British endemic. However, Bateman & Rudall (2011) refute a (largely vegetative) diagnostic separation between the two varieties and dismiss var. tenuifrons as simply representing typical levels of variation common in many geographically fragmented conspecific orchid populations. Genetically, however, the Suffolk population appears to show some distinction from the Buckinghamshire plants and may therefore represent a separate and more recent dispersal event from Continental Europe (Fay et al., 2004), although Bateman & Rudall (2011) postulate that such separation is not conclusive based on morphological characters.

Threats

Extant populations are well managed by Wildlife Trusts and their dedicated volunteers, but historical losses or reductions in the number of flowering plants have been attributed to habitat loss, either directly by ploughing and development or indirectly via neglect and the encroachment of scrub and trees. O. militaris is protected under Schedule 8 of the Wildlife and Countryside Act (1981). Collection was commonplace in the past and led to the loss of plants as recently as the 1980s, but the three extant sites are now all closely monitored and access is largely restricted to permit holders or organised public open days.

Management

Management aims to create open conditions via livestock grazing, mowing and raking, the control of encroaching scrub, or the felling of trees and lopping of branches (Hutchings et al., 1998; Waite & Farrell, 1998). Exclosures have been erected at two of the three sites to assist with sheep grazing and in an attempt to exclude deer and rabbits.

Dense moss cover that had developed following the clearance of perim eter trees at the Suffolk site was removed annually in response to concerns that the moss may smother seedlings and also harbor small mammals that damage orchid tubers (Farrell, 1991). Clearance activities appeared to be successful, with a substantial increase in numbers of O. militaris recorded in subsequent years.

At least one of the three native locations has been fortified with introduced plants. Hand-pollination has been undertaken at some point at all three sites.

References


Orchis militarís L.


Darwin, C. 1862. The Various Contrivances by which Orchids are Fertilised by Orchids. John Murray, London.


AUTHOR VERSION


SUGGESTED CITATION