Carex elongata L.

Elongated Sedge

A tussock-forming sedge with rough, trigonous stems, stiff yellow-green leaves and long brown diverging flowering spikes with ribbed utricles turning a reddish colour on maturity. It is associated with damp soils in wet woodland, the edges of slow-flowing ditches, lowland ponds and marshes but is unable to tolerate permanent inundation, with plants often found growing on fallen dead wood that raise the plant above the water level for some of the year. It is a rare plant in Wales, Scotland and Ireland and is thinly scattered across western England. It is assessed as Least Concern in Great Britain, Near Threatened in England and Endangered in Wales.

IDENTIFICATION

Carex elongata is a tussock-forming sedge with trigonous stems (30-80 cm) that are rough to the touch due to the presence of upwards pointing teeth. The yellow-green leaves (4-5 mm wide; 25-90 cm long) arch stiffly outwards from the dense tuft and gradually taper to fine, flat tips (Jermy et al. 2007). Leaf margins are scabrid, and leaf mid-ribs are also rough on the underside (Poland & Clement 2009). Basal sheaths are chestnut-brown, non-fibrous and persistent, and ligules are 4-8 mm long and acute.

The inflorescence (3-7 cm) has ±continuous, rigidly-angled zigzagging (diverging) long brownish spikes. The ellipsoid utricle is distinctively ribbed, with ribs turning a reddish colour at maturity (Jermy et al. 2007).

A tussock of *Carex elongata* photographed at Cole Mere, Shropshire. ©John Martin.

SIMILAR SPECIES

Carex elongata has the potential to be confused with other sedges in the *C. muricata* group, but is distinguished by the reddish-dark brown ribbed utricles, long acute ligules and non-fribrous persistent basal sheaths. It is much smaller than the robust, tussock-forming *C. paniculata* that often grows in similar habitats, and lacks the fibrillose sheaths of *C. elata*.

HABITATS

A characteristic plant of boggy alder and willow carr that dries out in summer, as well as slow-flowing ditches, lowland ponds, lakeshore marshes and water meadows.

C. elongata is unable to tolerate permanent inundation, is a very poor competitor, and appears to have developed a very specific ecological niche, with plants often found growing as epiphytes on fallen dead wood that marginally raise the plant above the flood level for most of the year, yet allow the roots access to year-round moisture (David 1978).

This distinctive sedge used to be a feature of canal banks, growing on the wooden pilings that were used to stablise banksides. However, the relatively recent practice of replacing wooden pilings with metal fixings has meant the loss of much of this formerly widespread habitat (David 1978).

It is a species of the *Alnion glutinosae*, associated in Britain with NVC W5 *Alnus glutinosa – Carex paniculata* woodland, W2 *Salix cinerea – Betula pubescens – Phragmites australis* woodland and W6 *Alnus glutinosa – Urtica dioica* woodland.

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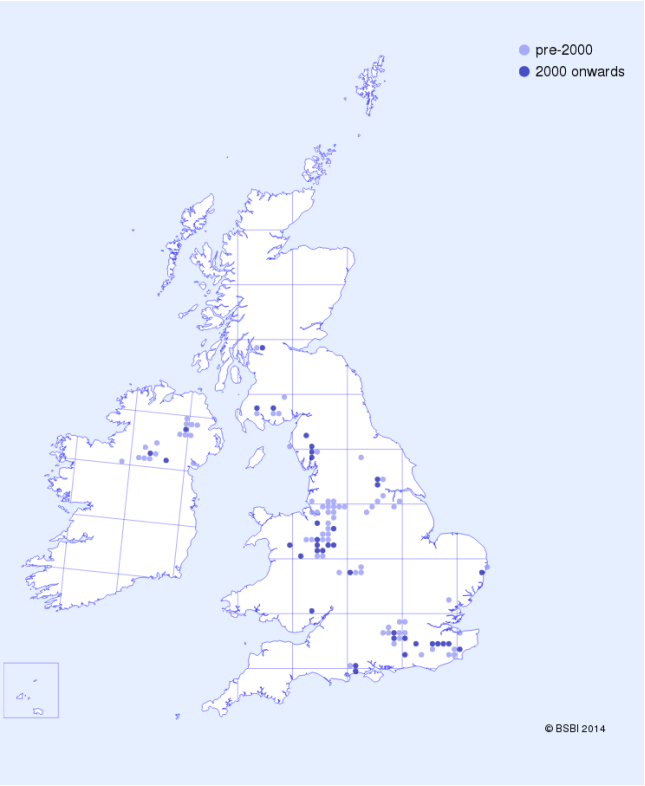
BIOGEOGRAPHY

Carex elongata is widely distributed across temperate and boreal regions of Europe, and is described by Preston & Hill (1997) as having a Eurosiberian Boreal-montane element, with a continental distribution in western Europe. It reaches the northern edge of its range in the subarctic zone of Norway, extends southwards to central France, northern Spain and Italy, and eastwards to the Caucasus (David 1994). The species is considered threatened in a number of countries across its range, including Estonia and Sweden.

Carex elongata has a scattered and disjunct distribution in Britain. It is thinly across western England, with single or low numbers of locations still present in Shropshire, Staffordshire, Worcestershire, Westmorland and Cumberland. Single locations are also present in mid-west Yorkshire at Askham Bog. Along the south coast of England it is found in low numbers from south Hampshire to east Kent, with a single location in east Suffolk at Reydon Wood.

In Wales there are current records from four locations covering Montgomeryshire, Denbighshire and Monmouthshire. It was last seen at a fifth site by the Llangollen Canal (Denbighshire) in 1981. In Scotland, it is present in five hectads in Kirkcudbrightshire, Dunbartonshire and Stirlingshire, and in Ireland *C. elongata* is confined to the Lough Neagh area and Upper Lough Erne (Forbes & Northridge 2012).



Distribution of *Carex elongata* in Great Britain and Ireland.

ECOLOGY

A perennial hemicryptophyte of damp soils and wet woodland, flowering between May and June, often discarding fruits (1-3 mm) by early July.

C. elongata has short, weak rhizomes and so the establishment of new populations largely depends on the production, dispersal and germination of viable seeds and the establishment of seedlings. When *C. elongata* is a dominant plant of the herb layer, seeds can make up an abundant component of the buried seed bank (e.g. 32,950 m^{-2} at a location in the moraine region of Kiel in Northern Germany; Leck & Schütz 2005). Schütz (2000) found that *C. elongata* seeds have high germination rates, although one of the largest British populations at Askham Bog in North Yorkshire is reported as rarely setting viable seed (David 1994).

Burial experiments have demonstrated that *C. elongata* has the ability to build up a persistent seed bank, but viability is much reduced in dry conditions, suggesting that the soil environment is an important factor in determining seed longevity. Results from germination experiments conducted by Schütz (1997a) infer that *C. elongata* is adapted to use a brief temporal regeneration niche during mid-spring, prior to a leaf canopy forming and when diurnal temperatures are close to a constant 10°C. However, this regeneration window is not in itself enough to ensure the maintenance and spread of populations, as seedling establishment following germination is greatly reduced in late summer under heavy shading.

Some authors have commented on the inability of *C. elongata* to colonise newly exposed mud, although the mass emergence of *C. elongata* plants has been observed following substantial soil disturbance activities (Schütz 1997b). Whilst mature *C. elongata* plants are capable of tolerating the moderate shading often encountered in neglected wet woodland and fen carr habitat, prolonged periods of dense shade over many years appear to result in reduced vigour of parent plants, a smaller pool of viable seeds, greater mortality of seedlings and subtle alterations to soil hydrology. Prolonged inundation of plants in the growing season can also result in the decay of tussocks. Consequently, the successful establishment of *C. elongata* seedlings and the long-term retention of parent plants may only be possible where there are temporally irregular soil disturbances, newly created forest gaps (Schütz & Rave 1999), and appropriate hydrological conditions.

THREATS

Habitat destruction, drainage and heavy shading as a result of long-term neglect all threaten extant British populations. The small size of many reserves where the species is found makes them particularly susceptible to nearby water abstraction. Populations are also vulnerable to increased eutrophication of river systems and streams. The apparent lack of reproduction at some sites, alongside limited opportunities for dispersal and regeneration, are also long-term threats to the survival of this species.

MANAGEMENT

Management should retain hydrological regimes that result in waterlogging in winter and early spring but lead to progressively drier (but still moist) soil conditions throughout the late spring and summer months, along with targeted long-term rotational clearance of small areas of sallow and alder carr. Fallen dead wood is an important habitat requirement and should be left *in situ*.

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