Blysmus compressus (L.) Panzer ex Link

Flat-sedge

Blysmus compressus has a pale-brown flattened inflorescence and flat, grass-like leaves. It is found in open mire, marsh and fen vegetation, dune slacks and in damp grassland, often by flushes, springs and riversides. Plants flower in early summer, with fruiting heads still visible into September. The species is widespread but localised across England, rare in Scotland and Wales and not recorded from Ireland. It has been assessed as Vulnerable in Britain due to substantial declines attributed to changes to hydrology, loss of habitat, nutrient enrichment and reduced grazing levels.

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IDENTIFICATION

The smooth and ±rounded erect stems (to 45 cm) of *Blysmus compressus* have a flattened, compact terminal inflorescence (1.6-3.5 cm × 5-10 mm) with ovate-lanceolate spikelets that are arranged distichously (in opposite rows). Glumes are yellowish to reddish-brown, have narrow hyaline (transparent) margins and a pale brown midrib. The mid-green grass-like leaves (6-20 cm × 1.2-2.9 mm) are also flattened and gradually narrow to a blunt tip (Jermy et al. 2007).

SIMILAR SPECIES

Blysmus rufus has a darker-brown inflorescence and narrower and shorter rush-like leaves (1.5 cm-15 cm × 0.4-1 mm) that are rolled inwards at the margins.

Streamside habitat of *Blysmus compressus* at Goredale Scar, North Yorkshire. ©Kevin Walker.

HABITATS

B. compressus occurs in open, base-rich marshes and fens, and in short, sedge-rich damp grassland, calcareous flushes and stream-sides subject to flooding and inundation (Foley & Porter 2002). It is also found in brackish ditches at the head of saltmarshes (Halliday 1997), in sparsely vegetated wet dune slacks where it appears to share the same niche as *Juncus balticus* (Smith 2009), and as a constituent of alluvial 'meadows' on stabilized shingle (Graham 1988).

It has been recorded as a component of vegetation assemblages that fit several NVC types, including spring-fed NVC M10 *Carex dioica-Pinguicula vulgaris* mires, where in northern England it may occur with rarities such as *Bartsia alpina* and *Juncus alpinoarticulatus*. In southern and eastern England it occurs in species-rich fen meadows including MG8 *Cynosurus cristatus-Caltha palustris* grassland and M23 *Juncus effusus/acutiflorus-Galium palustre* mire.

Across its European range *B. compressus* is a frequent associate of bryophyte-rich, tufa-forming calcareous fens of the *Carici flavae-Cratoneuretum* (Pouličková et al. 2005), of *Carex frigida* fens colonising seepages and flushes on stony slopes in the Alps, Pyrenees and Black Forest and in a number of other species-rich assemblages within the *Caricion davallianae* (Devillers et al. 1996).

BIOGEOGRAPHY

The species is present throughout the temperate zone of Europe as far north as southern Scandinavia, and across central Asia with its absolute eastern range limit close to the Wolong National Nature Reserve in Sichuan Province, China.

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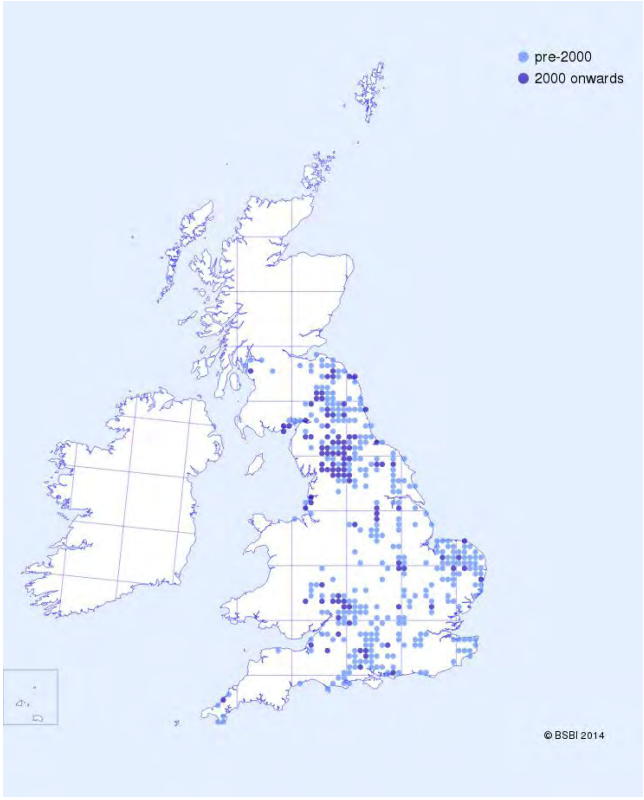
In Britain it is a widespread but localised species, often in lowland habitats and with a recorded altitudinal limit of 490m in County Durham. Core populations are found in the north and west of England where it is largely confined to the margins of rivers, streams, flushes and springs on base-rich rocks. Substantial declines have been recorded from southern and lowland areas of England, although large populations still persist along the River Kennet and the Thames. Historical losses in Wales mean that it is now confined to perhaps a single population at Henallt Common, Breconshire. It is a rare and declining plant in Scotland, only found south of the Central belt, with the bulk of populations located in border counties. The species has not been recorded from Ireland.

B. compressus is considered threatened in several countries in addition to Britain, including the Czech Republic, Croatia and Finland, although it is assessed as of 'Least Concern' in Europe as a whole.

ECOLOGY

A rhizomatous perennial flowering from June to July. The flowers are hermaphrodite and wind-pollinated with fruiting continuing into September. Little is known about its seed or reproductive biology, although studies in Flanders (Decleer 2008) recorded *B. compressus* on restored dune slacks following scrub clearance, and suggested that plants colonised from a long-lived seed bank. However, as the authors did not record *B. compressus* as a germinant in seed bank studies prior to restoration, it is also possible that propagules may have established via long-distance dispersal.



Distribution of *Blysmus compressus* in Great Britain and Ireland.

B. compressus flowers have long (3-6) barbed perianth bristles surrounding the nut (Pignotti & Mariotti 2004) that assist attachment to mammals or birds. The species has been recorded in several epizoochorous (externally) and endozoochorous (internally) dispersal studies (e.g. Leck & Schutz 2005).

B. compressus is a poor competitor (Hill et al. 2004) but is tolerant of frequent anoxia within the root zone when soils are waterlogged or compacted. Such conditions often happen as a result of livestock poaching or trampling, leading to a temporal deterioration of localised soil-water capacity. Tolerating oxygen deficiency in the soil can give a competitive advantage to such 'uncompetitive' species (Muller 2002), especially when excess biomass has been removed via livestock grazing.

The species appears to favour transitional habitats (Westhoff & van Leeuwan 1962), and almost always occurs where there is some movement of base-rich groundwater, even in acid *Sphagnum* bogs where springs ensure a constant supply of base-richness (*e.g.* chalybeate springs in the New Forest; Brewis *et al.* 1996). The extent to which populations in southern England have declined in response to changes in historical grazing regimes, hydrology and/or because of increased eutrophication requires further investigation.

THREATS

B. compressus occupies an ecological niche that is vulnerable to several threats. Long-term alterations to hydrology, nutrient enrichment (e.g. via agricultural run-off), the loss of unimproved grassland by ploughing, development or herbicide application, and changes to or the cessation of traditional grazing regimes and subsequent encroachment of rank vegetation have all been attributed to the steep decline of this species in Britain (Foley & Porter 2002; Smith 2009).

MANAGEMENT

Outcompeted by tall, rank vegetation, management should therefore attempt to maintain an open, short sward through either an extensive grazing regime or by annual mowing and the removal of arisings. Periodic removal of encroaching scrub may be necessary. The light trampling of informal footpaths that support *B. compressus* should not be discouraged (unless there is a detrimental impact to other threatened species in the vicinity), as although this practice can modify soil structure, it may also promote conditions in which *B. compressus* has an advantage. A dynamic hydrological regime should be maintained, and best practice should be implemented to ensure a reduction at source of the eutrophication of water bodies and riverine habitat.

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