

Matted (or Blunt) Bryum

Bryum calophyllum



A small patch of Matted Bryum © David Holyoak



A close up view of Matted Bryum's blunt leaves © David Holyoak

Bryum is a genus of mosses that come under the general term bryophytes, which are small, non-vascular plants including mosses, liverworts and hornworts. Bryums often grow in patches close to the ground, each patch made up of many individual plants. Each plant composes of a stem with many leaves attached, which are usually a single-cell thick. This leafy part of the plant is known as the gametophyte. Bryums do not produce seeds, instead producing sporophytes after fertilisation which protrude above the carpet of gametophytes. Sporophytes are unbranched stems (seta) with a single capsule at the end containing the spores.

Matted bryum (also known as Blunt Bryum) is one of the rarest species of Bryum in the UK. It can be identified by the wide, ovoid leaves that are concave in appearance. There is no excurrent leaf nerve and so the leaves often have a blunt tip. The leafy plants can be green or orangey brown. The seta are relatively long, up to 2cm in length, with short, ovoid capsules with wide mouths hanging from the end.

Lifecycle

Matted Bryum leaves are present above ground all year round. It is monoicous meaning the male and female reproductive parts are on the same plant. Once fertilisation occurs, an immature sporophyte begins to develop and capsules mature from late-summer through to early-winter. Once mature, the capsules mouth opens and the spores are released.

Spores are large in size suggesting that they may not be dispersed great distances by wind. Although strong coastal winds from autumn to spring may aid some wider dispersal. It is thought the large size of the spores means that they may allow several years of dormancy in the spore bank. It is likely that this species may depend on some slight disturbance to quickly colonise new areas.

Distribution

Since the mid-20th Century, Matted Bryum was recorded in at least 21 localities across the UK but since 2000, just four remain. Now extinct in England, just one small population in north-west



Distribution of Matted Bryum records pre-1960 (white), post-1960 (grey) and post-2000 (black)

Wales can be found and three in Scotland. It can be found in arctic and sub-arctic regions of Europe, Asia, Greenland and North America.

Habitat

In Britain, Matted Bryum is an entirely coastal species, found on mobile sand dune systems. It is most frequently found in wet dune slacks and at the base of blow-outs where damp, calcareous, nutrient-poor sand is present. It colonises bare areas of damp sand, favours open, early-successional vegetation and may be outcompeted by taller vegetation causing shading over time. It is commonly associated with *Aneura pinguis*, *Bryum pseudotriquetrum* and other *Bryum* species as well as rushes, sedges and creeping willow.

Protection

Matted Bryum is a priority species under the UK Biodiversity Action Plan (UK BAP). This plant is included as a species “of principal importance for the purpose of conserving biodiversity” under Section 41 (England) of the Natural

Environment and Rural Communities Act 2006.

Survey method

Surveys should be carried out between July and January.

Reasons for decline

Development and dune stabilisation are the main reasons behind the decline of many dune specialist species including Sea Bryum. On the Sefton Coast alone, 81% of bare sand has been lost since 1945. The outbreak of myxomatosis in the 1950s saw rabbit populations collapse. Before this, rabbits were responsible for maintaining a short sward and creating bare sand through intensive grazing. Around the same time, it became apparent that fewer people were visiting coastal resorts. Before this, holiday makers would descend on British beaches and sand dunes in their tens of thousands every day, causing disturbance, creating bare, mobile sand. Unfortunately, cheaper air travel meant holidaying abroad became more accessible and visitor numbers fell.

Changes to the water-table and to water quality have also likely played a part. Climate change is responsible for increasingly drier springs resulting in a lowering of the water table, meaning areas of damp sand available for colonisation are less frequent. Also, vegetation succession due to a lack of natural grazers, combined with soil and water enrichment is responsible for shading-out the bryums.

Habitat management

Urgent attention is required to prevent Matted Bryum going extinct altogether and priority must be given to ensuring current populations decline no further, increasing population size and range where possible.

Old dune slacks can be re-scraped to open up bare ground, activating the spore bank and allowing recolonisation, although, care must be taken to not scrape too deep and remove the spore bank altogether. Moreover, these scrapes will not last long and will need reworking frequently. Dune stabilisation for use as a natural sea defence should be avoided, as this reduces the mobility of dune systems and early-successional habitats disappear quickly. Therefore, fencing, boardwalks, dune thatching or grass transplanting should be avoided.

Grazing will also maintain a suitable habitat creating a short sward and preventing the growth of taller vegetation and scrub, also creating some light disturbance which may provide bare areas of ground to be colonised. Scrub may need to be removed from areas where shading is a threat.