

Sea Bryum (or Warne's Thread-moss)

Bryum warneum



A small patch of Sea Bryum © David Holyoak



A close up view of Sea Bryum capsules © 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 which protrude above the carpet of gametophytes. Sporophytes are unbranched stems (seta) with a single capsule at the end containing the spores.

Sea Bryum (also known as Warne's Thread-moss) is one of the rarer Bryum species in the UK but is easier to identify than others. It is often found in large, tufty patches, green and sometimes pinkish in colour. A pear-shaped capsule, with a narrow mouth opening, hangs at the end of a long seta, occasionally over 2cm in length. The leaves are not red at the base.

Lifecycle

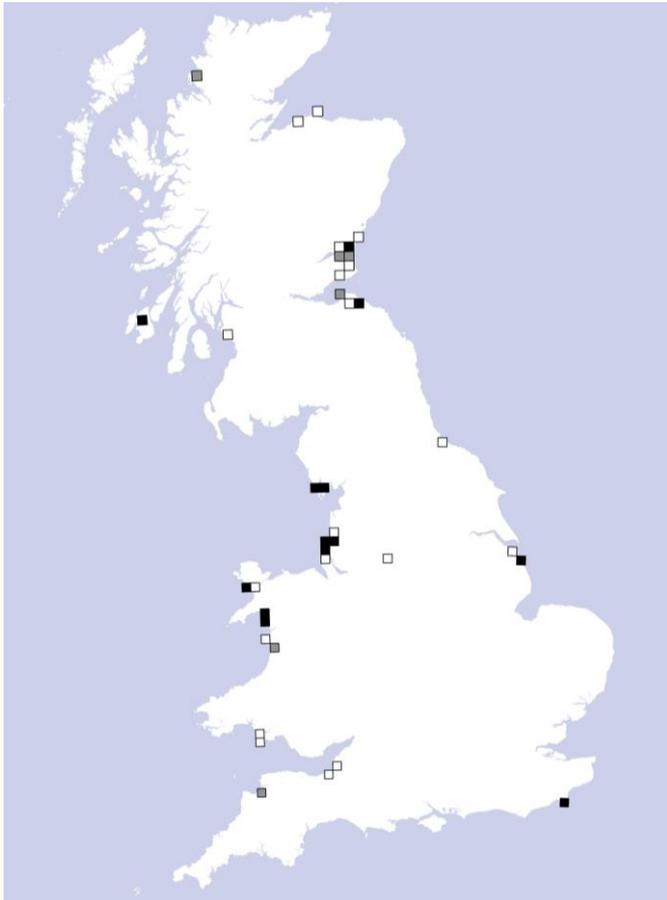
Sea Bryum is monoicous meaning the male and female reproductive parts are on the same plant. Once fertilised, an immature sporophyte begins to develop and, after 3-6 months, will be fully mature between late-autumn and winter. Once matured, the mouth of the capsule will open and the spores will be released, likely to be dispersed by the strong coastal winds in autumn and winter.

Distribution

Since the mid-20th Century, Sea Bryum was recorded in approximately 38 localities across the UK, but since 2000, just 13 remained. It can be found on the southern and western coasts of England and also in Scotland and Wales. Further afield, it is found mainly in Europe, most frequently along the coast from north France to Norway and rarely inland by lakes and rivers.

Habitat

In Britain, Sea 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,



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

nutrient-poor sand is present. It colonises bare areas of damp sand quickly and may be outcompeted by taller vegetation causing shading over time. Active blow-outs provide a constant supply of fresh sand. It has been known to establish itself in man-made habitats such as newly scraped dune slacks used as breeding pools for Natterjack Toads, however, such colonies will not survive for long without constant management recreating areas of bare ground. As *Sea Bryum* is typically associated with dune slacks it is often found amongst sparse, open vegetation which includes rushes, sedges and other species of *Bryum* (*B. algovicum*, *B. dichotomum*, *B. dyffrynense*, *B. Knowltonii*).

Protection

Sea 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 may be carried out between August and March, although September to December is considered peak season.

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 *Sea 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.