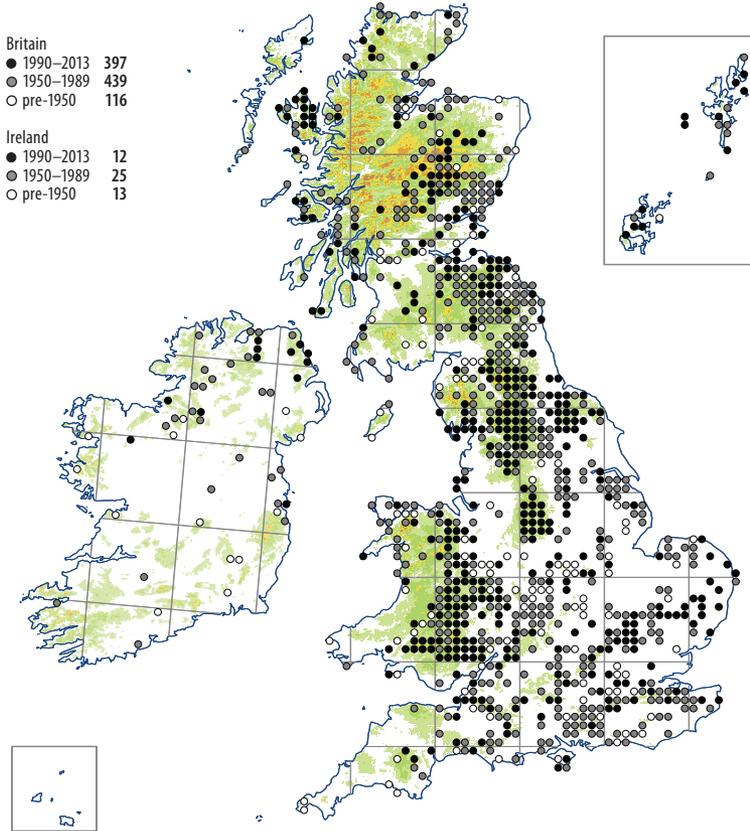


Tortula subulata



A moss of well-drained neutral and calcareous habitats, typically growing in small patches on ledges of rock outcrops, on roadside and woodland banks, on soil about tree roots and bases, on sandy soil on the coast, and on old walls. In the uplands it is often found in the open on rocky banks and slopes, including limestone scars and pavements, but in the lowlands it grows more often in sheltered and somewhat shady places, as in beech woods. It is frequent on limestone but also occurs on chalk, sandstone and other base-rich rocks, more rarely on relatively base-poor strata such as shale. On limestone rock ledges it is often associated with *Reboulia hemisphaerica*, *Riccia sorocarpa*, *Encalypta vulgaris* and *Entosthodon* spp. In some areas it is a member of the riparian community found in accumulated silt on tree bases and roots in the flood zone of rivers, with *Leskea polycarpa* and *Syntrichia latifolia*. Occasionally it

colonises tree bark remote from water. Altitudinal range: 5–720 m.

The trend in records suggest that it is a species in decline, especially in the lowlands, for reasons that are not completely clear. It has always been rare in areas of high rainfall, and it is unlikely that there have been significant losses in upland areas on base-rich formations.

Autoicous; capsules are frequent, mature in spring and summer.

Plants growing by rivers with weakly developed leaf borders have been called var. *subinermis*, while large-celled plants from upland areas have been separated as var. *graeffii*. Both intergrade with the typical form and are not recognised by Cano *et al.* (2005). Some records in the south and east of its range may refer to *Tortula schimperii*, and those not assigned to var. *subulata* have been omitted from the map if there is a high probability that they could refer to the other species.

Eurosiberian Southern-temperate. Widespread in Europe, but rare in the north, reaching Iceland and N Norway, east to European Russia and Caucasus. Macaronesia, N Africa. Turkey, Near East, Iran to Afghanistan and Kyrgyzstan, and scattered records further east from Kashmir to China. N America (mainly western).

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