

Recording Bryophytes on the Isle of Bute

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Summary

A new system of recording and the publication of an Atlas have stimulated fieldwork, and many species have been recorded on Bute for the first time. Further work would add more species to the list.

Introduction

Bryophytes are green land plants popularly known as mosses and liverworts. The individual plants are generally small, though they commonly grow together to form cushions or extensive lawns or mats. They are essential components of our flora and play an important role in the balance of nature.

The British Bryological Society (BBS), founded in 1896, exists to stimulate interest in all branches of bryology by amateurs and professionals, to facilitate research and to assist in conserving the British bryophyte flora.

Recording Schemes

Until 1960 the BBS relied solely on the Watsonian Vice-County (VC) system for recording the distribution of mosses and liverworts. Additions to the records must be supported by a voucher specimen checked by the recorder for mosses or the recorder for hepatics (liverworts). Voucher specimens are deposited in the BBS herbarium (BBSUK), and new records are published in the Bulletin of the BBS. A complete list of the distribution of bryophytes according to vice-county is published in a Census Catalogue at irregular intervals of several years, most recently in 1981 (Corley and Hill).

In the 1960's, botanists started to use Ordnance Survey (OS) 10km grid squares for their recording work in order to give a more precise picture of distribution. In 1960 the BBS, while continuing its VC recording, set up a mapping scheme using OS 10km squares. The aim is to create a database of the geographical distribution of British and Irish bryophytes. This is used to produce maps for each species in which a dot in a 10km square signifies its presence there. In this paper these dots are called *species dots*. The maps give more precise information on the locality of the species than the VC system, and by the use of transparent overlays can be more easily related to *e.g.* geology, altitude and climate. The maps will be particularly useful for relating changes in bryophyte distribution to changes in such things as land use, pollution levels and global warming. In 1991-1994 the first edition of the three-volume *Atlas of the Bryophytes of Britain and Ireland* was published (Hill *et al*). It is intended to produce new editions every ten years. Field record cards are available for use in field work. The records are held by the Biological Records Centre, Monks Wood, Huntingdon.

As with all mapping schemes, the resulting picture depends on the amount of recording work carried out in an area. Looking through the atlas, it is plain that the Isle of Bute has been under-recorded. With the exceptions of the 10km squares containing Balnakailly and Lenihuline Woods, the island's 10km squares commonly appear blank.

As a result of some recording work done on the Cumbraes, the author was appointed regional recorder for VC 100 (the Clyde Isles) by the BBS. A regional recorder's remit is to record

bryophytes and collect records made by other bryologists for submission to the mapping secretary for inclusion in future editions of the Atlas.

Recording on the Isle of Bute

Throughout a week in April 1993, and another in March 1994, records were made in each of the six OS 10km grid squares, where a wide range of habitats was visited. Habitats included: raised beaches with coastal rocks, cliffs, caves, saltmarsh, dunes; woodlands with streams and ravines; moorland, bog pools; man-made habitats such as walls, buildings, tracks, ditches, quarries and gardens. Using these records, and others kindly donated by other recorders from the years 1988 to 1994, a list of 271 bryophyte taxa (193 mosses and 78 liverworts) was compiled. This total represents approximately one quarter of the bryophyte flora of Britain and Ireland. A full list is available for inspection in the Bute Museum.

As a result of the above exercise, 262 species-dots will be added to the BBS database. The number of additional species-dots in each grid square for the Isle of Bute is shown in the table below.

OS 10km grid square	Mosses	Liverworts	Total
NS/05	76	29	105
NS/15	5	2	7
NS/06	70	20	90
NS/16	37	8	45
NR/97	0	0	0
NS/07	15	0	15
Total	203	59	262

The low number of additions in the 10km square NS/15 is due to the fact that many species occurring in this square on Bute had previously been recorded in the same square on the Cumbraes. NR/97 and NS/07 had already been well worked on Bute, at least in the woodlands, and these squares include larger parts of mainland Argyll. NS/16 includes small portions of Argyll, Ayr and Renfrew, NS/06 includes a tiny portion of Argyll, while NS/05 is exclusive to the Isle of Bute.

Notes on some species recorded

In the previously under-recorded 10km squares it was possible to record for the first time the following common or widespread species: *Calliergon cuspidatum*, occurring in wet turf by roadsides, ditches, beside waterfalls, and on wet ground in woodlands and gardens; *Grimmia pulvinata*, a calcicolous species common on walls and buildings, but also found on rocks near the sea; *Homalothecium sericeum*, growing on walls and rocks, especially when basic, in shaded or exposed situations; and *Tortula muralis*, very common on brick or stone walls, concrete and basic rocks.

More exciting finds included four species not previously recorded in VC100 (Clyde Isles). *Grimmia decipiens* was recorded by G.P. Rothero at Dunagoil Bay. This species is known to have been present since 1950 in 24 10km squares in Scotland. Prior to that date it had been recorded in a further 16 squares. *Grimmia laevigata* was found south of Dunagoil Bay. This

species is known in only three 10km squares in Scotland since 1950, but had been recorded before that date in a further eight squares. Both these *Grimmia* species are thought to be decreasing due to acid rain. There are few records in Scotland, particularly on the west side, of the calcicolous *Rhynchostegium murale* which was recorded on a rock on the raised beach at the south end of the island. *Weissia perssonii* is a rare moss more or less confined to banks and cliffs in coastal areas. It was found at Ardscaipsie Point.

Another interesting find made by T.A.Hedderson near the Bull Loch in 1991 is the only known female plant of *Hypnum lindbergii* in the British Isles.

Atlantic Species

A number of *Atlantic* species as defined by Ratcliffe (1968) are recorded on the Isle of Bute. Such species thrive on the Atlantic coastal regions of Europe where oceanic conditions, namely humid climate and equable temperatures, prevail. The number of "wet days" (a period of 24 hours in which 1mm or more of rain is recorded) in a year is thought to be a better index of the wetness of the climate than the total annual precipitation. The coastal woodlands in the north and northwest of Bute, where tree canopy, ravines and waterfalls reduce evaporation and maintain a moist, shady environment, are particularly rich in bryophytes including many Atlantic species, e.g. *Dicranum scottianum*, *Hyocomium armoricum*, *Adelanthus decipiens*, *Frullania teneriffae*, *Lejeunea lamacerina*, *L. patens*, *L. ulicina*, *Plagiochila punctata*, *P. spinulosa*, *Saccogyna viticulosa* and *Scapania gracilis*. Other Atlantic bryophytes found on the island include *Fissidens curnovii* on the coastal cliffs; the two strictly maritime mosses *Schistidium maritimum* on rocks and *Tortella flavovirens* in turf and sandy crevices in rocks; and the liverworts *Frullania microphylla* and *Porella obtusata* on rocks near the sea.

Maritime Species

Schistidium maritimum and *Tortella flavovirens* are the only two British mosses which are restricted to maritime habitats, where they are able to withstand being sprayed with sea water. The former is present on coastal rocks round the island, while the latter was recorded in turf by the shore. *Pottia heimi* is almost confined to maritime habitats, and was recorded on Bute on the saltmarsh. Some other bryophytes which are not restricted to maritime habitats can withstand a limited amount of salt water spray. These include the mosses *Ulota phyllantha* (occasionally found growing on rocks with *Schistidium maritimum*) and *Weissia perssonii*, and the liverworts *Frullania teneriffae*, *F. microphylla* and *Porella obtusata*.

Further Recording

Further recording on the Isle of Bute is sure to add species to the present list. Additional records would be gratefully received by the author. The dates of the records and map references, at least to the OS 10km grid square, but more precise if possible, are essential. Details of habitat would be valuable. BBS record cards can be supplied if wanted. New records should be sent to the author at 4, Ashwood Crescent, Marple, Stockport, Cheshire. SK6 6LS.

References

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