



Ambroise Baker describes the 2022 AGM and paper-reading event, together with a rather unusual site for the post-AGM field meeting

The meeting took place in person over the weekend of 9–11 September 2022. On Friday and Saturday Teesside University hosted the indoor meetings on its Middlesbrough Campus. On Saturday we had the paper-reading session and the AGM, followed by an outing to a local restaurant in the evening. Sunday's field visit took place in South Gare, near the town of Redcar at the north-east tip of North-east Yorkshire, vc 62. Many of the 30 bryologists who attended said how pleasant it was to be able to meet in-person without restriction after the COVID pandemic.

Paper-reading event

Some eight talks were delivered over 20-minute time slots, plus question and answers. Our

△ Figure 1. South Gare, with the Redcar blast furnace in the background. *Sharon Pilkington*

guest speaker Dr Alain Vanderpoorten from the University of Liège in Belgium delivered a much-appreciated keynote talk about the ability of bryophytes to disperse to suitable landscapes in response to climate change. Alain's talk bridged the gap between topics on which the BBS focuses, such as bryophyte distribution, ecology and taxonomy, and the more academic research into global change biology. The talks are briefly summarised below.

The new IUCN Red List of bryophytes in Britain (Des Callaghan)

For this latest Red List, 1097 species from Britain have been re-assessed in full using the IUCN criteria, and consequently assigned a status

ranging from Extinct to Least Concern. The geographical scope excluded the Isle of Man and the Channel Islands, as well as Northern Ireland. About 4% of the species could not be assessed properly (Data Deficient), illustrating both the vast amount of knowledge existing about the British bryophyte flora for 96% of species, and the need for more surveying in the natural environment for the other species. The sources of information for this work included previous lists, the BBS database, published literature and some grey literature.

Surprise View: three decades of recording the mosses and liverworts of Derbyshire (Tom Blockeel)

The talk introduced the bryophyte flora of Derbyshire, reviewing some of the most extraordinary floristic findings since the 1800s, within each of the major geological formations: millstone grit in the Dark Peaks, limestone in the White Peak, dolomitised limestone at Rainster Rocks, igneous rock outcrops and the Permian magnesian limestone. The impressive comeback of epiphytes following air quality improvement during the second half of the 20th century was highlighted, as well as bryophyte diversity in post-industrial sites. Finally, the upcoming *Mosses and Liverworts of Derbyshire*, expected to be published in 2023, was introduced.

Mapping the bryophyte biome: a micro-ecosystem of immense diversity (Jamie Bojko)

The preliminary results presented were based on specimens sampled from dripping rock faces and tufa-forming communities along Skelton Beck, vc 62. Two species were targeted, *Conocephalum conicum* s. str. and *Eucladium verticillatum*. There appears to be a greater diversity of micro-organisms associated with *E. verticillatum*, especially in terms of Archaea and Bacteria. The work also showed that metagenomic methods

provide promising tools to uncover micro-ecosystems in more detail, a first step towards understanding biotic interactions in more depth.

Did, do and will bryophytes efficiently disperse in response to climate change? (Alain Vanderpoorten)

A body of research findings was presented that addressed two questions: How can analyses of historical biogeography inform us of the ability of species to face climate change? What is the fate of the European bryophyte flora under ongoing climate change? The scientific challenges to answer these questions were explored. The overall conclusion of the talk was that the future of many species may be threatened by the pace of climate change, although there remain areas of uncertainty associated with the current models.

Can we learn anything from repeated site surveys? (Chris Preston)

This work introduced a series of sites surveys conducted from the 1930s to date in Cambridgeshire. The surveys are mostly one-day field visits by the Cambridgeshire bryology group, when species are listed. The most regularly visited site has been surveyed in nine of the last ten decades. Variation in species numbers reflected a variety of factors, from environmental change to potential recording bias. As a whole, the body of field work by the Cambridgeshire botanists showed trends in time for specific taxa, as well as individual sites. In addition, the need to link some of these trends to site-specific ecological disturbance was highlighted.

The bryophytes of Salisbury Plain (Sharon Pilkington)

Salisbury Plain covers 11% of Wiltshire's area and is one of the largest SSSIs in England. The SSSI notification cites many aspects of open calcareous habitats, fauna and flora ... including bryophytes!

The talk presented recent work, in collaboration with Natural England and the MoD, which manages the area, to protect bryophytes on the Plain. The field campaigns relocated most of the rare species, but importantly also made many exceptional findings, confirming the importance of the site for bryophyte conservation. The work also located the main areas of high bryophyte importance within the SSSI and identified key disturbance factors, linked with military activity, that promote diversity. Finally, the potential for more exploratory work on the bryophyte flora of the area was highlighted.

Leucobryum albidum in Britain (Tom Ottley, presented by Tom Blockeel)

This detailed work demonstrates the presence of three *Leucobryum* species in Britain and Ireland and will be the subject of an upcoming publication (Ottley *et al.*, 2023). Although it was discovered as early as 1882 in England, bryologists have not been able to consistently

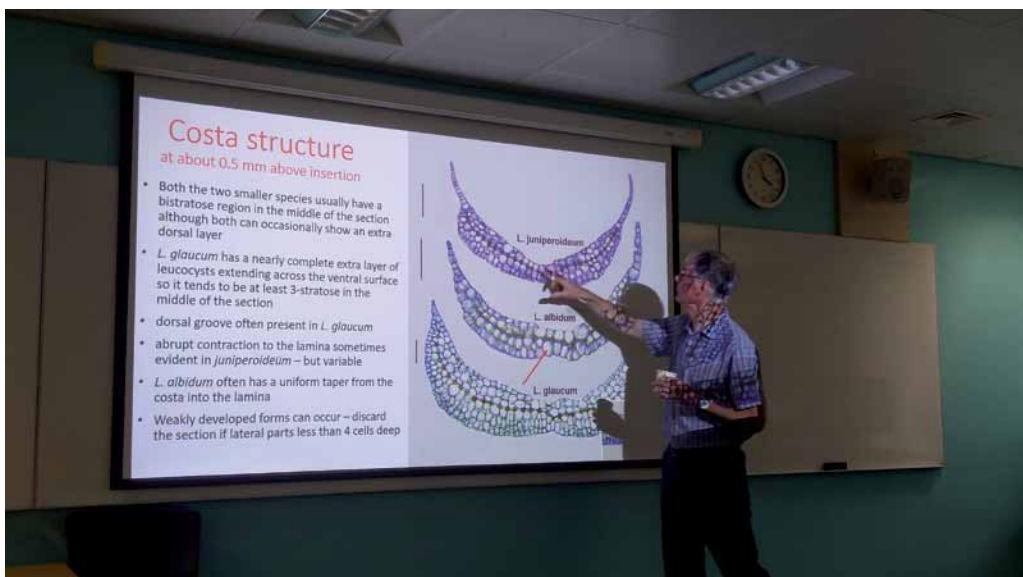
identify *L. albidum* until recently, a challenge addressed in full in the talk. Both extensive morphological studies and molecular work were necessary to clarify identification and species concepts within this genus (Fig. 2). The work presented will have important impact in the near future as bryologists across Britain, Ireland and continental Europe will be able to redetermine specimens and confirm the distributional range of *L. albidum*.

Some Sutherland Hills (Gordon Rothero)

A lavishly illustrated bryological tour of some of the Sutherland Hills. There remains much to explore, as there are some very remote hills with difficult access. A full illustrated account is presented by Rothero in *Field Bryology* (2022).

Following the talks there was a short introduction to the South Gare trip, due to take place the next day. Some of the history of this post-industrial site was presented.

▽ Figure 2. Tom Blockeel explaining the new species concepts in *Leucobryum*. Ambrose Baker



Annual General Meeting

The minutes of the AGM will be circulated by the executive committee.

Evening social at the local restaurant Oven

The talks and AGM gave plenty of fuel for discussions during an evening of informal socialising. One talking point was the size of the portions served in the restaurant, especially the local speciality, the parmo, that a few brave participants sampled. While many bryologists retreated to their accommodation after the dinner, some adventurous ones made the most of Middlesbrough's lively Saturday night and followed up with discussion in the pub.

Field trip to South Gare

This 381 ha site (Fig. 1) was designated as a SSSI from the 1970s based on its 'considerable interest for its flora, invertebrate fauna and birdlife'. In addition to being a well-known site for natural

history, it is used extensively by local residents for dog-walking, outdoor activities and, occasionally, fly-tipping.

The area consists of land reclaimed from the North Sea using iron and steel industry waste slag. As a result, there is a variety of substrates and habitats present, from slag rock-faces to reed beds and natural sand-dune slacks. South Gare is well known for its vascular plant diversity, including a range of rare native and alien plants (Barlow, 2020). In the drier part of the Gare, communities tend to be dominated by alkaline-loving species, while wetlands host a specialised flora of brackish environments. Overall, bryophyte exploration has been limited to a few visits since 1991 by S. J. Heathcote, J. Simkin, J. M. Blackburn and A. G. Baker. Unusual species reported from the site prior to this BBS meeting included *Aloina brevirostris* (one 1998 record), *Distichium inclinatum*, *Drepanocladus polygamus* and *Tortella flavovirens* (2019, first

▽ Figure 3. Field meeting at South Gare. Jonathan Sleath



vc record). However, it is to be noted that the adjacent Coatham marshes and Coatham dunes, which were previously directly connected with the North Sea, has 19th century records of rare bryophytes such as *Bryum knowltonii* and *B. marratii* (Porley, 2013).

The objectives of the BBS trip to South Gare were to have fun exploring the bryophytes of this unusual SSSI. In particular, we were hoping to establish the abundance and distribution of *Distichium inclinatum* and *Drepanocladus polygamus* and possibly refine *Aloina brevirostris*. Also, this visit was an opportunity to contribute to bryophyte recording in vc 62, an under-recorded vice-county, and establish a more comprehensive list of bryophytes for the site. In the following account, species followed by an asterisk (*) are new vice-county records or debrackets discovered during the meeting. The full list of species recorded will be available on the BBS website.

We met at NZ569258, near Blast-furnace Pool, the main pond of the site (Fig. 3). Despite a slight confusion about the meeting time, no one appeared to have been left behind. Many BBS members were travelling back on the day and could only plan half a day of field bryology. Participants also included a few local bryologists and Dave Barlow, the vc recorder for vascular plants. Dave was keen to get a few bryology tips as well as sharing his extensive knowledge of the site. We were lucky with dry weather on the day and damp ground following rain on previous days, providing the perfect conditions to practice field bryology. This contrasted with the extreme drought and heat experienced during the summer, which undoubtedly impacted bryophyte development in the months preceding the meeting.

The prospect of only a short day in the field multiplied the eagerness to start bryologising,

and before anyone knew it, three groups formed. Group one focused its effort near the golf course (NZ5725), an area of dune slacks and sand dunes. Group two travelled between monads, visiting NZ5726 and covering a range of habitats, while group three started from NZ5626, visiting the so-called ‘central highlands’, where the slag rock faces evoke views of the Colorado river.

Group one (Claire Halpin, Peter Martin, Sharon Pilkington, Agneta Burton and Jeff Scott) was the first group to find *Rhynchostegium megapolitanum** on dune slopes. This species is mostly known from southern England with scattered occurrences across the north. At South Gare it was found in its typical coastal habitats. In addition, the group confirmed and expanded the known distribution of *Drepanocladus polygamus* at the site. They also put together a very thorough list of more common species, including some that had not been reported to the site before (e.g. *Brachythecium rivulare*).

Group two (Rory Whytock, Gordon Rothero, Liz Kungu and Neil Bell) covered lots of ground and produced a detailed lists for three monads, but were a bit disappointed in terms of rarities. After lunch, they bumped into group three in a promising dune slack. *Distichium inclinatum* was a nice reward for them on their way back, a species that appears to be widespread at South Gare, on bare thin mineral soils composed of slag dust and sand.

Group three (Alain Vanderpoorten, Tom Blockeel, Philippa Thompson, Rachel Carter, Chris Preston, Mark Hill, Jonathan Sleath, Mags Crittenden and Ambrose Baker) also found *Distichium inclinatum*, along with *Bryum caespiticium**, on the first stretch of their visit. The slag rock faces proved particularly interesting with *Encalypta rhaptocarpa** found by Alain, Tom and Mark and *Aloina ambigua** found by Alain. This becomes the most southerly coastal site for



△ Figure 4. Bryologising in the Cabin Rocks area, South Gare. Chris Preston

E. rhabtocarpa in Britain. Leaving the rock faces, the walk along the sand dunes provided an ideal lunch spot, plus *Rhynchosstegium megapolitanum**, found by Tom among tall grassy vegetation.

As group two and three meet in a large dune slack, *Mesoptychia badensis* was found (Tom again!). There, Jonathan Sleath collected a *Bryum* that he grew at home in the following weeks; this turned out to be *Bryum warneum**. This species was recorded from Coatham Marshes a few times in the 1890s and a last time in 1903. This find entices us with the idea that other rare bryophytes recorded historically from Coatham Marshes and the Tees estuary may be making a post-industrial come back as the water and air quality have improved in the area. However, the absence of epiphytes was very notable throughout the visit and may indicate some level of air pollution.

The day finished with a short visit to the Cabin Rocks (Fig. 4), a large expanse of coarse slag substrate stabilised by small pockets of sand and shallow soils. Arriving, there was a clear feeling of a different habitat, with different bryophyte communities, including *Polytrichum juniperinum*, *P. piliferum*, *Weissia controversa*

and a magnificent patch of *Tortella tortuosa*. The discovery of *Lophozia excisa**, *Cephaloziella* sp. and *Fossombronina* sp. suggests that there may remain much to explore at South Gare.

Finally, the site as a whole did not leave anyone indifferent and was described afterwards as ‘truly surreal’, ‘an amazing sight - one of the oddest places I have ever been to’ and ‘a superb brownfield site’.

References

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