

Grimmia workshop

Blencathra Centre, Field Studies Council

16-18 September 2016

△ Fig 1. Sunrise over the Cambrian Mountains from Blencathra Centre. R. Porley.

It was 20 years ago, on a stormy weekend, that the BBS held a workshop in Cardiff (Porley & Blockeel, 1996), focusing on sectioning techniques and their usefulness in bryophyte taxonomy. During one session *Grimmia* was considered, and some of the key characters used to separate them were discussed. Looking back, it strikes one that our understanding then of British & Irish *Grimmia* was perhaps a little naïve. This is no reflection on participants of the workshop at the time; indeed the last 20 years has brought a revolution in our understanding of the genus. In another 20 years' time the 'landscape' will undoubtedly look quite different once the molecular era has fully penetrated the genus.

Since the 1996 Cardiff workshop, the *Grimmia trichophylla* group has been sorted out (with the realisation that we had *G. lisae*, resulting in the sinking of *G. retracta*, the dumping of *G. britannica* and removal from the British flora of *G. austrofunalis*), the *alpestris-montana-sessitana* group has been more or less clarified in Britain (with the loss of *G. ungeri*), three new taxa have been added: *G. dissimulata*, *G. muehlenbeckii* (both resulting from a morphological overhaul of the *trichophylla* group) and *G. anomala*. Not to mention the re-discovery of so-called 'extinct' taxa such as *G. elatior*, *G. crinita* and *G. anodon*,

detection of new populations of hitherto very rare species (*G. unicolor*, *G. elatior*) and new distributional data (eg: *G. ovalis*) including at least one taxon where climate change has been implicated (eg: *G. tergestina*).

In 1981 the Census Catalogue listed 21 *Grimmia* at species rank, in the 1998 CC there were 25 species, and the latest 2008 CC numbered 27 species. The new Atlas (2014) featured 28 species (*G. anomala* was added in 2012) and during the present workshop 29 species are treated. Muñoz & Pando (2000), in their world revision of *Grimmia*, compiled 1370 names which corresponded to 792 taxa. Following their analysis, which included studies of type material, they pared the genus down to 71 species. Interpretations of what constitutes a good species differ between workers; some are splitters, others are lumpers. Hence Greven (2003) recognized 93 species in the world, whereas Maier (2010) recognized 51 species. New species from around the world continue to be described.

The present workshop, in the pleasant environs of the Field Studies Council centre at Blencathra in the Lake District (VC 70), was ideally placed in beautiful *Grimmia* country. It was attended by 13 participants (Fig. 2) including the tutor Ron Porley and local organiser



◁Fig 2. *Grimmia* workshop participants outside Blencathra centre.

Martin Godfrey, and embraced the most advanced *Grimmia* practitioners to beginners. The aims of the workshop were to introduce the currently recognized British and Irish *Grimmia*, to highlight the characters essential for identification, to practise leaf sectioning, to look at *Grimmia* in the field and to examine herbarium material from within our islands and from overseas. Friday evening provided space for informal discussions about *Grimmia* and more besides, and we were welcomed by the FSC ecologist with free beers (including local real ales!) or wine to slake our thirst and the friendly catering staff ensured we were well satiated.

The serious business began on Saturday morning with a presentation by Ron of the 29 species of *Grimmia* in Britain and Ireland; the superb series of images by Michael Lüth of European *Grimmia* showing habits and microscopic details were used as the basis to build the presentation. The inclusion of *Grimmia cribrosa*, more familiar as *Coscinodon cribrus*, was explained (see notes following the new key on p.28). The notorious variability of *Grimmia* including gametophytic and sporophytic traits as well as sexuality was discussed, noting that nearly every character was subject to some degree of variation. Handouts were distributed including a new key to British and Irish *Grimmia* by Ron, notes on species and a glossary, a translation of the *Grimmia* key from the original Spanish in Flora Briofítica Ibérica (Muñoz *et al.*, 2015), and a checklist of English, Scottish, Welsh and Irish *Grimmia*.

There have been a number of keys to *Grimmia*

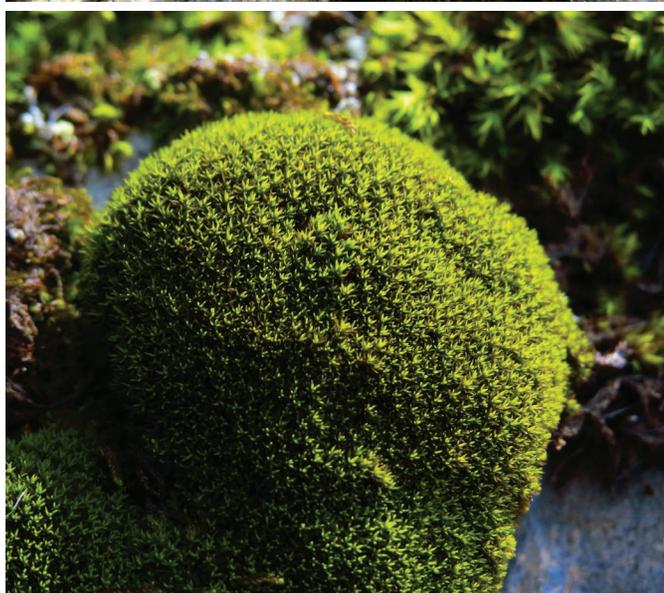
published in recent years, covering Europe and various parts of the world. Some are more useful than others, and include Maier & Geissler (1995) (and an unpublished British and Irish key by Tom Blockeel based on this publication), Greven (1999), Maier (2009) and an English translation (of Maier, 2009) by Peter Erzberger (2011). I believe the key to *Grimmia* of the Iberian Peninsula (Muñoz *et al.*, 2015) is particularly good, hence the provision of a translation at the workshop. In fact two translations were provided: the complete key including all the non-British taxa, and a modified key comprising just British and Irish species (both keys to be found on the BBS website). The only key until now to deal solely with British and Irish *Grimmia* is Smith (2004), the mainstay for British and Irish bryologists for identifying mosses, but it has limitations and some species are not included or recognized as good species anymore. There is thus a pressing need for a new key to the 29 species of *Grimmia* currently occurring in Britain and Ireland.

A short field-trip interlude followed. The warm sunshine beckoned us onto Blease Fell, just behind the centre, with Blencathra Mountain looming yonder. An outcropping of Skiddaw Slate (NY 2950 2581) at c. 340m, briefly checked out the previous day on a reconnaissance, provided an ideal spot to examine *Grimmia trichophylla*, *G. donniana*, *Grimmia cribrosa* *c.fr.* and the speciality of the area, *G. elongata* (Figs 3 & 4). *Grimmia* lookalikes were also on hand to trap the uninitiated, including *Racomitrium sudeticum*, *R. affine* and *Andreaea* sp. Pleased with what we

had seen, we tucked into our lunches (Fig. 5) and enjoyed the famous Lakeland views before heading back down to the centre where we noted *G. lisae* on a shaded stone wall.

Back at the base we got to grips (or not) with the microscopes. Unfortunately the microscopes available to us had their limitations and some of us struggled; thankfully several people brought their own microscopes with them (Fig 6). We discussed and demonstrated characters essential for naming *Grimmia*. Maier (2002) considers costal architecture to be one of the most stable traits and emphasis is placed on this in her recent monograph and Muñoz (1999) also considers the structure of the costa to be of major taxonomic importance. However, even costal architecture is subject to some variation, for example in the number of guide cells at leaf insertion. Certain sporophyte characters, especially the peristome, are also considered to be relatively stable, but often capsules are not available and thus for practical purposes their use in separating taxa are limited. Eva Maier, the Swiss Grimmerologist has made invaluable studies on *Grimmia* and her 2010 world monograph (Maier, 2010) is an admirable attempt to bring some understanding to this complex genus. However, the key provided therein is heavy going, and perhaps too much emphasis is placed on costal architecture and too little on sporophytic characters. The real delight of her monograph is in the accurate illustrations, and for this reason alone it is a must-have for the serious Grimmerologist.

An essential part of the workshop was the testing of the new key to British and Irish *Grimmia* (published in this issue of *Field Bryology* vol. 116, p. 28). During the rest of the day, material which we had gathered earlier, or herbarium material supplied by David Long, Ron and others, was taken through the new key. Techniques, in particular sectioning,



△Fig 3 (above). Moist cushions of *Grimmia elongata* on Skiddaw Slate, Blease Fell. R. Porley. △Fig 4 (below). Close-up of *Grimmia elongata*, Blease Fell. R. Porley.

were examined. Everybody has a technique which works (or not) for themselves, but Ron demonstrated a technique where several dry shoots are pinned down under the index finger on a slide, and incremental pressure of the blade on the guiding finger produces scores of sections at different levels along a leaf. Inevitably there will be many poor sections on the slide, but there will nearly always be enough good sections to work with. A quality double edged blade is essential, and should only be used four times (use a black marker to place a spot on the blade to indicate which corner has been dulled) otherwise perfect specimens will not result. With some



△Fig 5 (above). Skiddaw Slate provides ideal seating for sun-bathed lunchtime on Blease Fell. R. Porley.

△Fig 6 (below). Thoughtful *Grimmia* study; the concentration is palpable. R. Porley.

experience it is easy to recognize sections from the extreme base (insertion) to the apex. It is crucial to hold the blade perpendicular to the slide (to determine the shape of guide cells, ie: oblique or not) and at right angles to the shoots.

Sunday morning saw us back on the microscopes examining *Grimmia* and doggedly persevering with the new key, and suggestions for improvements noted (and of course comments are welcomed on the version included in this issue on p.28). The notorious variability of *Grimmia*, alluded to earlier, makes constructing a key very difficult; some dichotomies are necessarily longer than others. Interpreting the dichotomies can be tricky too, but Ron was on hand to provide individual guidance during the workshop. A final caveat: it is not possible to confidently name all collections!

Some participants had a long way to travel home, so by Sunday afternoon the ranks were thinning with only the most ardent still peering down microscopes. All were agreed however that the weekend had been most instructive and were inspired to pay more attention to *Grimmia* in the future. Equally important, it had been fun (Lucia Ruffino was busy tweeting to whomever – the first for a BBS workshop?), the Lake District weather was unbelievable and the venue was perfect. Our thanks to the staff at Blencathra Centre who really were great, and to Martin Godfrey for making the workshop a reality, to Robert Goodison (Natural England) who shared his information on *Grimmia elongata* and provided suggestions for field visits, thanks to Michael Lüth for allowing the use of his European images of *Grimmia*, to Jesús Muñoz for checking the translation of the Iberian *Grimmia* key and for permission to publish, and thanks to those who provided feedback on the key, particularly Nick Hodgetts and Tom Blockeel, and to Eva Maier who has

encouraged me at every faltering step of the way on my journey with *Grimmia*. Special thanks to Tom Blockeel for critically reading a draft and making valuable suggestions, and finally I would like to acknowledge the financial support from the BBS Bequest Fund to cover expenses from Portugal and back.

Ron D. Porley

e ron.porley@sapo.pt

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