Leaf gemmae in *Orthotrichum tenellum* Bruch ex Brid.

During a recent field trip in Herefordshire, **Jonathan Sleath** observed an unusual *Orthotrichum*. Here he reports his finds.

△ *Orthotrichum tenellum. Jonathan Sleath*

In February 2009 I came across an unfamiliar *Orthotrichum* growing on the north aspect of the base of a mature solitary ash tree in a field at Kerry's Gate, Herefordshire (v.-c. 36). It had abundant leaf gemmae and many capsules. It was clearly not *Orthotrichum lyellii,* so I collected some material for examination.

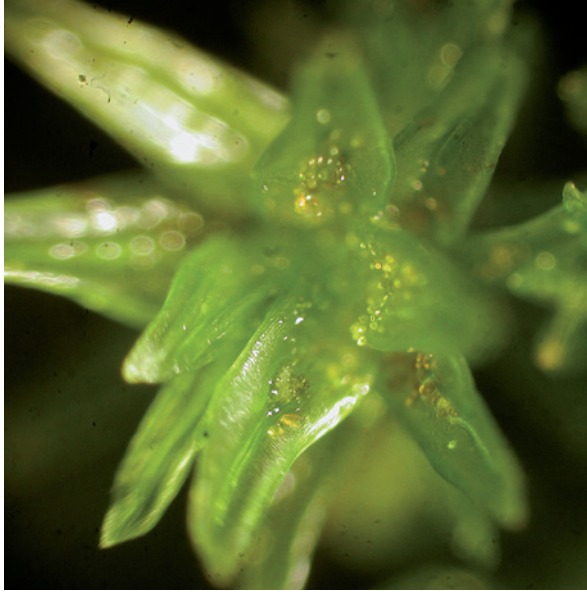
The plant appeared to be *Orthotrichum tenellum*, which is a rare plant in this county. Of our standard moss floras, neither Smith (2006) nor Dixon (1924) mention the presence of gemmae. Looking into the European literature, I noted that Nyholm (1998) comments in the key that gemmae can sometimes be present but does not mention them in the species description. Blockeel (in Frey *et al.*, 2006) mentions them in the key, and there are illustrations in Hallingbäck *et al.* (2008). Lara *et al.* (2009) say they are frequent on old leaves.

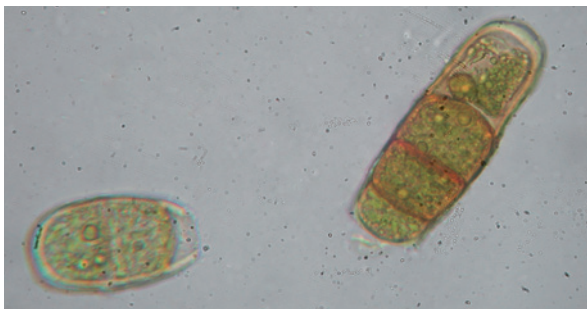
I wondered how common these really were in British material, so I approached Mark Hill, who told me that he had not personally encountered them, and Tom Blockeel, who said that he did sometimes notice them although they can be very sparse. Both kindly directed me to a note by Joan Appleyard in *Journal of Bryology* (1996) in which she described them, and indeed there is also mention of this paper in Chris Preston's account of *O. tenellum* in Hill *et al.* (1994). Chris tells me that he has occasionally seen plants with abundant gemmae.

The gemmae on the plants I collected were present on both leaf surfaces, arising across the width of the lamina and concentrated in the central zone. They were uniseriate, 30–40 µm in width and up to five cells long, but mostly shorter. They are similar but shorter to the rhizoidal gemmae noted in axenic culture of Greek material of *O. tenellum* by Harold Whitehouse in the 1980s (Whitehouse, 1987).

The plant that Joan Appleyard collected in 1961 and subsequently described was from Hentland, which is about 10 miles away from Kerry's Gate. Hallingbäck *et al.* (2008) imply that gemmiferous

Orthotrichum tenellum with leaf gemmae





▷ *From top to bottom*: gemmae visible on the surface of the leaf (*Jonathan Sleath*); photomicrographs of an intact leaf and of typical gemmae (*Jonathan Sleath*); photomicrograph of rhizoidal gemmae in culture (*H.L.K. Whitehouse*).

plants are more common in some parts of Europe than others. It seems likely, therefore, that there is genotypic variation, resulting in the presence of races of highly gemmiferous plants in particular areas, or possibly there is some unknown environmental change acting as a stimulus to gemmae production.

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References

Appleyard, J. (1986). Leaf gemmae in *Orthotrichum tenellum*. *Journal of Bryology* **14**, 179–180.

Dixon, H.N. (1924). *The Student's Handbook of British Mosses*. Eastbourne: V.V. Sumfield.

Frey, W., Frahm, J.-P., Fischer, E. & Lobin, W. (2006). *The Liverworts, Mosses and Ferns of Europe*. English edition revised and edited by T. L. Blockeel. Colchester: Harley Books.

Hallingbäck, T., Lönnell, N. & Weibull, H. (2008). *Nationalnyckeln till Sveriges flora och fauna. Bladmossor: Kompaktmossor–kapmossor. Bryophyta: Anoectangium–Orthodontium*. Uppsala: ArtDatabanken.

Hill, M.O., Preston, C.D. & Smith, A.J.E. (editors) (1994). *Atlas of the Bryophytes of Britain and Ireland, Vol. 3. Mosses (Diplolepideae)*. Colchester: Harley Books.

Lara, F., Garilleti, R., Medina, R. & Mazimpaka, V. (2009). A new key to the genus Orthotrichum Hedw. in Europe and the Mediterranean Region. *Cryptogamie, Bryologie* **30**, 129–142.

Nyholm, E. (1998). *Illustrated Flora of Nordic Mosses*, Fasc. 4. Copenhagen and Lund: Nordic Bryological Society.

Smith, A.J.E. (2006). *The Moss Flora of Britain and Ireland*, 2nd edn (reprinted). Cambridge: Cambridge University Press.

Whitehouse, H.L.K. (1987). Protonema-gemmae in European mosses. *Symposium Biologica Hungarica* **35**, 227–231.