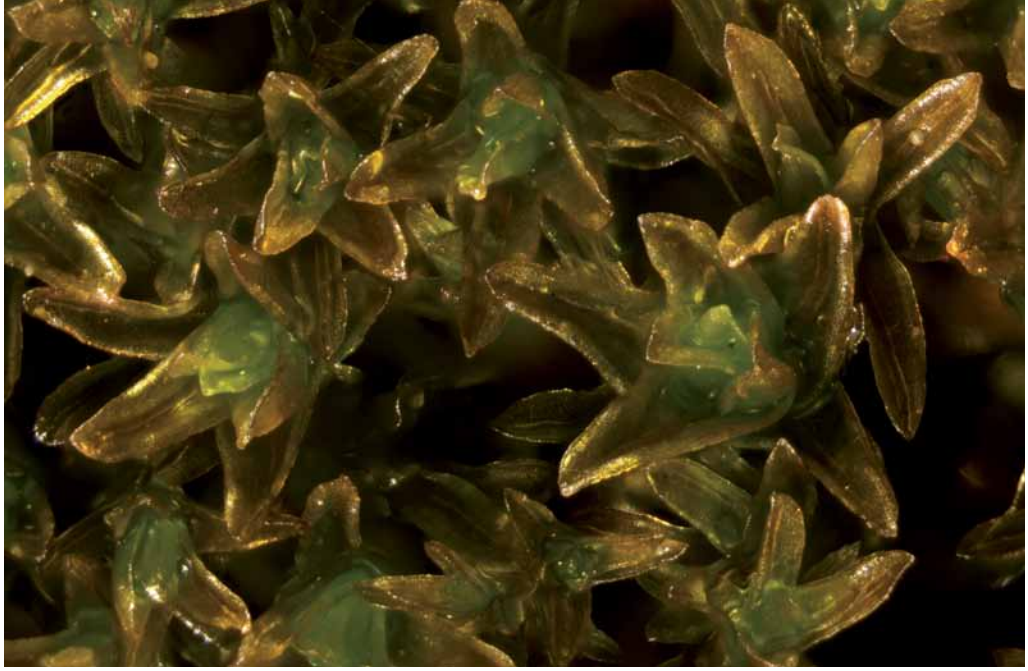

Didymodon tophaceus subsp. *sicculus* on Lundy Island, new to Britain

Peter Martin describes his discovery of this subspecies in Britain.

I collected a sample of *Didymodon tophaceus* from a wall on Lundy Island off the North Devon coast (vc 4) on 20th April 2021, Grid Reference SS13834402 (Figs 1, 2). It appeared to be *Didymodon tophaceus* subsp. *sicculus* (M.J.Cano, Ros, García-Zam. & J.Guerra) Jan Kučera, and the identification was subsequently confirmed by Jan Kučera using morphological characters.

Until 2018, *Didymodon sicculus* was recognised at species rank but Kučera *et al.* (2018) treated it as a subspecies of *D. tophaceus*. These authors applied molecular methods to a range of specimens of *D. tophaceus*, *D. sicculus* and *D.*

△ Figure 1. *D. tophaceus* subsp. *sicculus*. *All photographs Peter Martin*

▷ Figure 2. Aerial view of the wall on Lundy where *D. tophaceus* subsp. *sicculus* occurs.

▷ Figure 3. Leaf of *D. tophaceus* subsp. *sicculus*.

▷ Figure 4. Leaf of *D. tophaceus* subsp. *tophaceus*.

△ Figure 5. Short cells over ventral area of costa at mid leaf of *D. tophaceus* subsp. *sicculus*.

△ Figure 6. Long cells over ventral area of costa at mid leaf of *D. tophaceus* subsp. *tophaceus*.

erosus and confirmed that they were genetically distinct but closely related. However, in view of overlap in their morphological characters it was thought best to treat the three taxa as subspecies of *D. tophaceus*. Furthermore, *D. tophaceus* subsp. *tophaceus* has two varieties: var. *tophaceus* with nerve ending below apex and var. *anatinus* with excurrent nerve.

Didymodon sicculus was first described from arid regions of Spain by Cano *et al.* (1996). Further records followed, mainly in the Mediterranean area. Now it is more widely recorded in Europe, as well as in Morocco and, more distantly, in Cape Verde.

Identification

Because of variation in the diagnostic characters, identification can be difficult based on morphology alone. The best characters to separate subsp. *sicculus* from subsp. *tophaceus* are perhaps the width of the costa and the cells overlying the ventral surface of the costa. In subsp. *sicculus* the costa is mostly less than 70 µm (Fig. 3) whereas well-developed plants of subsp. *tophaceus* have the costa greater than 100 µm at the base (Fig. 4). The costae at the base in the Lundy plants were between 65–75 µm. Subsp. *sicculus* has quadrate to shortly rectangular cells overlying the costa ventrally (Fig. 5) in comparison to subsp. *tophaceus* where the cells are elongated (Fig. 6). The leaves in subsp. *sicculus* are less decurrent in comparison to subsp. *tophaceus*. Jan Kučera commented that the Lundy plants have the typical overall small size of subsp. *sicculus* and that the obtuse apices of the Lundy plants are less typical but have been seen previously.

A useful key and species descriptions for *Didymodon* can be found in *Flora Briofítica Ibérica* (Guerra *et al.* 2006). This account mentions the leaf colour reaction with KOH; cell walls orange-brown or more rarely yellowish for subsp. *tophaceus* and yellow-green for subsp. *sicculus*. The Lundy plants were slightly reddish with KOH and Jan Kučera commented that the colouring of the cell walls can be difficult to evaluate sometimes in that the more exposed the site, then the more the cell walls can become reddish. Subspp. *sicculus* and *erosus* often have rhizoidal gemmae, which are unconfirmed in subsp. *tophaceus*, but no gemmae were seen in the Lundy plants. Subsp. *erosus* is unknown in Britain. It shares the short cells over the nerve ventrally with subsp. *sicculus* but has longer leaves. A peristome was not seen in a fruiting specimen of subsp. *erosus* but was in subsp. *sicculus*, but as there are only single records of fruit in each subspecies this might not be a reliable distinction.

Ecology

Subsp. *sicculus* is most often found in periodically wet saline grasslands. It can also occur in permanently wet conditions, as well as periodically wet sites that are not saline. It is possible that the ecology and distribution are not completely known yet. On Lundy the plant occurred between granite blocks of a wall where it formed neat cushions. The wall did not have a large covering of bryophytes and associates were *Didymodon vinealis*, *Pseudocrossidium revolutum* and *Zygodon viridissimus*.

Acknowledgements

Thanks to Jan Kučera for confirming identification of Lundy plant and further information on *Didymodon tophaceus* and to Tom Blockeel for reviewing the text.

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