

## Bryophytes on the Knepp Castle Estate



*Amblystegium varium*. Photo courtesy of BBS.

### 1. Survey

This survey on 2<sup>nd</sup> June 2013 covered a small part of the Knepp Castle Estate owned by Charlie Burrell. The areas covered included the lake in Spring Wood, the outflow stream from that lake following down as far as the river, the river banks down as far as the public footpath leading to Charlwood Barn, the dam end of the main lake and the outflow from it, the old ruins, the southern shore of the main lake (or rather the adjoining carr woodland containing a heronry) and the main buildings plus the surrounding woodland. Even within these areas the survey was necessarily rather patchy.

The large number of species found reflects a very varied habitat with a lot of water courses. The soil is neutral in chemistry, so some plants that are characteristic of acid soils were either absent or very scarce. Epiphytes were thriving with many trees of favoured species such as ash, field maple, elder and willow; a few quite scarce species were consequently found.

Several man-made habitats were looked at and found to be particularly rich having had little disturbance for a long time. The outflow from the lake runs through a brick-lined culvert which yielded numerous interesting mosses.

The river is going to be interesting in a few years' time when the current works have had time to settle in but some typical riparian species were found on concrete structures and also on trees.

The old ruins were too dry for most bryophytes but did have some *Didymodon vinealis* on the north side.

The lake margins were predictably rich in species and will no doubt yield more in future surveys. Two mosses rare in Sussex were spotted: *Oxyrrhynchium speciosum* and *Amblystegium varium*. Both indicate a woodland where there is periodic inundation and of some considerable age.

The main lake has an old record for the rare floating liverwort *Ricciocarpos natans*. This was looked for without success on this occasion.

The north-facing walls of the house and the ha-ha were looked at. There is a nice band of moss just above soil level. Several patches of the exceedingly small *Gyrowesia tenuis* were discovered. Also, a *Schistidium* collected on the walls of the walled garden appears to be *S. apocarpum* (in the strict sense of the name) which has not yet been recorded from Sussex. The specimen collected did not have capsules so is unlikely to be accepted as a new county record but a future visit may well find some.

It was noticeable how few mosses typical of the usual woodland ground flora were observed. This is partly due to the soil chemistry as many species such as *Dicranella heteromalla* require an acid soil. It may also be due to the

grazing regime resulting in excessive disturbance of the forest floor. However, it is known that some woods have been left ungrazed and this is where the missing ground flora mosses will no doubt be found.

The table below indicates the frequency of the plants as found in the survey. A further column describes how common the species is in Sussex generally. The list is approximately in the order found. The grid reference indicates one site where the plant was found; usually there were many more, and a few of the more interesting ones have all their records listed. All critical identifications have been checked microscopically.

English Name	Scientific Name	Grid Ref	Location and Frequency	Occurrence in Sussex
Lesser Bird's-claw Beard-moss	<i>Barbula convoluta</i>	TQ151222	On mud at edge of lake; frequent on soil generally.	Common throughout Sussex on base-enriched soils.
Pointed Spear-moss	<i>Calliergonella cuspidata</i>	TQ151222	Lake margins and by streams; common.	Very common in short grassland such as north-facing chalk downland and in damp places by streams.
Swartz's Feather-moss	<i>Oxyrrhynchium hians</i>	TQ151222	Lake margins and stream sides, frequent.	Common by streams in woods and also on chalk downland.
Pink-fruited Thread-moss	<i>Pohlia melanodon</i>	TQ151222	On clay bank of lake and on stream banks.	On clay banks on neutral to basic soils, often by streams.
Slender Pocket-moss	<i>Fissidens exilis</i>	TQ151222	On clay bank of lake.	Scarce on clay banks in woods and by streams.
Rough-stalked Feather-moss	<i>Brachythecium rutabulum</i>	TQ151222	On soil; very common.	Usually abundant on a variety of substrates.
Common Feather-moss	<i>Kindbergia praelonga</i>	TQ151222	On soil and tree roots; very common.	Abundant in woodland.
Mamillate Plait-moss	<i>Hypnum andoi</i>	TQ151222	On Oak; locally common on older trees.	Common on old trees.
Supine Plait-moss	<i>Hypnum resupinatum</i>	TQ151222	On Oak; very common.	Common, particularly on smooth-barked trees.
Cypress-leaved Plait-moss	<i>Hypnum cupressiforme</i>	TQ151222	On trees, logs and roots; abundant.	Generally abundant in woodland.
Lateral Cryphaea	<i>Cryphaea heteromalla</i>	TQ151222	On Oak and Maple; locally common, fruiting.	Epiphytic on many trees, particularly Elder. Still increasing following the Clean Air Act (1956).
Wood Bristle-moss	<i>Orthotrichum affine</i>	TQ151222	On Oak; very common, fruiting. Also found on Ash, Willow and Field Maple.	Common, preferring well-lit trunks on trees such as Willow, Ash and Elder.
Dilated Scalewort	<i>Frullania dilatata</i>	TQ151222	On Oak; very common.	Common throughout Sussex
Lesser Pocket-moss	<i>Fissidens bryoides</i>	TQ151222	On mud at edge of lake; common.	Common on damp soil in gardens and woods.

English Name	Scientific Name	Grid Ref	Location and Frequency	Occurrence in Sussex
Crescent-cup Liverwort	<i>Lunularia cruciata</i>	TQ151222	On mud at edge of lake; common.	Common on stream banks, in gardens and at the foot of walls.
Even Scalewort	<i>Radula complanata</i>	TQ151222	On Maple, fruiting. Also found on Willow.	Frequent on smooth-barked trees in well-lit positions.
Forked Veilwort	<i>Metzgeria furcata</i>	TQ151222	Epiphyte; common.	Common throughout the county.
Field Forklet-moss	<i>Dicranella staphylina</i>	TQ151222	Mud at edge of lake.	Common in arable fields and on disturbed soil in damp places.
Overleaf Pellia	<i>Pellia epiphylla</i>	TQ151222	Mud at edge of lake. Apparently scarce.	Very common on acid to neutral soils by streams.
Park Yoke-moss	<i>Zygodon rupestris</i>	TQ151222	On Maple by lake, with gemmae.	Scarce; mainly on old trees in parkland. Found on trees with an alkaline bark such as Ash or Maple.
Creeping Feather-moss	<i>Amblystegium serpens</i>	TQ151222	Epiphyte; common, fruiting.	Common as an epiphyte, particularly on Elder. Equally common on old walls.
Green Yoke-moss	<i>Zygodon viridissimus</i>	TQ151222	Epiphyte; common, with gemmae.	Common on older trees, prefers a well-lit situation.
Swan's-neck Thyme-moss	<i>Mnium hornum</i>	TQ151222	Tree roots and banks; common.	Very common in woodland, indicates older banks or trees.
Common Smoothcap	<i>Atrichum undulatum</i>	TQ151222	Tree roots and banks; common.	A very common woodland plant.
Bird's-claw Beard-moss	<i>Barbula unguiculata</i>	TQ152220	Stream bank; common.	Common throughout Sussex except on acid soils.
Blunt-fruited Pottia	<i>Tortula modica</i>	TQ152220	Stream bank; one patch found. Provisional identification without capsules.	Scarce in arable fields or by streams.
Intermediate Screw-moss	<i>Syntrichia intermedia</i>	TQ152220	On concrete at edge of stream; locally abundant.	Common on walls and roofs.
Silver-moss	<i>Bryum argenteum</i>	TQ152220	On concrete at edge of stream.	Common on paths and tarmac.
Grey-cushioned Grimmia	<i>Grimmia pulvinata</i>	TQ152220	On concrete at edge of stream, fruiting. Also found on walls.	Common on walls and roofs.

English Name	Scientific Name	Grid Ref	Location and Frequency	Occurrence in Sussex
White-tipped Bristle-moss	<i>Orthotrichum diaphanum</i>	TQ152220	On concrete at edge of stream, fruiting. Also as an epiphyte on Ash.	Often common in polluted areas but also found generally in well-lit areas in woodland.
Dusky Beard-moss	<i>Didymodon luridus</i>	TQ152220	On concrete at edge of stream	Frequent on stone and concrete
Wall Screw-moss	<i>Tortula muralis</i>	TQ152220	On a concrete block; also found on walls, fruiting.	Ubiquitous on walls.
Lyell's Bristle-moss	<i>Orthotrichum lyellii</i>	TQ151219	Epiphyte; locally common, with gemmae.	Fairly common in unpolluted areas.
Fairy Beads	<i>Microlejeunea ulicina</i>	TQ151219	Epiphyte; locally common.	Common in the N of the county, tends to be replaced by <i>Cololejeunea minutissima</i> in the S.
Slender Bristle-moss	<i>Orthotrichum tenellum</i>	TQ151219	Epiphyte; locally abundant, fruiting.	Frequent, particularly in the S of the county, and increasing.
Bifid Crestwort	<i>Lophocolea bidentata</i>	TQ151219	On stream banks; frequent.	Frequent on banks, stumps and logs.
Tufted Feather-moss	<i>Scleropodium cespitans</i>	TQ151216	On concrete structures and trees by river; locally abundant. Even found on the fibreglass covering of a pipe.	Near rivers; often common on tree roots and walls.
Cylindric Beard-moss	<i>Didymodon insulanus</i>	TQ151216	Tree roots by river. Also found on soil near the lake.	Common on soil and rock. Also found on tree bases and roots by streams.
Wall Scalewort	<i>Porella platyphylla</i>	TQ151216	On Maple by river; large patch.	Frequent on old trees, sometimes by water. Also found on old walls.
Flat Neckera	<i>Neckera complanata</i>	TQ151216	On Maple by river. Also found on Ash.	Frequent on old trees, particularly Ash. Also on old walls.
Blunt Feather-moss	<i>Homalia trichomanoides</i>	TQ151216	On Maple by river.	Frequent on old trees, particularly Ash.
Shaw's Bristle-moss	<i>Orthotrichum striatum</i>	TQ151216	On Maple by river, fruiting.	A rather scarce epiphyte but apparently increasing.
Variable Forklet-moss	<i>Dicranella varia</i>	TQ151216	On river bank; a few patches found.	Common on neutral to basic soils on damp bare soil.
Bicoloured Bryum	<i>Bryum dichotomum</i>	TQ151216	On river bank, with bulbils; very immature.	Very common throughout Sussex, especially in ruderal habitats. Formerly considered to be rare.



English Name	Scientific Name	Grid Ref	Location and Frequency	Occurrence in Sussex
Silky Wall Feather-moss	Homalothecium sericeum	TQ151216	On stump by river.	Common on ash trees and on walls.
Redshank	Ceratodon purpureus	TQ151216	On concrete structure by river. Also on wooden jetty by lake.	Very common on soil and walls, requires an acid substrate.
Elegant Bristle-moss	Orthotrichum pulchellum	TQ152215	On Salix by river, fruiting.	Occasional, probably increasing.
Water Screw-moss	Syntrichia latifolia	TQ151214	On concrete weir, covered in silt; locally abundant.	Frequent in the flood zone of rivers; on walls and trees. Also found on damp tarmac.
Wavy Beard-moss	Didymodon sinuosus	TQ151214	On concrete weir by river.	Occasionally found on damp walls.
Many-fruited Leskea	Leskea polycarpa	TQ151212	On Ash by river. Scarce in the section surveyed.	Principally found in the flood zone of large rivers, low down on the roots of trees which are periodically inundated.
Common Pincushion	Dicranoweisia cirrata	TQ154212	On Oak roots, fruiting. Also on fence posts by the lake.	On bark of living trees and on fence posts, common in acid habitats.
Great Hairy Screw-moss	Syntrichia ruralis subsp. ruralis	TQ155212	On concrete by lake.	Common on roofs and walls.
Kneiff's Feather-moss	Leptodictyum riparium	TQ155212	On concrete by lake.	Frequent to common on roots and other hard surfaces near water.
Capillary Thread-moss	Bryum capillare	TQ155212	On concrete by lake, common. Elsewhere as an epiphyte.	Usually very common on logs, roots, walls etc.
Clustered Feather-moss	Rhynchostegium confertum	TQ155212	On concrete by lake. Also on tree roots in carr.	Common on tree bases, roots and also on walls.
Velvet Feather-moss	Brachytheciastrum velutinum	TQ155212	On concrete by lake.	Frequent on trees and walls but possibly decreasing.
River Feather-moss	Brachythecium rivulare	TQ155212	On mud at end of lake and in carr.	Frequent at lake margins and by streams.
Petty Pocket-moss	Fissidens pusillus	TQ156211	On bricks on base of culvert; locally abundant.	Characteristically found on small rocks in streams; common in the Weald, less so elsewhere.
Long-beaked Water Feather-moss	Platyhypnidium riparioides	TQ156211	On bricks on base of culvert.	Frequent on hard surfaces in streams.

English Name	Scientific Name	Grid Ref	Location and Frequency	Occurrence in Sussex
Wavy Beard-moss	<i>Didymodon sinuosus</i>	TQ156211	On brickwork of culvert; locally abundant.	Occasionally found on damp walls.
Dotted Thyme-moss	<i>Rhizomnium punctatum</i>	TQ156211	On brickwork of culvert.	Common in wet woodland.
Common Pocket-moss	<i>Fissidens taxifolius</i>	TQ156211	On brickwork of culvert.	Common on a variety of soils, prefers damp places.
Bordered Screw-moss	<i>Tortula marginata</i>	TQ156211	On brickwork of culvert.	Frequent on damp walls.
Red Beard-moss	<i>Bryoerythrophyllum recurvirostrum</i>	TQ156211	On brickwork of culvert.	Frequent on bridges and similar structures by streams.
Tender Feather-moss	<i>Rhynchostegiella tenella</i>	TQ156211	On brickwork of culvert, fruiting.	Common on walls.
Beric Beard-moss	<i>Leptobarbula berica</i>	TQ156211	On brickwork of culvert.	Scarce on damp walls; only a handful of records across the county.
Slender Stubble-moss	<i>Gyrowesia tenuis</i>	TQ156211	On brickwork of culvert, with gemmae.	Frequent on damp sandstone and brickwork.
Thickpoint Grimmia	<i>Schistidium crassipilum</i>	TQ156211	On roof of small building near stream, fruiting.	Frequent and increasing; on walls etc.
Soft-tufted Beard-moss	<i>Didymodon vinealis</i>	TQ163209	On old ruin.	On walls and also on bare patches of soil in chalk grassland
Slender Mouse-tail Moss	<i>Isoetecium myosuroides</i>	TQ160212	At base of Oak; frequent.	Common, often abundant, on the base of larger trees in woodland.
Blueish Veilwort	<i>Metzgeria fruticulosa</i>	TQ160212	On Salix, with gemmae.	Frequent in wet woodland.
Showy Feather-moss	<i>Oxyrrhynchium speciosum</i>	TQ160212	On tree roots in alder carr.	Rare in very wet woodland on neutral to basic soil. Only a very few records from Sussex.
St Winifrid's Moss	<i>Chiloscyphus polyanthos</i>	TQ160212	On tree roots in alder carr.	Frequent by streams, particularly in the Weald.
Willow Feather-moss	<i>Amblystegium varium</i>	TQ160212	On tree roots in alder carr.	Rare on roots and decaying wood on ground in wet woodland, mainly in alder carr.
Hart's-tongue Thyme-moss	<i>Plagiomnium undulatum</i>	TQ160212	In alder carr; apparently uncommon.	A typical streamside species, often common.
Bruch's Pincushion	<i>Ulota bruchii</i>	TQ160212	On alder buckthorn in carr, fruiting.	A common epiphyte. Often misidentified as <i>U. crispa</i> and vice-versa.

English Name	Scientific Name	Grid Ref	Location and Frequency	Occurrence in Sussex
Larger Mouse-tail Moss	<i>Isoetecium alopecuroides</i>	TQ159212	On base of Ash; uncommon.	Frequent, particularly associated with ash.
Fern-leaved Hook-moss	<i>Cratoneuron filicinum</i>	TQ159212	On tree roots in carr. Also on damp tarmac drive nearer house.	Frequent in damp places.
Variable-leaved Crestwort	<i>Lophocolea heterophylla</i>	TQ159212	On rotting log.	Common on banks and logs.
Nicholson's Beard-moss	<i>Didymodon nicholsonii</i>	TQ156214	On tarmac drive.	Frequent on wet tarmac, less often on hard surfaces by streams
Heath Star Moss	<i>Campylopus introflexus</i>	TQ157214	On wooden jetty.	An introduced species, now abundant on heathland.
Whitish Feather-moss	<i>Brachythecium albicans</i>	TQ157214	On wooden jetty; locally abundant.	Common on acid soils such as heathland.
Slender Stubble-moss	<i>Gyrowesia tenuis</i>	TQ156217	On Ha-ha wall, with gemmae.	Frequent on damp sandstone and brickwork.
Lesser Bird's-claw Beard-moss	<i>Barbula sardoa</i>	TQ156217	On wall of house.	On gravel and sometimes on walls; occasional throughout Sussex.
Common Cord-moss	<i>Funaria hygrometrica</i>	TQ155218	In walled garden on soil, fruiting.	Ubiquitous on sites of bonfires and cultivated ground generally.
Marsh Bryum	<i>Bryum pseudotriquetrum</i>	TQ155218	In walled garden on soil.	Occasional in marshes but also in shaded damp areas.
Sessile Grimmia	<i>Schistidium apocarpum</i>	TQ155218	On shaded wall. Not fruiting so not confirmed.	In the current usage of the name, not yet recorded from Sussex. A western species.
Springy Turf-moss	<i>Rhytidiadelphus squarrosus</i>	TQ156218	In grassland; frequent.	A common grassland species.
Neat Feather-moss	<i>Pseudoscleropodium purum</i>	TQ156218	In grassland; uncommon.	Very common in short grassland.
Slender Bristle-moss	<i>Orthotrichum tenellum</i>	TQ15602209	On Ash; locally abundant, fruiting.	Frequent, particularly in the S of the county, and increasing.
Minute Pouncewort	<i>Cololejeunea minutissima</i>	TQ15602209	On Ash, fruiting.	Once a rarity, now common in southern parts of Sussex.
Dwarf Neckera	<i>Neckera pumila</i>	TQ15602209	On Ash; several patches.	Scarce epiphyte in W Sussex, almost unknown in E. Sussex.

## 2. Summary

The rewilding project at Knepp is going to result in some excellent habitat for mosses either being retained or created. The variety of habitats provides a rich diversity and the large number of species present, 89 detected in just 5 hours, suggests this will ultimately prove to be one of the richest sites in Sussex. Several rarities have been found already.

Although Sussex is well-worked generally for bryophytes, it would appear the Knepp Estate has been overlooked to a large extent. This survey has added no fewer than 24 new records for the 10 km grid square, TQ12 which is quite remarkable.

## 3. Recommended Books

For identification of the mosses and liverworts listed above, the Field Guide (Mosses and Liverworts of Britain and Ireland: A Field Guide) published by the British Bryological Society and obtainable through Amazon is helpful but confirmation requires further textbooks and a microscope and not all specimens can be named even then. The illustration of *Amblystegium varium* is taken from the online version of the Field Guide.

A hand lens (x8 or x10) is useful. One that is particularly recommended is made by Ruper, part number 3005 and is obtainable from the following website:

[http://www.ukge.co.uk/uk/product.asp?P\\_ID=4220&strPageHistory=search&strKeywords=FD3005](http://www.ukge.co.uk/uk/product.asp?P_ID=4220&strPageHistory=search&strKeywords=FD3005)

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