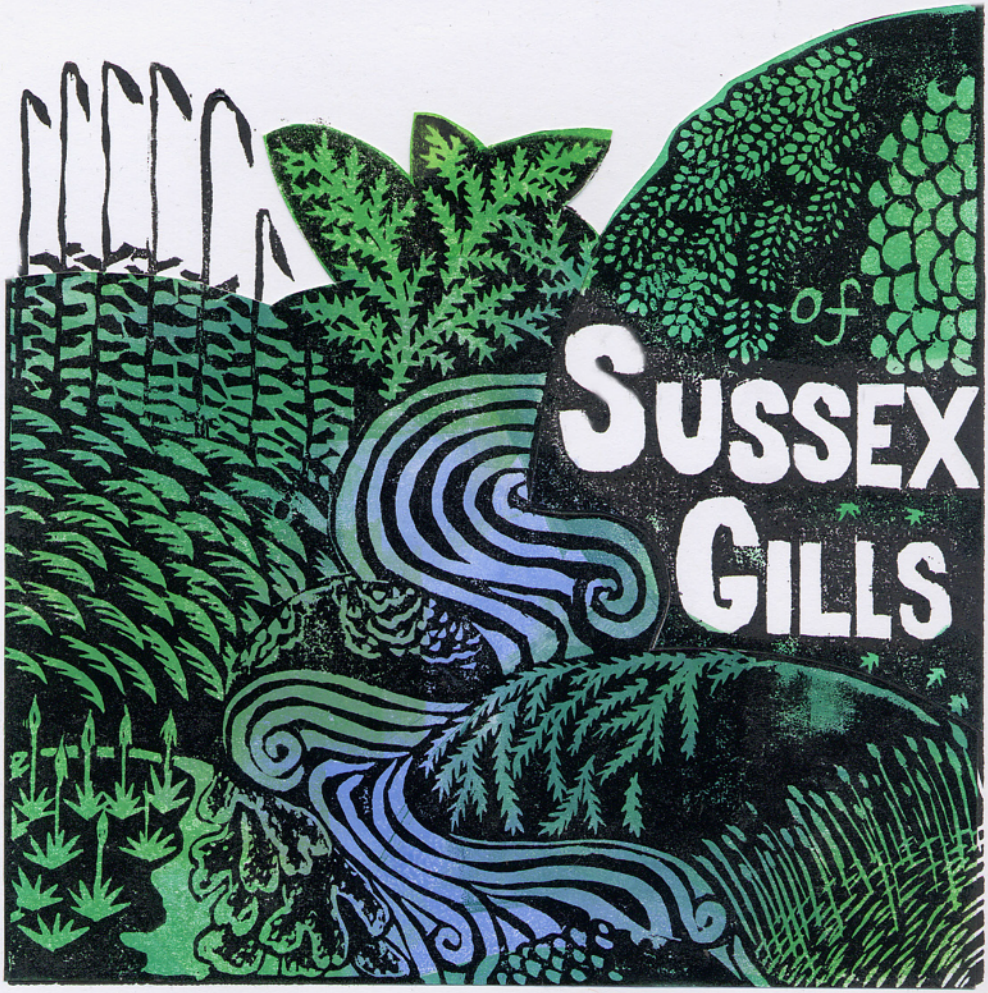
# MOSSES and LIVERWORTS



# Mosses and Liverworts

# of Sussex Gills: a field guide

As a contribution to Sussex University's **The River Ouse Project,** this guide has been produced as an aid to identifying the mosses and liverworts found in the gills of the Ouse catchment.

It contains descriptions, photographs and drawings of about 50 of the most characteristic species found in this habitat. It is possible to identify most of these in the field with the aid of a x10 hand lens but a few may need confirmation by microscopical examination. The text mentions where this is necessary. Another c. 100 rarer species may be found and may be included in future editions.

The species are presented in the same order as in *Mosses and Liverworts of Britain and Ireland: a field guide* (eds. Ian Atherton, Sam Bosanquet and Mark Lawley; British Bryological Society, 2010): leafy liverworts; thalloid liverworts; acrocarpous mosses and pleurocarpus mosses.


### Acknowledgments

| | |
|---|---|
| Text and layout | Jacqui Hutson |
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The Sussex University River Ouse Project (2014)

## Contents

# *Calypogeia fissa*

## Key points

- Shallowly notched leaves
- Cleft underleaves
- Occasional

### Plant

Appressed to substrate with shoots 1.5–3.5 mm wide with two rows of slightly overlapping, not-quite-opposite leaves held at 90° to the stem.

### Leaves

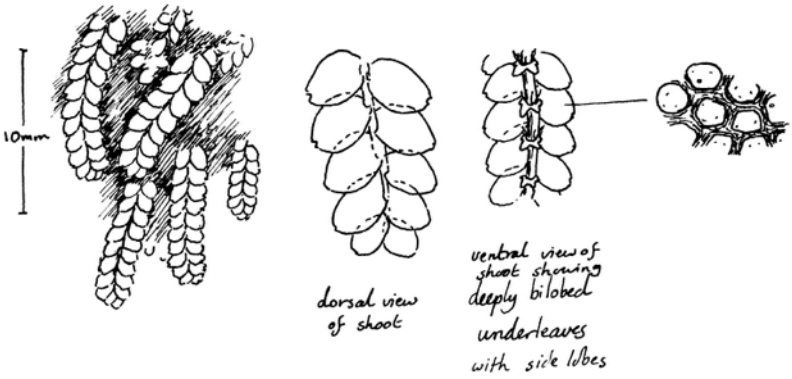
Incubous (arranged unlike tiles on a roof - so they let the rain *in*). Slightly less than 2 mm long and wide. Leaves may end with shallow notch. Underleaves deeply bilobed with an extra lobe on each side.

### Reproduction

Pale green gemmae sometimes present at shoot tip.

### Habitat

Acidic soil, rotting logs.



# *Calypogeia arguta*

## Key points

- Round/oval leaves with two short divergent points
- Leaves reducing in size towards tip of shoot
- Frequent

### Plant

Pale green, flat shoots 1–2.5 mm wide with well-spaced leaves.

### Leaves

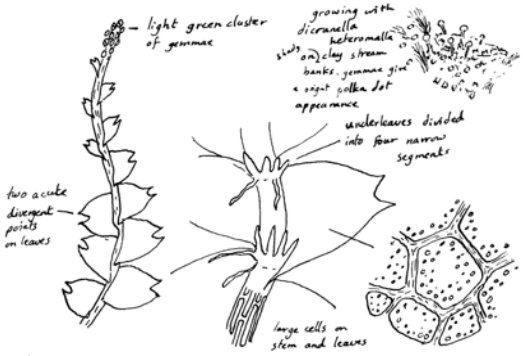
Incubous (arranged unlike tiles on a roof - so they let the rain *in*). About 1.2 mm long and 1 mm wide with pair of small divergent teeth at tip. Underleaves divided into four.

### Reproduction

Shoot tip often ends in mass of very pale gemmae.

### Habitat

Shaded, acidic soil, vertical clay or crumbly areas under overhangs and acidic rock faces.



# *Cephalozia bicuspidata*

## Key points

- Leaves with two sharp points
- Leaf-insertion runs diagonally across stem
- Frequent

### Plant

Dull, olive-green patches. Very small; shoots *c.* 0.5–1.5 mm wide.

### Leaves

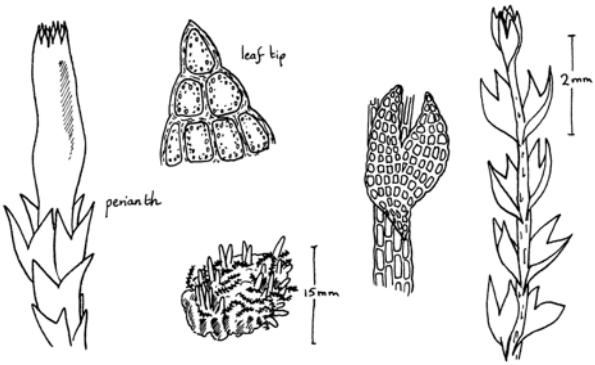
Translucent 2-lobed leaves less than 1 mm long and wide. Leaf insertion to mid-line. No underleaves.

### Reproduction

Often fertile with large female bracts that are sometimes toothed. Perianth long and often very pale. The perianth mouth is sharply toothed.

### Habitat

Acidic, on organic substrates as well as damp, inorganic mineral soil and damp rocks.



# *Diplophyllum albicans*

## Key points

- Often in spreading mats with frilled appearance
- Pale band along centre of lobes
- Occasional

### Plant

Shoots up to 3.5 mm wide and several cm long. Lies flat when moist but when dry leaves curl upwards and inwards over stem.

### Leaves

Divided into two lobes, which are long and round-tipped, up to 0.8 mm wide and 1.8 mm long with clearly visible band of colourless cells in the middle of each lobe. Lobes sometimes clearly toothed.

### Reproduction

Clusters of green gemmae often form on tips of leaf lobes. Male plants, perianths and capsules fairly frequent.

### Habitat

Acidic soil, rocks, logs, tree stumps and bases of living trees.


# *Scapania undulata*

## Key points

- Leaves with two lobes
- Looks swollen when wet as concave leaves overlap
- Frequent

### Plant

1.5–5-mm-wide shoots are often several cm long. Usually dark green but may be bright green, reddish or yellow-green; some forms in exposed places are bright purple. Very variable.

### Leaves

1-3 mm long, flaccid looking, rounded leaf lobes appressed to each other; a straight keel, an antical lobe that does not run down on to the stem and a larger postical lobe that does.

### Reproduction

Pale green 1-celled or 2-celled gemmae may be found on the tips or margins of the upper leaves. The perianth is broad and strongly compressed dorsiventrally.

### Habitat

In wet places, on rocks by streams, flushes, damp soil, sand or gravel on sides of streams.

# *Lophocolea bidentata*

## Key points

- Leaves bilobed
- Strongly aromatic
- Frequent

### Plant

Strongly aromatic, delicate, translucent, pale green shoots 2–4 mm wide and may be several cm long.

### Leaves

Conspicuously bilobed, *c*. 2 mm long. Lobes drawn out into narrow point. Underleaves bilobed with an additional extra tooth on each side.

### Reproduction

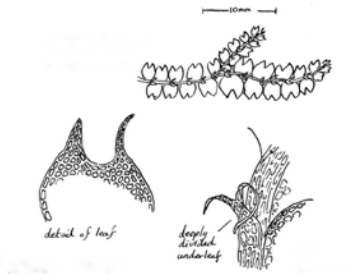
Often fertile with toothed perianths.

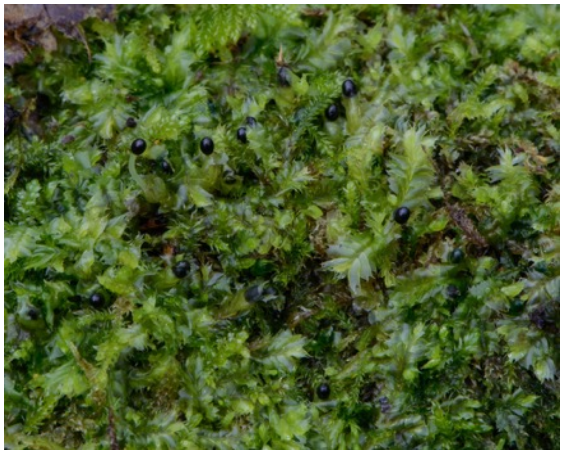
### Habitat

Stream banks, also on wood.

### Similar species

*Lophocolea heterophylla* has bi-lobed leaves lower on stem and entire leaves towards tip.



# *Lophocolea heterophylla*

## Key points

- Bilobed and rounded leaves
- Strongly aromatic
- Occasional

### Plant

Strongly aromatic, delicate, translucent, pale green shoots 1–3 mm wide and may be several cm long.

### Leaves

< 1.5 mm wide and long. Leaves bilobed on lower part of stem grading into slightly notched or entire leaves towards tip. Underleaves bilobed with additional lateral tooth on each side.

### Reproduction

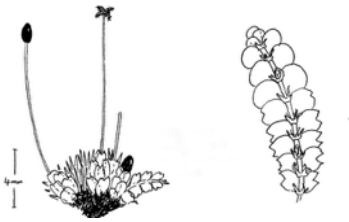
Often fertile with toothed perianths. Sometimes has gemmae on margins of leaves and bracts.

### Habitat

Base of trees, rotting logs, earth banks.

### Similar species

*Lophocolea bidentata* has bi-lobed leaves along entire length of shoot.



# *Chiloscyphus polyanthos*

## Key points

- Rounded leaves held flat
- Untidy growth form
- Frequent

### Plant

Shoots 1.5–4.5 mm wide, usually interwoven into a mat, often vivid green.

### Leaves

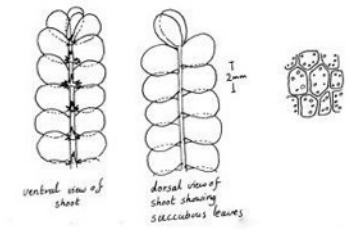
Succubous (arranged like tiles on a roof). Up to 2 mm long and wide, ± alternate, rounded, truncate or weakly indented with decurrent base. Underleaves hard to see in field.

### Reproduction

Perianth lobes undivided and hardly toothed.

### Habitat

On rocks in stream, flushes and wet ground.




### Similar species

*Plagiochila asplenoides* also has succubous leaves but has a tidier growth form.

# *Plagiochila asplenoides*

## Key points

- Robust
- Bright or pale green
- Occasional

### Plant

Robust stems up to 12 cm long and 5–9 mm wide, bright or pale green.

### Leaves

Succubous (arranged like tiles on a roof). Leaves are convex with translucent sheen, 2.5–4.5 mm wide, 3–4.5 mm long, lying close together in neat rows along each side of the stem and attached at an oblique angle.

### Reproduction

Rarely fertile.

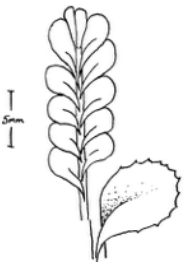
### Habitat

Damp banks.

### Similar species

*Plagiochila porelloides* is dark green and looks like a small *P. asplenoides.* Shoots up to 6 mm wide (choose widest you can find) but it needs to be checked microscopically. It is rare.

Right: photo of *P. asplenoides*
Below left: *P. asplenoides*
Below right: *P. porelloides*




# *Pellia epiphylla*

## Key points

- Often forms large mats
- Thallus 1 cm wide
- Common

### Plant

Often forms dense bands just above normal water level.

### Thallus

Thallus is 1 cm wide, sparingly branched, in various shades of green and rather featureless with a poorly defined mid-rib.

### Reproduction

The male organs are like tiny volcanoes in a broad line along line of midrib. The female organs are under flaps that are horizontal to start with but become vertical as perianth pushes through.

### Habitat

By streams on shady banks. Also on wet ground on neutral or acidic soil.


# *Metzgeria furcata*

## Key points

- Patches on trees
- Thallus forks at tips
- Common

### Plant

Forms yellowish green patches on trees.

### Thallus

Thallus is just over 1mm wide, and has a thick midrib. It forks at the tip. There is a line of hairs scattered along the margin and on the underside.

### Reproduction

Narrow gemmae infrequently present on margins.

### Habitat

On a wide range of trees and shrubs.

### Similar species

M. *fruticulosa/temperata* always have gemmae; on the tip of the thallus in the former species and on the margins of the latter species.

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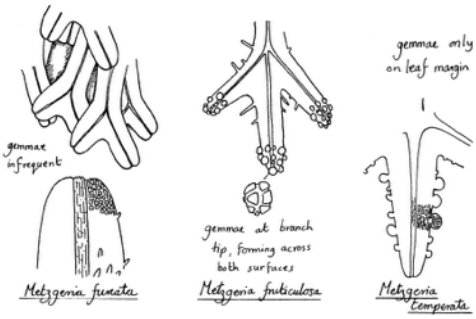


# *Lunularia cruciata*

## Key points

- Large branched thallus
- Pale green surface dotted with pores
- Occasional

### Plant

Pale green, shiny patches.

### Thallus

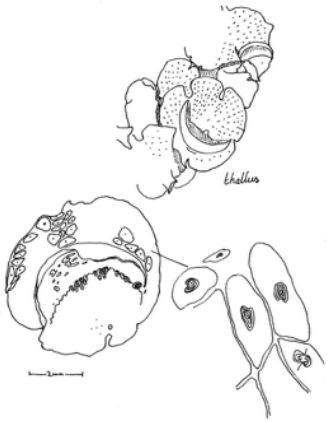
Thallus branches dichotomously and is up to 12 mm wide. Its shiny surface is dotted with conspicuous air pores.

### Reproduction

The crescent-shaped receptacles contain green disc-like gemmae. Capsules are rare.

### Habitat

Frequently near human habitation, along stream banks.




# *Conocephalum conicum*

## Key points

- Thallus large in extensive, dark green shiny patches
- Strongly aromatic
- Frequent

### Plant

Very conspicuous in extensive mats.

### Thallus

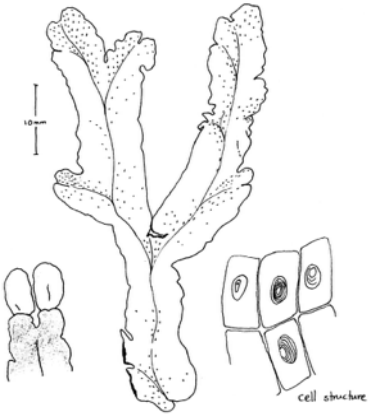
Up to 17 mm wide, strongly aromatic, flat, leathery, dark green and dichotomously branched. Surface is smooth and shiny with prominent but ungrooved network of lines and conspicuous air pores.

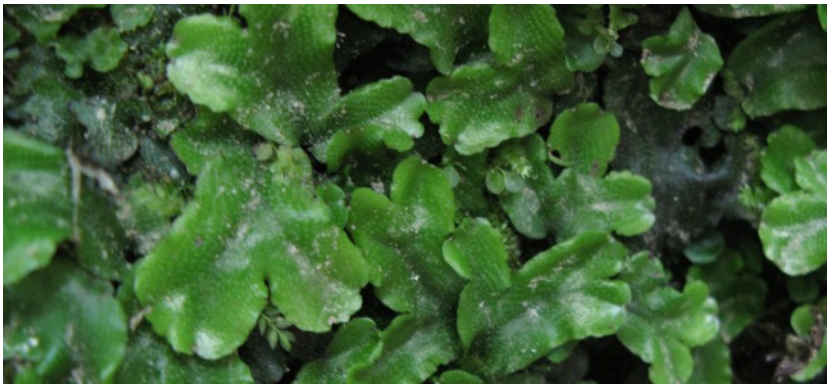
### Reproduction

Male plants have sessile, terminal cushions and fruiting female plants bear terminal, stalked, conical receptacles with short descending lobes.

### Habitat

Damp, shady rocks and soil by streams.



# *Pogonatum aloides*

## Key points

- Dull green aloe-like shoots
- Vivid green protonema
- Occasional

### Plant

Aloe-like shoots with leaves arranged in a rosette on short, stout, reddish stems. Shoots emerge from persistent, vivid green, protonemal felt.

### Leaves

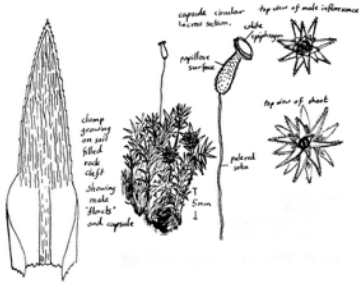
Crowded, dull dark green, 3–4 mm long with blunt multicellular marginal teeth along much of blade. Upper surface of leaf above colourless sheathing base is largely covered by longitudinally orientated, parallel plates of cells. Nerve ends in apex to slightly excurrent.

### Reproduction

Capsules common in autumn and winter on 1–4-cm red setae. They are upright and shortly cylindrical and the wall is very pale. The calyptra is densely hairy.

### Habitat

Bare. loose, shaded acidic soils and banks.



# *Polytrichastrum formosum (Polytrichum formosum)*

## Key points

- Stiff rosettes of leaves
- Narrow, colourless margins to leaves
- Frequent

### Plant

Erect, unbranched, scattered shoots in loose tufts, 5–10 cm tall.

### Leaves

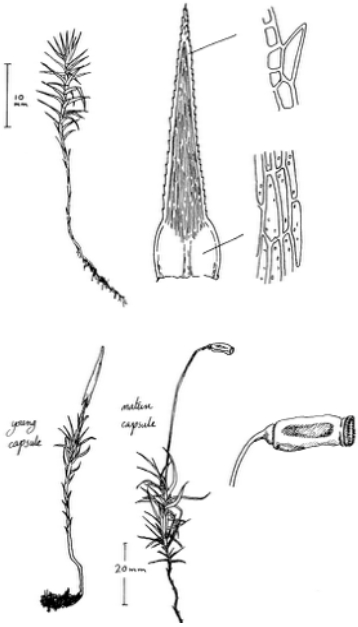
Bright, dark green, 1 cm long, straight. Spreading when moist but hug the stem, becoming waxy and duller when dry. The spreading, triangular, narrow limb extends to form a matt, colourless, sheathing base. Narrow, colourless margins are toothed and become inrolled as the leaf dries out.

### Reproduction

Capsules are (4-) 5–6-angled, erect to inclined, rather rectangular with a 2-mm-long lid; borne on 2.5–6 cm setae, yellowish above, red below. Capsules are frequent and covered by calyptra when mature.

### Habitat

On banks in woods, on soils from strongly acidic to nearly neutral.




# *Atrichum undulatum*

## Key points

- Delicate leaves, which shrivel easily
- Undulate leaves
- Common

### Plant

Robust, loosely tufted and can form extensive patches; dark green but more yellow when well lit. Stems erect, unbranched and up to 7 cm long.

### Leaves

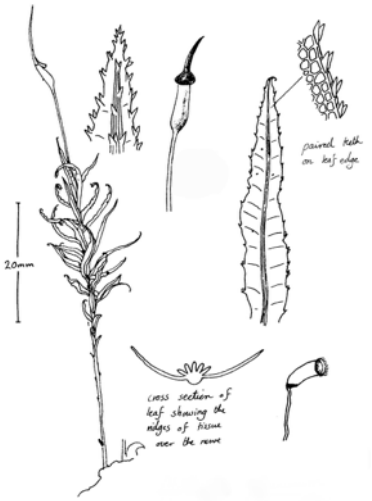
Long, narrow, pointed up to 1 cm long with transverse undulations when moist and strongly crisped when dry. Paired teeth on margins from near base. Nerve ends in leaf tip.

### Reproduction

Capsules frequent in the common variety *undulatum*. Inclined, cylindrical, 3–4 mm long with lid and beak of similar length. Reddish seta 2–4 cm long.

### Habitat

Common in lowland woods in shaded, well-drained places.




# *Dichodontium pellucidum*

Key points

- Dense green
- Leaves widely spaced on stem
- Occasional

## Plant

Usually in lax, bright green cushions or turfs, 5 mm–2 cm tall.

## Leaves

Leaves incurved and shrunken when dry, spreading and reflexed when moist. Typically 1.5–2.5 mm long, 2.5 to 4 times as long as wide, spearhead- or egg-shaped, narrowing to an acute or blunt tip, which is usually coarsely toothed but sometimes difficult to see in the field. The nerve is stout and toothed at the back near the tip and the cells in the upper surface of the leaf have a very rough surface visible with a hand lens.

## Reproduction

Capsules uncommon, egg-shaped and curved, 1–2 times as long as wide.

## Habitat

On gravel and silted rocks by streams.

# *Dicranella heteromalla*

## Key points

- Bright mid-green cushions or patches
- Long, narrow, curved leaves
- Common

### Plant

Dense mid- to dark green silky cushions or patches up to 3 cm tall but often smaller.

### Leaves

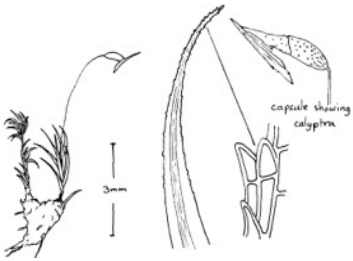
More or less curved, 3–3.5 mm long, pointing in one direction when moist and hardly altered when dry. Leaf-base egg-shaped and tapers to a long, fine, channelled, toothed point. The nerve occupies about 30% of the leaf base, most of the tip and is often excurrent.

### Reproduction

Capsules common, horizontal or inclined, elliptical and not swollen at base. Yellow seta browns with age.

### Similar species

*D. rufescens* has reddish stems and is a pioneer species of acidic soil by streams. Classic gill species.




### Habitat

Acidic woodland banks, tree stumps and roots.

# *Fissidens pusillus*

## Key points

- Minute flattened shoots
- On rocks
- Frequent

### Plant

Shoots 1–1.5 mm wide; fertile shoots 1.5–6 mm long with up to 10 pairs of leaves.

### Leaves

Bordered with an acute tip that has straight sides.

### Reproduction

Capsules erect and symmetrical, on red setae arising terminally on shoot. Late summer to spring.

### Habitat

On rocks in streams.

# *Fissidens celticus*

## Key points

- Minute, flattened shoots
- Shoots with many equal leaves
- Rare

### Plant

Shoots up to 4.5 mm tall and 1–1.5 mm wide. Shoots have numerous leaves (often 10 pairs or more) of equal size so that the shoots are parallel-sided (like a palm frond).


### Leaves

Unbordered and nerve runs all the way to leaf tip and may protrude slightly. Nerve has a distinct bend about halfway along (also in other species but not so well marked).

### Reproduction

Only female plants known and capsules are not produced.

### Habitat

Shaded, acidic soil banks by woodland streams. It favours bare patches that have been eroded by flood water but which are compact rather than crumbling.

# *Fissidens bryoides*

## Key points

- Flattened shoots with leaves in two ranks
- Border at edge of leaf
- Frequent

### Plant

Dark green patches. Shoots 3–20 mm long and flattened with 3–10 pairs of leaves arranged in two ranks.

### Leaves

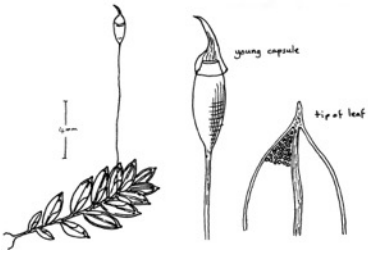
Oblong to lanceolate, 3–5 times as long as wide, with pale, glistening borders composed of long, narrow, thick-walled cells. Nerve extends beyond the tip.

### Reproduction

Capsules frequent, 1 mm long and erect with the seta arising terminally on the shoot.

### Habitat

Soil, favouring mildly acidic substrates.




# *Fissidens taxifolius*

## Key points

- Flattened shoots with leaves in two ranks
- Unbordered leaf with excurrent nerve
- Frequent

### Plant

Light green to reddish-brown patches. Shoots up to 2–3 cm long, branching from base.

### Leaves

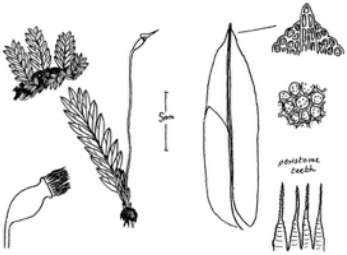
Numerous, lingulate-lanceolate with margins unbordered, crenulate or serrulate, sometimes finely so. Strong nerve extends to tip or beyond.

### Reproduction

Capsules occasional to frequent, arising in axils near base of main branches, horizontal with red setae and bright red peristome.

### Habitat

Basic to acidic soil, especially clay, and roots.




# *Didymodon insulanus*

## Key points

- Like a Catherine wheel when moist
- Leaves curled and twisted when dry
- Occasional

### Plant

In loose patches or tufts, with shoots 0.5–3 cm tall, olive-green and often brownish on the lower part.

### Leaves

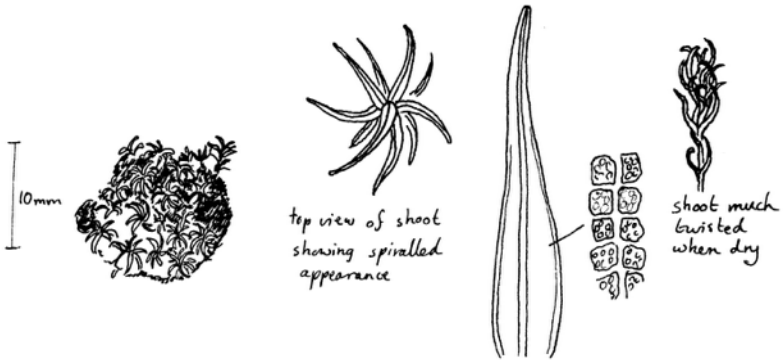
Narrow upper leaves are 3–4 mm long and longer than lower leaves, with a long tapering tip. Each curves to one side when moist giving the shoot the appearance of a Catherine wheel when viewed from above. Margins recurved.

### Reproduction

Erect, cylindrical capsules are very rare in spring and are borne on wavy setae.

### Habitat

Usually on soil, roots or bridges.



# *Mnium hornum*

## Key points

- Dark older leaves
- Fresh green younger leaves
- Common

### Plant

Dull, dark green; upright stems 2–4 cm tall.

### Leaves

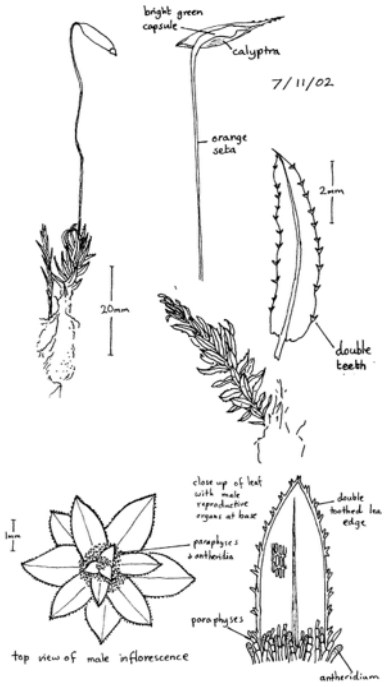
Typically 4 mm long but can be 8 mm towards tip of shoot and have a double-toothed border of long narrow cells. Lower part of stem has small, narrowly triangular leaves. Nerve ends a little below tip of leaf.

### Reproduction

Capsules frequent, 5 mm long on 2.5–5 cm setae. Lid narrows abruptly into a very short point.

### Habitat

On acidic soil, logs, rocks and tree bases.




# *Rhizomnium punctatum*

## Key points

- Round, bordered leaves
- Large cells visible with hand lens
- Frequent

### Plant

Erect shoots, 1–10 cm tall. Tufts of large rhizoids arise from leaf axils and form a dark felt on lower part of shoot. Damp substrates often covered with a greenish-brown, algal-like felt from which small, sparse, leafy shoots arise.

### Leaves

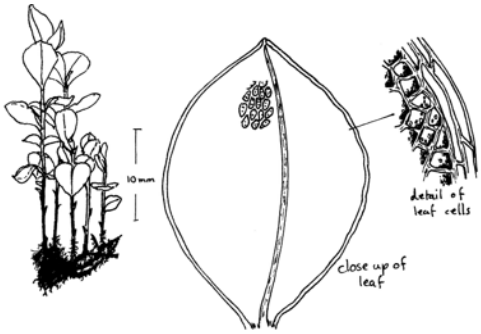
5–6-mm-long leaves are broadly elliptical to egg-shaped but widest above the middle, with a differentiated border of elongated cells that lack teeth. The nerve ends shortly below the tip.

### Reproduction

Capsules frequent in autumn and winter, *c*. 4–5 mm long with a beaked lid. Seta 2–3 cm long.

### Habitat

On damp or wet soil, rock and rotting wood in acidic to base-rich habitats.



# *Plagiomnium undulatum*

## Key points

- Branched like a tiny tree
- Tongue-shaped,undulate leaves
- Frequent

### Plant

Stems may be 15 cm long and branched like a tiny tree. Stunted forms are less distinctive and, in spring, shoots with immature, pointed leaves can be confused with other species.

### Leaves

Tongue-shaped, undulate, 2–5 mm long with the base decurrent. Nerve runs to the tip of the leaf.

### Reproduction

Capsules infrequent but occasionally abundant with several growing from one shoot; 5 mm long on 3-cm setae.

### Habitat

Common on base-rich or neutral soil.

### Similar species

*Plagiomnium affine* and *Plagiomnium rostratum* have larger cells and other differences.

# *Hookeria lucens*

## Key points

- Looks like large liverwort but leaves not in two ranks
- Large oval, translucent, overlapping leaves
- Rare

### Plant

Shoots 2–6 mm long, pale or bright green and somewhat flattened.

### Leaves

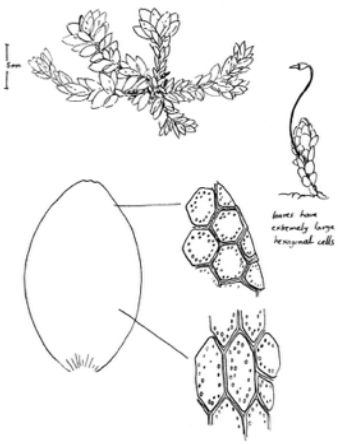
5 mm long, 3 mm wide, rounded at tip. Brittle and overlap like fish-scales. Have enormous hexagonal cells extending to margins. There is no nerve.

### Reproduction

Capsules quite common, dark brown, on setae *c.* 2 cm tall and carried horizontally or sloping slightly downwards.

### Habitat

Shaded, humid sites in flushes on woodland banks and streamsides.




# *Neckera complanata*

## Key points

- Looks like a ruff on trees or walls
- Tends to curl up from substrate
- Occasional

### Plant

Pale yellow-green shoots up to 5 cm long, rather rigid and fan-like. Thread-like shoots usually present and often numerous.

### Leaves

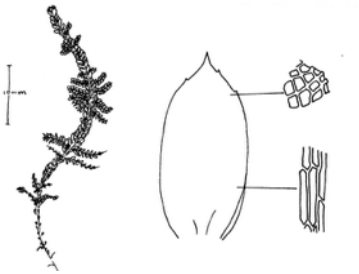
Smooth, < 2 mm long with a rounded tip that contracts suddenly into a short point. Very short double nerve.

### Reproduction

Capsules uncommon.

### Habitat

Shaded walls and bases of ash trees.



# *Thamnobryum alopecurum*

## Key points

- Tree-like form
- Main stems rather wiry
- Frequent

### Plant

Tree-like form, 3–6 cm tall.

### Leaves

Stem leaves < 2 mm long, triangular and scale-like; branch leaves dark green, 1.5–2.5 mm long, egg-shaped with acute tip and coarse teeth. Nerve is very robust.

### Reproduction

Capsules very occasional.

### Habitat

On rocks and tree roots by streams. Also on base-rich soil in drier, shaded places.


# *Thuidium tamariscinum*

## Key points

- Usually tripinnate
- Fern-like
- Common

### Plant

Bright, matt green, usually tripinnate shoots, 5–25 cm long, forming loose mats. Branches arranged in ± one plane and become shorter towards the tip of the shoot. The green or red-brown stems are covered with tiny, branched filaments.

### Leaves

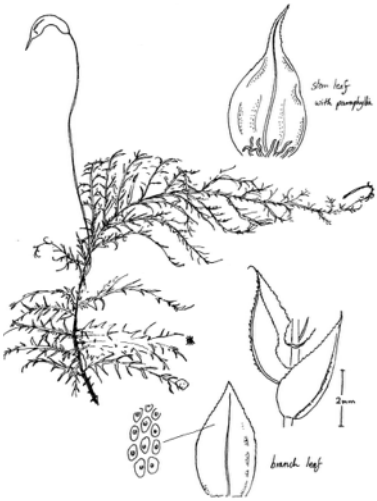
Stem leaves broad, heart-shaped or triangular, opaque, longitudinally ridged, acute-tipped *c*. 1.25 mm long. Branch leaves narrower and up to 0.5 mm long. The nerve is broad and almost reaches the leaf tip.

### Reproduction

Capsules uncommon, autumn and winter, large and curved on 2–4-cm purple-red setae.

### Habitat

On soil in woodland, on clay banks. More typical of neutral conditions than of strongly calcareous or strongly acidic sites.



# *Cratoneuron filicinum*

## Key points

- Slender, spiky-looking shoots
- Stem with dense, reddish-brown rhizoids
- Occasional

### Plant

Pinnate shoots, 1–3 cm long with a rather pale tip. Have a spiky look and branches may look hooked. Stem bears red-brown rhizoids and may have tiny, leaf-like structures, although these may be sparse and confined to upper parts of shoots.

### Leaves

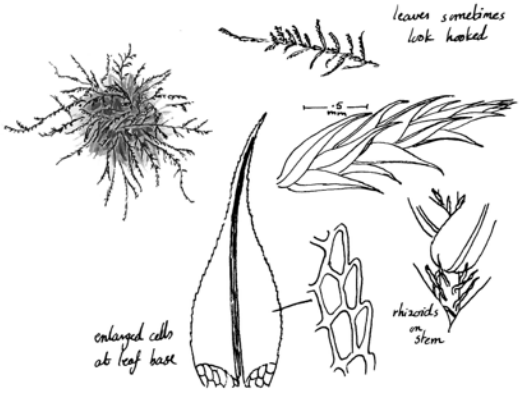
1 mm long and straight or slightly or strongly curved, Stem leaves triangular, broadest just above base and taper evenly to a fine, acute tip. Branch leaves narrower, broadly spear-shaped to egg-shaped. Nerve is stout and prominent all the way to the tip.

### Reproduction

Capsules uncommon.

### Habitat

Wet stream banks and damp rides.



# *Amblystegium serpens*

## Key points

- Soft green, untidy patches
- Leaves narrowly egg-shaped with tapering tip
- Occasional

### Plant

Patches of 1–2-cm long,slender, irregularly branched shoots.

### Leaves

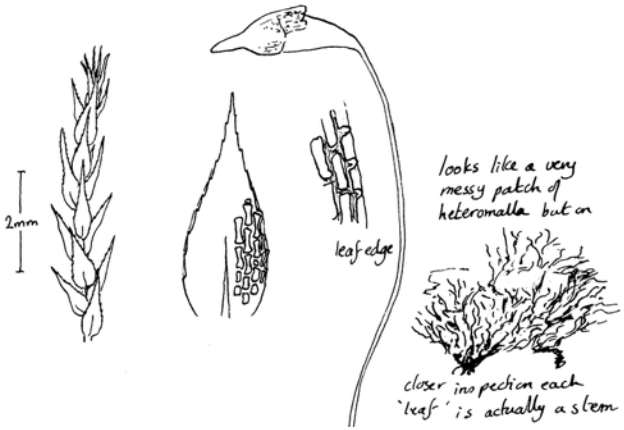
Stem leaves 0.5 mm long, erect or erect-spreading, narrowly egg-shaped with a tapering tip. Often narrowed at mid-leaf. Branch leaves similar but smaller and narrower. Nerve almost absent or single and not extending beyond mid-leaf.

### Reproduction

Capsules common, to about 2 mm long, curved and cylindrical, with white calyptrae. On long setae.

### Habitat

Moist or sheltered places on living and dead wood, often elder. Also on stones and soil on banks, beside streams.



# *Isothecium myosuroides*

## Key points

- Tree-like, often forming downward-growing mats
- Leaves with long apices
- Common

### Plant

Tree-like growth form. Main stems grow away from substrate, unbranched in lower part and bushy above. Often in pure, dense mats on inclined or vertical surfaces with stems and branches curving downwards.

### Leaves

Stem leaves towards base of stem *c.* 2 mm long, egg-shaped-triangular, rapidly contracting to a finely tapering tip. Branch leaves 1–1.5 mm long, narrower, triangularly spearhead-shaped, tapering to a shorter, slender, sharply toothed tip. Single nerve ceases at mid-leaf.

### Reproduction

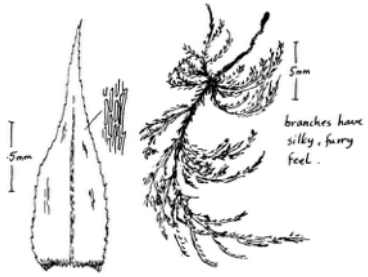
Capsule is 2–2.5 mm long, frequent in some regions, elliptical, slightly asymmetrical and inclined. The lid has a long beak.

### Habitat

Tree bases.

### Similar species

*I. alopecuroides* is larger, pale in colour and has shortly pointed leaves. It is common on the base of Ash trees.



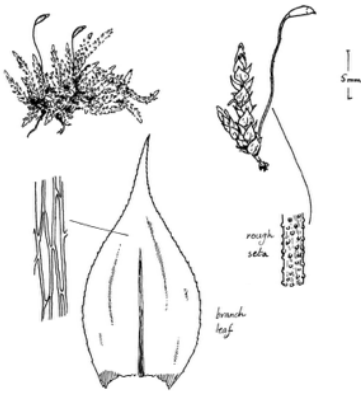
# *Brachythecium rutabulum*

## Key points

- Glossy shoots with widely spreading leaves
- Nerve ceases well below tip of leaf
- Common

### Plant

Loose patches with irregular, ascending or erect branches; shoots to 12 cm long. Glossy, often with pale, shiny tips to shoots.




### Leaves

Spreading, ovate or ovate-cordate, tapering to acute or acuminate apex. Stem and branch leaves similar, up to 2–3 mm long. Margins finely toothed. Sometimes weak, longitudinal pleats present. Nerve ceases well below tip of leaf.

### Reproduction

Capsules common, late autumn to spring, curved, egg-shaped with conical lid and rough setae.

### Habitat

On wood and stones, on soil, in shade or open.

### Similar species

See note under *Brachythecium rivulare.*

# *Brachythecium rivulare*

## Key points

- Leaves less widely spreading than *B. rutabulum*
- Leaves strongly plicate with decurrent margin
- Frequent

### Plant

Usually bright golden-green, robust, creeping with secondary shoots. Up to 12 cm long.

### Leaves

Stem leaves *c.* 2–2.5 mm long, broadly to narrowly egg-shaped, concave, plicate. Margins finely toothed. Clearly marked, colourless patches of cells in basal angles, which run down on to the stem. Nerve extends above mid-leaf.

### Reproduction

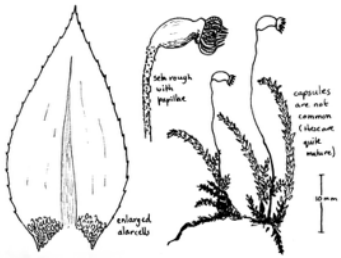
Capsule inclined, ovoid, asymmetrical, on rough seta. Rare, autumn to spring.

### Habitat

On rocks, logs and tree boles in and by fast-flowing streams.

### Similar species

*Brachythecium rutabulum* has leaves that stand out from the stem more markedly. Not always possible to distinguish between these two in the field: check leaves of main stems microscopically for alar cells – enlarged and hexagonal in *B. rivulare*, rectangular in *B. rutabulum*.




# *Platyhypnidium riparioides*

## Key points

- Shoots flattened at tips
- Leaves wide, flat, toothed, acute
- Occasional

### Plant

In clean water forms patches of erect, unbranched shoots 10 cm long or more with older parts of the stem becoming denuded. In small and polluted streams it occurs as small, scruffy shoots. Shoot tip looks broad and flat.

### Leaves

1.5–2.5 mm long, broadly egg-shaped, narrowed at base, broadly pointed at tip and standing out from stem when moist or dry. Margins finely toothed. The nerve is long and single.

### Reproduction

Capsules are 2 mm long and often present. Lid has beak about 2 mm long and seta is smooth.

### Habitat

Submerged or semi-submerged for at least part of the year on stones, tree roots and wood. Grows best in running water.

# *Eurhynchium striatum*

## Key points

- Stiff and bushy
- Leaves with longitudinal pleats
- Frequent

### Plant

Large cushions or mats of pale or yellow-green shoots, ± pinnately branched and looking rigid with straight stems and branches.

### Leaves

Spread widely and hardly alter when dry, up to 1.5–2 mm long. Triangular, narrowed and heart-shaped at point of attachment, with acute tips. Margins are finely toothed and leaf surface is plicate. Nerve extends beyond mid-leaf.

### Reproduction

Capsules occasional, with beaked lid.

### Habitat

- On ground and around stones. Characteristic of old woodland.


# *Kindbergia praelonga (Eurhynchium praelongum)*

## Key points

- Very widely inserted stem leaves
- Branch leaves smaller than stem leaves
- Common

### Plant

Regularly branched, pinnate shoots, typically 1–3 cm long, ± triangular. Robust woodland forms have bipinnate to tripinnate branching patterns and are larger.

### Leaves

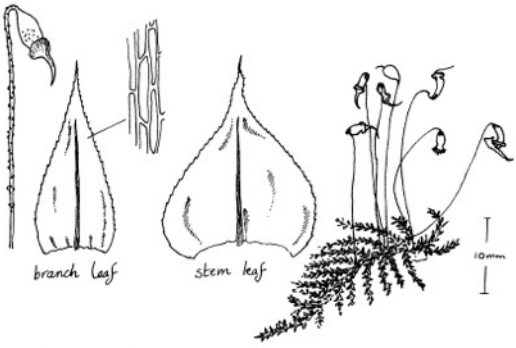
Stem and branch leaves are finely toothed but markedly different. Stem leaves 1–1.5 mm long, triangularly heart-shaped with fine elongated tip, which often turns outwards. They are widest just above base but narrow abruptly to clasp and run down stem a little distance. Leaves at shoot tip are crowded and spread outwards. Branch leaves are *c.* 1 mm long, egg-shaped with a shorter tip and no obvious clasping base. The nerve is single and extends beyond mid-leaf.

### Reproduction

Capsules occasional, especially in woods, 2 mm long with a beaked lid.

### Habitat

On soil, logs and tree bases.



# *Oxyrrhynchium hians*

## Key points

- Yellowish
- Leaves spread away from stem and are widely spaced
- Occasional

### Plant

Variable. Yellow-green, prostrate with straggling stems and widely spaced branches or dense, dull green patches. Branches usually spread widely from main stems, which are 1–4 cm long.

### Leaves

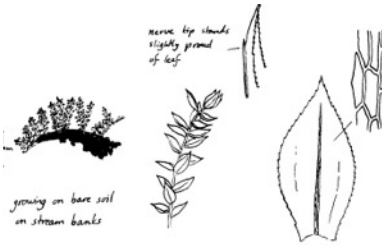
Stem leaves 1–1.5 mm long, spread away from stem and widely spaced, broadly egg-shaped with finely toothed margins and a broadly pointed to tapering tip. Branch leaves narrower and acutely pointed but not drawn out to a fine tip. Nerve is single, strong, extends beyond mid-leaf and seems to stop suddenly.

### Reproduction

Capsules rare, curved and oblong with a beaked lid and rough seta.

### Habitat

Bare soil on stream banks.




# *Plagiothecium succulentum*

## Key points

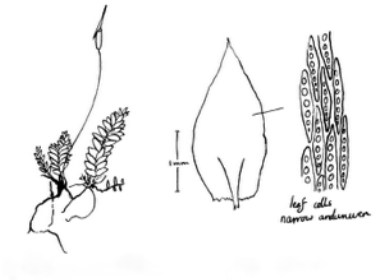
- Glossy, flattened shoots
- Weak nerve
- Common

### Plant

Golden-green, glossy shoots, sparsely branched and arranged in one plane.

### Leaves

2.0–3.2 mm long, moderately to strongly shrunken when dry, spreading when moist, symmetrical. Leaf cells are very long and overlap one another. Weak, double nerve may reach mid-leaf.




### Reproduction

Capsules occasional, inclined, cylindrical, curved, ± smooth when dry with conical lid.

### Habitat

On banks and tree bases.

### Similar species

*Plagiothecium nemorale* is darker green, also has flattened shoots but the leaf cells are in rows and do not overlap.

# *Plagiothecium nemorale*

## Key points

- Dull, flattened shoots
- Weak nerve
- Occasional

### Plant

Dull dark green patches, sparsely branched and arranged in one plane.

### Leaves

1.8–3.0 mm long, shrunken when dry, spreading, symmetrical, more or less ovate, acute. Leaf cells in more or less transverse rows, scarcely overlapping. Weak, double nerve may reach mid-leaf.

### Reproduction

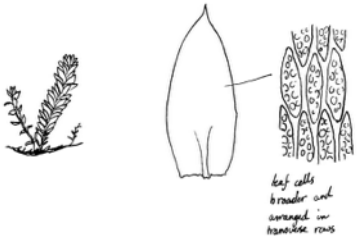
Capsules occasional, cylindrical, curved ± smooth when dry, with a beaked lid.

### Habitat

On banks and tree bases.

### Similar species

*Plagiothecium succulentum* is glossy golden-green, also has flattened shoots but the leaf cells are in not in transverse rows and overlap.




# *Pseudotaxiphyllum elegans (Isopterygium elegans)*

## Key points

- Slender shoots in sleek mats
- Shoots flattened
- Common

### Plant

Forms sleek mats with shoots up to 3 cm long, sparingly branched and *c.* 2 mm wide, flattened.

### Leaves

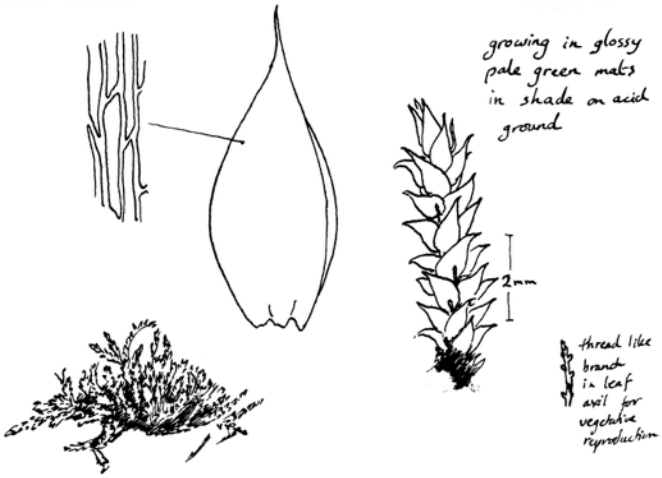
Just over 1 mm long and gradually taper to a fine point. Nerve is very short and double or absent.

### Reproduction

Capsules are rare but vegetative propagules in the form of very slender, easily detached branchlets form in the leaf axils and are sometimes abundant.

### Habitat

Acidic, shady banks and tree roots.



# *Hypnum cupressiforme*

## Key points

- Concave curved leaves overlap like a cupressus branch
- Capsule with beak
- Common

### Plant

Irregularly branched, slender to medium-sized shoots, typically 2 cm long, green or tinged with warm brownish colour in older parts.

### Leaves

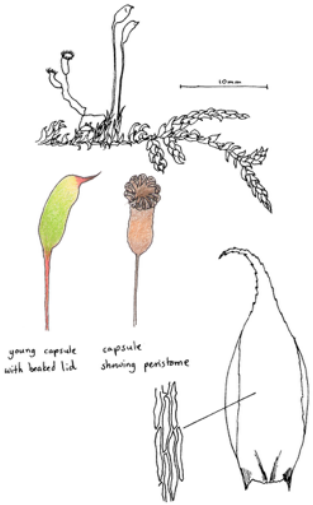
Curved, 1–2 mm long, tapering to a long fine point. Nerve absent or very short and double.

### Reproduction

Capsules frequent in autumn, 1.7–2.4 mm long with beaked lid 0.6–0.9 mm long.

### Habitat

On acidic or slightly base-rich bark and siliceous rock.




# *Hypnum andoi*

## Key points

- Leaves strongly curved towards underside of shoot
- Capsule mamillate
- Frequent

### Plant

Irregularly branched, yellow-green to dull green, up to 1.5 mm wide but often very slender, especially on steep surfaces.

### Leaves

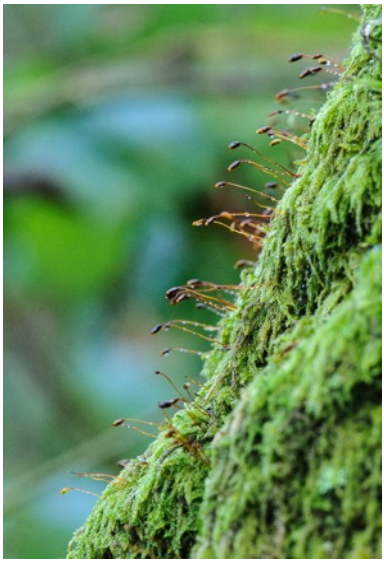
0.75–1.75 mm long, strongly curved towards underside of shoot and taper gradually to a fine point. Nerve is very short and double, or absent.

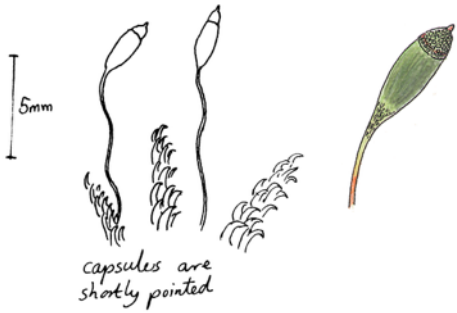
### Reproduction

Capsules occasional to frequent in autumn, 1.6–2.4 mm long with very shortly pointed lid 0.41–0.57 mm long.

### Habitat

Locally abundant on acidic bark and rock in shade.





# *Hypnum resupinatum*

## Key points

- Dark green
- Leaves stick up from substrate
- Occasional

### Plant

Shoots slender, dark green (or olive green), silkier than other *Hypnum* species, *c*. 2 cm long.

### Leaves

1–1.5 mm long, most pointing up from stem, straight or with weakly curved tips, ovate or ovate-lanceolate, gradually tapering from ¼ to ½ from base to ± abruptly narrowed to apex. Nerve very short and double or absent.

### Reproduction

Capsules erect, straight or slightly curved; body 1.1–2.2 mm long with beaked lid 0.83–1.17 mm long.

### Habitat

Mainly on trees. Calcifuge.