

A GUIDE TO LEAFY LIVERWORTS COMMON IN THE NW

(NB *do not use this key* without first reading the **INTRODUCTORY GUIDE** available from the same source. Note that this guide is a **DRAFT** version subject to correction)

Last revised 17.09.08

1. Plants with irregularly divided leaves, very often with the appearance of miniature (1cm dia.) lettuces. Purple rhizoids (“roots”) invariably present

● ***Fossombronina* spp.**

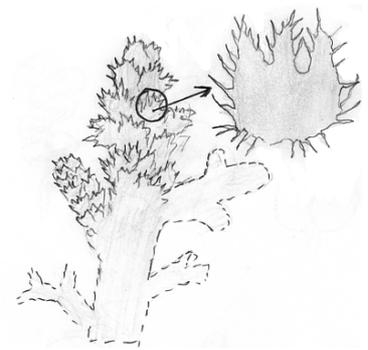
There are two common species, *F.pusilla* and *F.wondraczekii*. Microscopic examination of the spores is necessary for their determination.



Fossombronina is strictly speaking a thallose rather than “leafy” liverwort, but included here because superficially more like the latter.

2. Plants with lobed leaves much divided into filaments

- ***Ptilidium ciliare*** on stone or among grass etc on soil. Rarely on tree bark.
- ***P.pulcherrimum*** is very similar but almost always grows on tree bark. The leaves are more deeply divided, to well over half way (It is difficult to judge this without isolating a leaf: breaking or bending the stem may help).

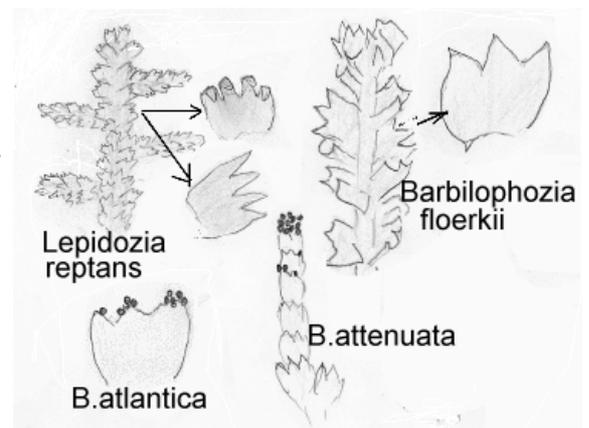


3. Leaves (at least some) divided into three or four lobes

- ***Lepidozia reptans*** Leaves with four lobes. This is not always obvious since the leaf lobes are usually folded down and the plant is small. However the right-angle branching is a good indicator of this species.
(The following species have mostly 3-lobed leaves, though a few leaves may be 2-lobed)

- ***Barbilophozia floerkii*** never has gemmae
- ***B.atlantica*** usually has some bright red gemmae at the tips of the leaf lobes (which are often eroded)
- ***B.attenuata*** has red gemmae at the tips of attenuated branches (like little vertical sticks) with closely appressed leaves

B.floerkii is normally larger than the other two species but plants without gemmae can be difficult to determine without microscopic examination.



4. Leaves (at least some) divided into two lobes, all in one plane.

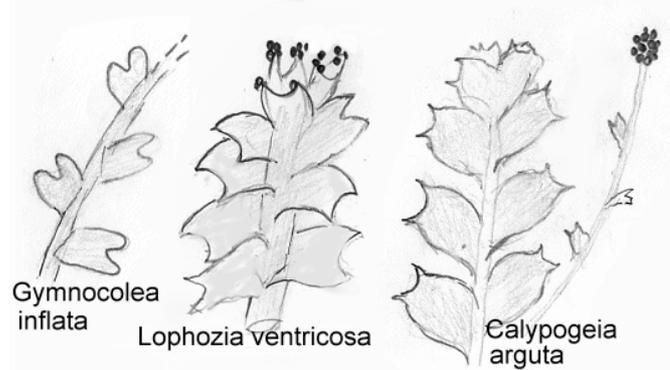
(If one (smaller) leaf lobe is strongly bent out of the plane of the rest of the leaf, or lies flat against it, go to following section)

● ***Gymnocolea inflata*** Leaf lobes rounded at the tip.

● ***Lophozia ventricosa*** Upper leaves with clusters of light green gemmae at the tips. (The leaves are inserted almost horizontally on the stem so this species usually looks less flat than most leafy liverworts)

● ***Calypogeia arguta*** Leaves with divergent lobes (“Cat’s ears”). Stick-like stems bearing rudimentary leaves and round clusters of gemmae at the tip very often present.

(If gemmae-sticks are present but leaves without divergent lobes see other *Calypogeia* species in next section.)



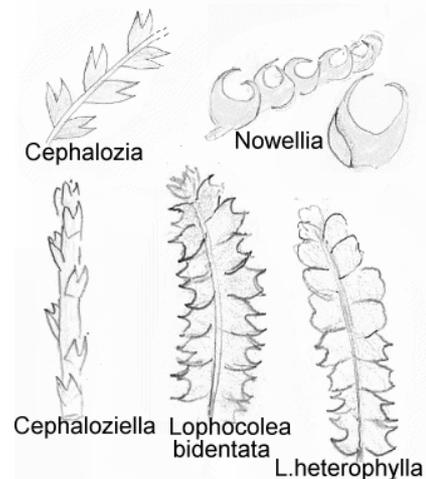
● ***Cephalozia bicuspidata*** Plants minute, with shoots up to 1.5 mm wide (often much less). Leaves flat, lobes acute but not finely drawn-out.

(*Cephaloziella* spp. are even smaller, with shoots up to 0.5 mm wide and leaves hardly wider than the stem thickness. Difficult to name to species level).

● ***Nowellia curvifolia*** Similar in size to *Cephalozia bicuspidata*, but leaves with one side folded-up, and with finely drawn-out tips to the lobes. Nearly always on old rotten logs, often conspicuous by virtue of its red colour but sometimes green.

● ***Lophocolea bidentata*** is larger, with shoots normally >2mm wide

● ***Lophocolea heterophylla*** is similar in size to *L. bidentata* but only the lower leaves are bilobed, the upper being entire or slightly indented.



Lophocolea and *Cephalozia* are normally very different in size but occasional miniature *Lophocolea* plants are deceptive. A useful character is the large leaf cells of *Cephaloziella* - clearly visible with a good lens. With experience, the different leaf shape is also helpful.

5. Leaves bilobed but with one, smaller, lobe folded over flat against the other so that leaves at first sight appear unlobed

(In some cases the two lobes may gape rather than one lying flat against the other, but the leaf is always strongly folded, never flat as in the last section. Small plants with *obviously* lobed leaves, the lobes finely pointed, are likely to be *Nowellia curvifolia* see above).

In the drawings following L indicates view of LOWER side of leaf or plant; “lower” side means that nearest the ground, tree bark etc

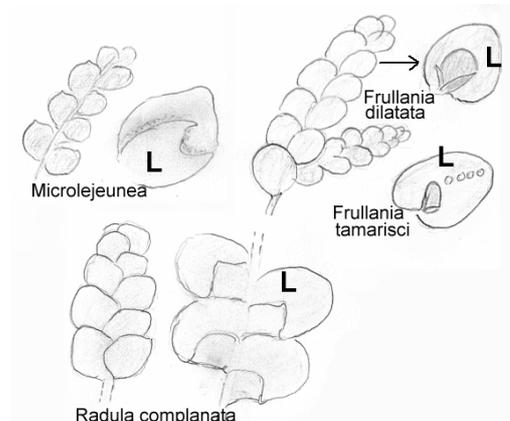
5a In the following four species the smaller lobe is folded against the LOWER surface of the larger:

● ***Microlejeunea ulcina*** plants minute, shoots less than 0.5 mm wide, forming patches on bark.

● ***Frullania dilatata*** smaller lobe helmet shaped. Perianths when present warty. On bark. Red or green, rather dull.

● ***Frullania tamarisci*** similar but helmets smaller, and at least some leaves with a row of translucent dots. Perianths when present smooth. Usually red, rarely green, fairly glossy. Much scarcer than *F. dilatata*.

● ***Radula complanata*** On bark, resembling green *Frullania* in top view but smaller lobe rectangular rather than helmet-shaped; an upside-down version of *Scapania* (see below).

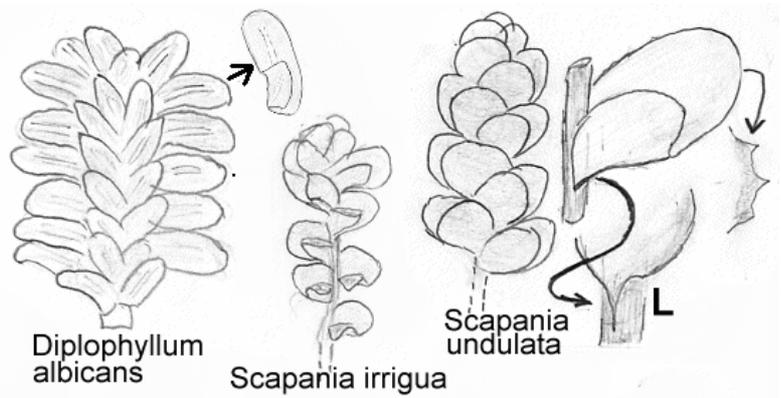


5b In the following three species the smaller lobe is folded against the UPPER surface of the larger

● *Diplophyllum albicans* smaller lobe flat against upper surface of larger lobe, which has an apparent “nerve” or midrib consisting of translucent cells.

● *Scapania undulata* smaller lobe flat against the upper surface of the larger. Larger lobe decurrent down stem. Almost always in very wet places, often in water.

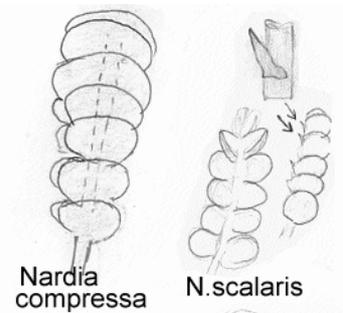
● *Scapania irrigua* Lobes often gaping rather than pressed together, the large lobe not decurrent. Smaller than the above species, often in drier places on bare ground, paths etc.



6. Plants with undivided unlobed leaves

● *Nardia compressa* leaves wider than long, pressed together enfolding stem, and extending well to each side of it. Always in running water

● *Narda scalaris* Leaves more or less round, spread apart or (often) pressed together but then mostly on one side of stem. Underside of plant with a third row of small narrowly triangular leaves (*underleaves*). They are inconspicuous but project away from the stem and are usually easily visible in side-view: not to be confused with root-like rhizoids which are threadlike rather than triangular. (N.compressa also has underleaves but they can be very hard to find.)

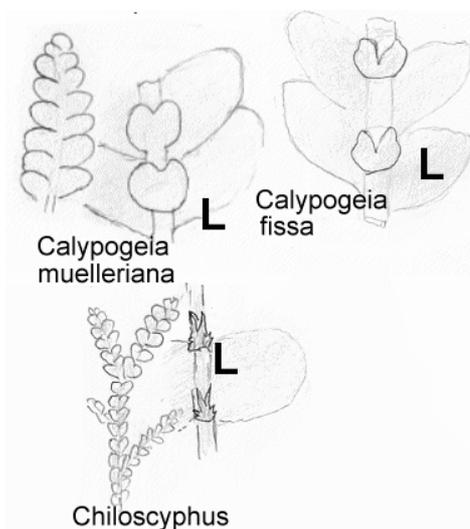


6a The following three species have third row of underleaves (defined under *Nardia scalaris* above) which are conspicuous, easily seen with a hand lens.

● *Calypogeia muelleriana* unbranched or sparingly branched; underleaves round with V-notch. Gemmae on “sticks” often present. (*C.arguta* has similar gemmae sticks but the leaves are invariably lobed, so that species is in part 4 above)

● *Calypogeia fissa* similar to above but underleaves more deeply notched and usually with a “shoulder” on the side. Leaves more pointed and sometimes notched (*C.muelleriana* leaves are occasionally notched).

● *Chiloscyphus polyanthos* usually markedly branched, underleaves deeply divided into narrow lobes. NB *Lophocolea heterophylla* may have mostly entire leaves but the lower ones are bilobed or at least indented.



6B The following five species lack underleaves:

● ***Jungermannia gracillima*** resembles *Nardia scalaris* (but lacks underleaves). There is often a distinctive border of large cells (“pearl necklace”) but this is often obscure. Plants without bordered leaves and no obvious underleaves require microscopic examination.

● ***Plagiochila porelloides*** underleaves absent. Plants flat, with leaves markedly decurrent on the upper stem and finely toothed (usually visible x10)

● ***Plagiochila asplenioides*** is lighter, clearer green than the above, and larger. Plants more than 6mm wide from leaf tip to leaf tip can be assumed to be this species. Plants less than 5mm wide are definitely *P.porelloides*.

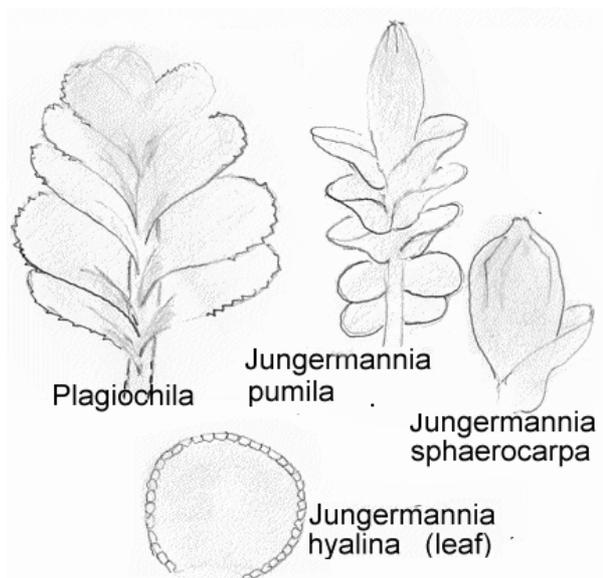
The remaining three species cannot be identified unless perianths are present. Perianths are often sparse and inconspicuous and need careful searching.

● ***Jungermannia pumila*** Perianths gradually tapering both at the top and the bottom. At least some “leaves” (actually male bracts) below the perianth with a conspicuously swollen and hollowed base.

● ***Jungermannia sphaerocarpa*** male bracts as in previous species but perianth sharply contacted at the tip, with prominent folds.

● ***Jungermannia atrovirens*** has no male bracts below the perianth (they may be found on separate shoots without perianths). Perianth similar to *J.pumila* but not so gradually tapering.

(If the perianth resembles *J.sphaerocarpa* and no male bracts are present your plant may be *J.gracillima* - the leaf border is often inconspicuous)



The following rare species are omitted from the key:

Calypogeia neesiana resembles *C.muelleriana* but the underleaves are near-perfect circles, with a slight indentation rather than a notch

Cephalozia connivens & *C.lunulifolia* differ from *C.bicuspidata* in that the lobes of the leaves curve inward, the tips pointing one to another.

Leiocolea spp. are difficult to distinguish from *Gymnocolea inflata* but are confined to markedly basic substrates.

Lejeunea spp. are like a much larger *Microlejeunea ulcina* but the smaller lobe is much smaller than the larger.

Cololejeunea minutissima plants resembling *Microlejeunea ulcina* but bearing perianths (resembling those of *Jungermannia sphaerocarpa*, but of course much smaller) are likely to be this species. *Microlejeunea* is almost never fertile.

Mylia taylorii looks like a *Jungermannia* but usually tinted chestnut brown and the leaves toward the top of the are held vertically clasped together.

Mylia anomala & *Odontoschisma denudatum* have unlobed leaves with clusters of gemmae

Scapania nemorea grows in drier places than *S.undulata*. It frequently bears chocolate-brown gemmae on the leaf-tips.

Scapania scandica & *S.umbrosa* are similar in size to *S.irrigua* but the smaller lobe is trapezoidal (narrower at the stem end) rather than rectangular.