

Overview – Hornworts & Liverworts

Revised through 23 July 2012

Plants a ±flat plate or sheet of tissue, i.e., " thalloid "; typically strap-shaped or rosette-like . Plants deep blue-green from symbiotic cyanobacteria; 1(2) chloroplasts per cell (except <i>Megaceros</i>); sporophytes long cylindrical with stomata & a columella – the " Hornworts "	Group H
Plants opaque with internal air chambers or air-channels ; rhizoids often " pegged "; setae very short or lacking – the " Complex thalloid " liverworts.	Groups C1 on
Plants translucent and ±thalloid (some with irregular leaf-like lobes); lacking air chambers, air-channels or pegged rhizoids; setae very long – the " Simple thalloid " liverworts.	Groups S1 on
Plants with a distinctive stem , and leaves of a regular shape – the " Leafy " liverworts.	Groups L1 on

The "Complex" Thalloid Liverworts

Thalli a rosette (or hemi-rosette) with dichotomous lobes; sporophytes embedded in thallus.	Group C1
Thalli rolled into blackish-purple , worm-like tubes when dry.	Group C2
Thalli with gemmae receptacles.	Group C3
Thalli with scales distinctively protruding from below.	Group C4
Thalli with air pores on the dorsal surface (distinct to indistinct).	Group C5
Thalli lacking any of the above unique characteristics.	Group C6

The "Simple" Thalloid Liverworts

Thalli an aquatic vertical axis with a stair-step like (helicoidal) wing ; CA, NM, SD, TX	<i>Riella</i>
Thalli with distinct dorsal " flaps "; TX	<i>Petalophyllum</i>
Thalli a lobed rosette ±totally covered with vase or urn-shaped involucre s; WS	<i>Sphaerocarpos</i>
Thalli with a distinct midrib & unistratose wings.	Group S1
Thalli with a indistinct midrib & multistratose wings thinning to the margin.	Group S2
Thalli with distinctly wavy or irregular margins.	Group S3
Thalli narrow with irregular , leaf-like lobes .	Group S4

The "Leafy" Liverworts

Leaves with ciliate lobes (\pm one cell in diameter) to near base or with distinctly ciliate margins .	Group L1
Leaves 3-4 lobed or toothed .	Group L2
Leaves complicate-bilobed (leaves folded into differentiated dorsal & ventral halves). Dorsal half larger (appearing incubous). Underleaves readily evident.	Group L3
Underleaves vestigial or lacking .	Group L4
Ventral half larger (appearing succubous); underleaves lacking .	Group L5
Leaves distinctly bilobed , but not folded, i.e., plane with two similar lobes. Leaves with distinctly succubous insertion. Underleaves readily evident.	Group L6
Underleaves vestigial or lacking .	Group L7
Leaves with sub-transverse to transverse insertion.*	Group L8
*Lower leaves may show trend towards succubous insertion, except for <i>Herbertus</i> which may show trend towards incubous insertion.	
Leaves unlobed to emarginate. Leaves with distinctly incubous insertion.	Group L9
Leaves with distinctly succubous insertion. Underleaves readily evident.	Group L10
Underleaves obscured by rhizoids, minute or lacking .	Group L11
Leaves with sub-transverse to transverse insertion.	Group L12

End.