***Sub-Guide to Initial Groups***

*Revised through 30 June 2010*

***Group A – Plants on persistent protonemata***

 **Group A**

Leaves **2-ranked** and **distichous** (attached in two rows on opposite sides of the stem).

 Leaves **cleft** at anterior edge and clasping posterior edge of next leaf; WS *Fissidens*†

 Leaves **decurrent** and **confluent**; protonemata **luminous**; “Goblin Gold”; WS\* *Schistostega*

Leaves with longitudinal **lamellae**; setae **long**; capsules **cylindrical**; **epiphragm** present; WS *Pogonatum*†

Leaves serrate to **spinose-dentate**; capsules **sessile**, +globose & **cleistocarpous**; WS *Ephemerum*

Leaves acute, **lacking** the above unique characteristics.

 Plants growing on clear, **quartz crystals**; costa **strong**; capsules **immersed**; KS *Aschisma*

 Plants growing on **soil**; costa **weak** at base; capsules **exserted**; WS\* *Discelium*

***Group B – Plants minute with immersed capsules***

 **Group B**

Leaves with a **hair-point** or awn.

 Leaves with ridge-like **lamellae** on upper surface of costa; WS *Pterygoneurum*

 Leaves with **revolute**, **entire** margins; cells **pleuripapillose** (C-shaped); WS *Phascum*

 Leaves with **recurved** (at apex), **serrate** margins; cells +**smooth**; WS\* *Acaulon*

 Leaves with **plane**, **entire** margins; cells **smooth**.

 Capsules **cleistocarpous**;stem **rhizome-like**; spores few and **large** (>100µ); TX *Lorentziella*

 Capsules **operculate**; calyptrae **persistent**, **4-angled** and **split**; spores **small**; E *Pyramidula*

Leaves **subulate** / **setaceous** at least on perichaetial leaves.

 Setae **curved**; capsules **laterally** emergent and **operculate**; FL & GA *Eccremidium*

 Setae **straight**; capsules **immersed** and **cleistocarpous**.

 Capsules **pyriform** with conspicuous, **stomatose** neck; spores **small**; WS *Bruchia*†

 Capsules **globose** to **ovoid** with no neck.

 Calyptrae mitrate or **cucullate**; spores numerous and **small**; WS *Pleuridium*

 Calyptrae **rudimentary**; spores few and **large** (>100µ); E *Archidium*

Leaves **cuspidate** to long-apiculate with **reflexed** tips; **bulbiform**; WS\* *Acaulon*

Leaves **involute** when wet, crisped and contorted when dry; E *Astomum*

Leaves with ridge-like **lamellae** on upper surface of costa; WS *Pterygoneurum*

Leaves serrate to **spinose-dentate**; protonemata **persistent**; WS *Ephemerum*

Leaves acute to acuminate, **lacking** the above unique characteristics.

 Capsules clearly **operculate**.

 Operculum **short**-beaked; exothecial cells **collenchymatous**; WS *Aphanorrhegma*

 Operculum **long**-beaked; exothecial cells **not** collenchymatous; WS *Physcomitrium*†

 Capsules **cleistocarpous** or rupturing irregularly.

 Capsules **pyriform** with conspicuous, **stomatose** neck; spores **small**; WS *Bruchia*†

 Capsules **ovoid**; calyptrae **cucullate**; spores **small**; BC, OR *Pseudephemerum*

 Capsules **globose**.

 Calyptrae **cucullate**; **persistent** protonemata under **quartz** pebbles; KS *Aschisma*

 Calyptrae **mitrate**; spores numerous and **small**; WS *Physcomitrella*

 Calyptrae **rudimentary**.

 Costa **strong**; spores few and **large** (>100µ); E *Archidium*

 Costa **lacking**; spores **medium** to large (up to ~80µ); WS *Micromitrium*

***Group C – Plants dendroid or frondose from an erect stipe.***

 **Group C**

Plants **dendroid**

 Stems with dense **paraphyllia** or paraphyllia-like structures.

 Paraphyllia **green**, filiform, and branched.

 On rich **soil**; WS *Climacium*

 On **trees**; curled when dry; WC, ID *Dendroalsia abietina*

 Paraphyllia **hyaline**, filiform, and branched, **lamellae** on stem; NW *Pleuroziopsis ruthenica*

 Stems **lacking** paraphyllia.

 Stem leaves **bordered** with long marginal right-angled **teeth**; WC, NW *Leucolepis acanthoneuron*

 Stem leaves **not** bordered.

 Leaf singly or doubly **serrate** above; apical cells **rhombic**; WS *Thamnobryum*

 Leaf with **alternate** large and small **teeth**; alar cells distinctly subquadrate; E, WC *Isothecium*†

Plants **frondose**.

 Leaves **falcate-secund**; plant regularly pinnate; WS\* *Ptilium crista-castrensis*

 Leaves **dimorphic** (ventral amphigastria), **complanate** and **bordered**; FL, BC, AK *Hypopterygium*

 Leaves **concave** and serrulate above.

 **Long**, axillary, filiform **brood branches**; FL *Pseudocryphaea*

 **Short**, axillary, spindle-shaped **brood** **bodies**; FL to LA *Pireella*†

***Group D – Plants with pendulous branches***

 **Group D**

Leaves **ovate** and cordate.

 Leaves **plicate**; leaf cells **pleuripapillose**; FL, LA *Papillaria nigrescens*

 Leaves **plane**; leaf cells **smooth**; FL *Zelometeorium patulum*

Leaves **lanceolate** to oblong-lanceolate.

 Leaf margins coarsely **serrate** in upper third; upper cells +**prorulose**; WS *Isothecium myosuroides*†

 Leaf margins **revolute** to near apex; **extra** **costae**; leaf cells **smooth**; W, NF *Antitrichia* *curtipendula*†

 Leaf margins **entire**; leaf cells **pleuripapillose**; FL to LA *Barbella pendula*

***Group E – Plants projecting horizontally from vertical surfaces or***

***with upturned/curled branch tips***

 **Group E**

Plants growing **horizontally**; sticking +**straight out** from vertical surfaces.

 Leaves **complanate** and **undulate**.

 Costa **long** & **single**; **paraphyllia** present; W *Metaneckera menziesii*

 Costa **short** & **double**, or lacking; paraphyllia **lacking**; WS\* *Neckera*†

 Leaves **neither** complanate **nor** undulate.

 Shoots distinctly **julaceous**; costa long & single; cells short; SE *Cryphaea*

 Shoots **not** julaceous.

 Alar cells subquadrate in **large** groups; E *Forsstroemia*

 Alar cells in **small**, inconspicuous groups; ON *Neomacounia nitida*

Plants with branch tips **upturned** or **curled** when dry.

 Branch tips **distinctly** or **strongly** upturned or curled when dry.

 Costa **long** & **single**.

 Plants **dendroid**; **paraphyllia** present; leaf cells distinctly **prorulose**; WC, ID *Dendroalsia*

Plants **not** dendroid; paraphyllia **lacking**; leaf cells **smooth** or +prorulose; W *Homalothecium*†

 Costa **short** & **double**, or lacking.

 Leaf margins sharply **serrate** above; leaf cells distinctly **prorulose**; WC *Pterogonium*

Leaf margins +**entire** above; leaf cells **smooth**.

 Leaf cells **>5:1**; **5-20** quadrate alar cells at the **basal angles**; WS\* *Pylaisiella*

 Leaf cells **~3:1**; **numerous** oblatealar cells extending up **leaf margins**; E, AZ *Leucodon*

 Branch tips **loosely** or **indistinctly** upturned, or curled when dry.

 Stems with **paraphyllia**.

 Leaves **falcate**, **plicate** below & **rugose** above; WC, NW *Rhytidiopsis*

 Leaves **straight**, **smooth** & **imbricate** when dry; WC *Alsia*

 Stems **red** and/or **julaceous**; costa **long** & single; W *Antitrichia*

 Stems **lacking** the above unique characters.

 Costa **long** & **single**.

 Leaves **plicate**; leaf cells **smooth** or +prorulose; W, NL *Homalothecium*†

 Leaves **planar**; leaf cells **papillose**; E *Anomodon* †

 Costa **short** & **double**, or lacking.

 Alar cells **inflated** as “bubble” cells; leaves +homomallous; E *Sematophyllum*†

 Alar cells **quadrate** & numerous.

 Capsules +**erect** & **symmetric**; upper leaf cells **narrowly** rhomboidal.

 Leaf margins **reflexed** below; **brood** **branchlets** common; WS\* *Platygyrium*

 Leaf margins **planar** below; brood branchlets **lacking**; WS\* *Pylaisiella*

 Capsules +**inclined** & **asymmetric**; upper leaf cells **shortly** *Homomallium*†

 oblong-rhomboidal; WS \*

***Group F – Plants growing on dung***

 **Group F**

Hypophysis **turbinate**, **globose** or **skirt-like**, and **colored**; leaves obtuse to acuminate; N, CP & SA *Splachnum*

Hypophysis **pyriform** and +**urn**-**colored**; leaves elongate-**subulate** to **hair**-pointed; N *Tetraplodon*

Hypophysis evident, but +**narrower** than urn and **wrinkled** when dry; leaves obtuse to acuminate.

 Capsules **cylindric**; setae **brownish**; calyptrae **constricted** above base; N\* *Tayloria*†

 Capsules **dumbbell** shaped; setae **hyaline**; calyptrae **not** constricted; A/A *Aplodon*

Hypophysis **lacking**; **cleistocarpous**; leaves long **acuminate** to **hair**-pointed; A/A *Voitia*

End.