

Sub-Guide to Rarely Branched (mostly acrocarpous) Mosses

Revised through 16 November 2009

Reminder: A dagger (†) indicates that not all of the species within the given genus have the character(s) defining that Group. Abbreviations for the **distribution** of taxa are found at the end of the Concordance. Abbreviations for the number of **stereid bands** in costa cross sections are found in the Introduction and at the end of this section.

Group A1 – Shoots flat or angular, not round

	Group A1
Shoots flattened ; leaves 2-ranked (lying in one plane).	
Leaves distichous (attached in two rows on opposite sides of the stem).	
Leaves cleft at anterior edge and clasping posterior edge of next leaf; WS	<i>Fissidens</i>
Leaves conduplicate , crowded, and progressively larger; the “Sword” moss; WS*	<i>Bryoxiphium</i>
Leaves flat, decurent and confluent ; protonemata luminous ; “Goblin Gold”; WS*	<i>Schistostega</i>
Leaves needle-like ; a roughened subula from a sheathing, shiny-white base; WS	<i>Distichium</i>
Leaves complanate (attached all around the stem, but twisted into one plane).	
Leaves with a long, single costa ; cells smooth .	
Leaves distant on stoloniferous shoots and bordered by linear cells; WS	<i>Plagiomnium</i>
Leaves crowded , unbordered and ±undulate ; capsules plicate (dry); E	<i>Aulacomnium</i> †
Leaves ecostate ; cells short and pleuripapillose ; GC	<i>Erpodium</i> †
Shoots triangular ; leaves 3-ranked .	
Plants minute with immersed capsules; leaves broadly ovate with recurved apiculi; WS	<i>Acaulon</i> †
Plants larger with exserted capsules; leaves ±lanceolate .	
Cells short and strongly papillose ; plants on dry soils; CA	<i>Triquetrella</i>
Cells intermediate and smooth ; in calcareous wetlands .	
Capsules with well-defined neck ; endostome longer than exostome; N	<i>Meesia</i> †
Capsules short & black (golf clubs); endostome reduced to lacking; N	<i>Catoscopium</i>
Shoots angular ; leaves 4-5 ranked .	
Stems densely tomentose ; leaves squarrose recurved; in calcareous wetlands ; N	<i>Paludella</i>
Stems smooth ; leaves crowded and appressed ; on soil near rocks; A/A	<i>Conostomum</i>

Group A2 – Shoots julaceous when wet

	Group A2
Stems red .	
Stems freely forked; plants whitish ; capsule necks extremely long ; A/A	<i>Plagiobryum</i>
Stems sparsely forked; capsule necks mostly short to moderate in length.	
Cells long (~8:1); N*	<i>Anomobryum</i>
Cells intermediate (~4:1).	
Upper leaves abruptly acuminate ; capsules erect ; peristome single ; NW	<i>Aongstroemia</i>
Upper leaves apiculate ; capsules pendent ; peristome double ; WS	<i>Bryum</i> †
Stems green .	
Cells unipapillose and ±stellate ; leaves concave-cucullate; A/A.	<i>Aulacomnium</i> †
Cells ±prorulose ; leaves 5-ranked and serrate; plants bluish- white ; A/A	<i>Conostomum</i>
Cells smooth ; leaves radially arranged.	
Leaves serrulate and unbordered ; immersed capsules; E	<i>Pleuridium</i> †
Leaves entire and bordered with longer cells; exserted capsules; WS	<i>Bryum</i> †

Group A3 – Stems distinctly tomentose

	Group A3
Stems covered with pigmented (reddish to brownish) tomentum.	
Leaves squarrose-recurved and heart shaped; fens; N	<i>Paludella</i>
Leaves ovate to broadly elliptical.	
Rhizoidal initials in longitudinal rows ; endostome fused into a dome ; N	<i>Cinclidium</i>
Rhizoidal initials not in rows; endostome segments free ; N*	<i>Rhizomnium</i> †
Leaves oblong -lanceolate to oblong-lingulate.	
Cells pleuripapillose ; terminal cell long and smooth ; brood bodies axillary ; N*	<i>Zygodon</i> †
Cells unipapillose ; terminal cell papillose ; brood bodies terminal ; WS	<i>Aulacomnium</i> †
Cells smooth ; leaves broadly lingulate ; a copper-sulfur moss; WS (E)	<i>Scopelophila</i> †
Leaves narrowly lanceolate from an ovate, plicate base; WC, NW	<i>Anacolia</i>
Leaves lanceolate to subulate-setaceous ; WS	<i>Dicranum</i>
Stems covered with white-wooly tomentum.	
Leaves with green sheets (lamellae) on their surface; bogs; N*	<i>Polytrichum</i> †
Leaves lacking lamellae; WS	<i>Dicranum</i>

Group A4 – Stems red

	Group A4
Plants julaceous .	
Stems freely forked ; leaves with distinct, \pm reflexed point ; cells in oblique rows; A/A	<i>Plagiobryum</i>
Stems occasionally forked; leaves ovate to ovate-lanceolate and concave.	
Leaves broadly obtuse to acute; costa ending subpercurrent ; cells ~8:1 ; N*	<i>Anomobryum</i>
Leaves abruptly acuminate ; costa percurrent ; cells ~4:1 ; NW	<i>Aongstroemia</i>
Leaves obtuse to acute ; costa percurrent to excurrent ; cells ~4:1 ; WS	<i>Bryum</i> †
Plants with stems covered with pigmented (reddish to brownish) tomentum .	
Leaf cells >3:1 ; WS	<i>Bryum</i> †
Leaf cells <2:1 .	
Leaves setaceous, serrate above & recurved below; WC, NW	<i>Anacolia</i>
Leaves neither setaceous, serrate nor recurved.	
Rhizoidal initials in longitudinal rows ; endostome fused into a dome; N	<i>Cinclidium</i>
Rhizoidal initials not in rows; endostome segments free ; N*	<i>Rhizomnium</i>
Plants neither julaceous nor tomentose.	
Leaves bordered by elongated cells.	
Leaves distinctly toothed .	
Cells strongly bulging ; AK	<i>Trachycystis</i>
Cells smooth .	
Cells very large (to 150x50 μ); leaves rugose ; WC, NW, CO	<i>Roellia</i>
Cells smaller (up to 50 μ); leaves plane ; WS	<i>Mnium</i> †
Leaves entire .	
Leaves \pm dimorphic (\pm distichous lateral leaves and smaller dorsal leaves); WC	<i>Epipterygium</i>
Leaves of one kind; WS	<i>Bryum</i> †
Leaves not bordered.	
Leaves serrulate \pm throughout ; cells prorulose ; WS	<i>Philonotis</i> †
Leaves \pm serrulate near the apex ; cells smooth .	
Leaves subulate ; alar cells inflated, thick-walled and reddish ; N*	<i>Blindia</i>
Leaves not subulate; alar cells \pm undifferentiated ; WS	<i>Pohlia</i> †

Group A5 – Leaves squarrose-recurved

Leaves squarrose-recurved when **dry (or wet)**.

Leaves **5-ranked** and folded to appear **heart shaped**; stems densely **tomentose**; fens; N

Leaves squarrose-recurved **only** when **wet** (\pm appressed when dry).

Leaves **3-ranked**, long-**decurrent** and with papillose-**crenulate** margins; CA

Leaves **subulate-setaceous** from a **sheathing** base; disturbed soil; N

Leaves with **wavy** margins; **hyaline** basal and marginal cells; on dry limestone; SE

Leaves distinctly **toothed** in upper half; cells **papillose**.

Leaf lamina \pm **bistratose**; stem **hyalodermis** present; peristome **lacking**; SW

Leaf lamina **unistratose**; stem hyalodermis **lacking**; **peristome** present; SE

Leaves **lacking** the above unique characteristics.

Cell walls irregularly **thickened**; cell lumens **stellate**; A/A

Cell walls of **uniform** width; cell lumens \pm **rounded**.

Cells **intermediate** in length; WS

Cells **short**.

Leaves \pm **bordered** by **longer**, or **shorter** and **thick**-walled cells; **1***; WS

Leaves **unbordered**; **2***; WS

Group A5

Paludella

Triquetrella

Trichodon

Pleurochaete

Rhexophyllum

Leptodontium

Geheebia

Dicranella[†]

Tortula[†]

Barbula[†]

Group A6 –Leaves falcate-secund

Plants **blackish**; leaves **multistratose**; capsules **valvate**; on rocks; NW

Plants **grayish**; costa **>1/2** leaf breadth with **3(4)** cell layers; green **striations** on leaves; N*

Plants **green**; costa usually **<1/5** leaf breadth; leaves **lacking** striations.

Alar cells clearly **differentiated**; plants **large**, mostly >1cm.

Alar cells **pigmented**; capsules **rarely** strumose; **various** habitats; **2***; WS

Alar cells **pale**; capsules **strumose**; on **alpine rocks**; **0***; A/A

Alar cells \pm **undifferentiated**; plants **small**, mostly <1cm; WS

Group A6

Andreaeobryum

Paraleucobryum[†]

Dicranum[†]

Kiaeria[†]

Dicranella[†]

Group A7 – Leaves subulate / setaceous (8:1 or greater)

	Group A7
Plants small to minute (mostly <5 mm high) with ±immersed capsules growing on bare soil , usually as winter annuals ; the " pygmy ephemerals " as defined here.	
Setae curved ; capsules laterally emergent and operculate ; FL and GA	<i>Eccremidium</i>
Setae straight ; capsules immersed and cleistocarpous .	
Capsules pyriform with a conspicuous, stomatose neck; spores small ; WS	<i>Bruchia</i> †
Capsules globose to ovoid , lacking a distinct neck.	
Calyptrae mitrate or cucullate ; spores numerous and small ; WS	<i>Pleuridium</i> †
Calyptrae rudimentary ; spores few and large (>100μ); E	<i>Archidium</i> †
Plants larger with exserted capsules growing on various substrates.	
Leaves squarrose-recurved (wet); subula roughened throughout by cell ends; N	<i>Trichodon</i>
Leaves with bases distinctly incurved to expanded and clasping .	
Cells intermediate in length and prorulose/papillose ; upper cells ±bistratose ; WS	<i>Bartramia</i> †
Cells intermediate in length and smooth .	
Capsules with distinct , very long necks ; WS	<i>Trematodon</i> †
Capsules lacking a distinct neck.	
Plants minute ; peristome double with entire , papillose teeth; NT	<i>Pseudoditrichum</i>
Plants larger ; peristome single with forked teeth.	
Teeth divided to base , round and papillose ; WS	<i>Ditrichum</i> †
Teeth divided to mid-point , flat and pitted-striolate ; WS	<i>Dicranella</i> †
Cells short and smooth .	
Upper cells ±bistratose ; capsules inclined , asymmetric and strumose ; WS	<i>Oncophorus</i> †
Upper cells unistratose ; capsules erect , symmetric and cylindrical ; SW	<i>Symblypharis</i>
Leaves with a broad, single costa (>1/3 the leaf width).	
Alar cells inflated and hyaline or colored (brownish to reddish).	
Costa 3(4) cell layers thick (middle & dorsal layers green & " stripped "); N*	<i>Paraleucobryum</i>
Costa lacking the above unique characters.	
Inner basal cells pale , enlarged and extending up along the costa; N*	<i>Dicranodontium</i>
Inner basal cells little differentiated; WS	<i>Campylopus</i> †
Alar cells ±undifferentiated ; capsules pyriform ; WS	<i>Leptobryum</i>
Leaves lacking the above unique characteristics.	
Alar cells distinctly differentiated .	
Capsules curved and strumose (goiter-like swellings); on rocks ; A/A	<i>Kiaeria</i>
Capsules obovoid to pyriform ; on rocks .	
Capsules ribbed (dry); peristome teeth wide- flaring , ±split and striolate ; N	<i>Arctoa</i>
Capsules smooth (dry); peristome teeth erect , ±entire and papillose ; N*	<i>Blindia</i>
Capsules lacking any of the above unique characters; substrates various .	
Cells with cuticular ridges ; peristome teeth ±entire and papillose ; N*	<i>Dicranoweisia</i>
Cells smooth ; peristome teeth forked and pitted- striolate below; WS	<i>Dicranum</i> †
Alar cells ±undifferentiated .	
Stems tomentose & red ; leaves serrate above & recurved below; WC, NW	<i>Anacolia</i>
Stems lacking tomentum & green .	
Cells intermediate to long; peristome teeth usually present.	
Plants small (<2mm); leaves little altered (dry); on rocks ; WS	<i>Seligeria</i> †
Plants larger (>5mm); leaves twisted (dry); on wood ; SA, WC	<i>Orthodontium</i> †
Cells short ; annulus compound ; peristome teeth mere stubs ; WS*	<i>Brachyodontium</i>

Group A8 – Leaves dimorphic

Leaves **costate**, 4-ranked and **bordered**; **dorsal** leaves smaller; stems **red**; cells **smooth**; WC
 Leaves **ecostate**, 4-ranked and **complanate**; **ventral** leaves smaller; cells **pleuripapillose**; GC

Group A8
Epipterygium
Erpodium†

Group A9 – Leaves with hair-points or awns

Plants **minute** (mostly <5 mm high) with **±immersed** capsules growing on bare **soil**, usually as winter **annuals**; the "**pygmy ephemerals**" as defined here.

Leaves with **lamellae** on the upper end of the costa; WS

Leaves with **filaments** on the upper end of the costa.

Leaves "**fleshy**" with **inrolled** margins; filaments on very **broad** costa; WC

Leaves thin with **reflexed** to revolute margins; filaments on **narrow** costa; W

Leaves **lacking** lamellae or filaments.

Leaves with a **revolute** margin; cells **pleuripapillose**; WS

Leaves with **reflexed** tips; cells with **single** blunt papillae; WS*

Leaves with **plane** margins and tips; cells **smooth**.

Capsules **exserted** and **peristomate**; calyptrae **cucullate**; NW

Capsules **±emergent** and **operculate**; calyptrae **persistent**, **4-angled** and **split**; E

Capsules **immersed** and **cleistocarpous**; spores few and **large** (>100μ); TX

Plants growing on **dung**, animal remains, or other highly nitrogenous materials; the "**dung mosses**".

Hypophysis greatly **differentiated** and **colored**; peristome teeth **chambered**; N, CP, SA

Hypophysis narrowly **pyriform** and **±urn-colored**; peristome teeth **not** chambered; N

Hypophysis **lacking**; **cleistocarpous**; A/A

Plants **lacking** any of the above unique characteristics.

Leaves "fleshy" from crowded **lamellae** covering a very broad costa; WS

Leaves with a **broad** (1/3 – 1/2 leaf width) single **costa**; WS

Leaves **ecostate**.

Cells **±isodiametric** throughout with conspicuous **primordial utricles**; TX

Cells **short rhomboidal** (>3:1) above; TX, OK.

Leaves with distinct **border**.

Cells **short** (±isodiametric); pleuripapillose or smooth; WS

Cells **intermediate** in length; smooth.

Capsules **pendent** and **pyriform**; WS

Capsules **erect** and **±cylindric**; GC, SW and SA

Leaves with large, lax and **hyaline** basal cells contrasting with dense upper cells.

Basal cells pale with **brown, thickened** cross walls; calyptrae **campanulate**; WS

Basal cells **thin-walled** and **non-pigmented** throughout; calyptrae **cucullate**.

Peristome of 32 **twisted** teeth on a **high** basal membrane; WS

Peristome of 32 **±erect** teeth on a **low** basal membrane; WS

Leaves **lacking** the above unique characteristics.

Group A9

Pterygoneurum

Aloina†

Crossidium

Phascum

Acaulon†

Stegonia†

Pyramidula

Lorentziella

Splachnum†

Tetraplodon†

Voitia

Polytrichum†

Campylopus†

Erpodium†

Venturiella

Desmatodon†

Bryum†

Brachymenium†

Encalypta†

Tortula†

Desmatodon†

Continued below at left margin

Continued from Group A9 above

Leaf cells mostly papillose ; marginal cells greener ; on mountain rocks and soil; WC, SW	<i>Pseudocrossidium</i> †
Leaf cells mostly smooth .	
Plants in tufts on tree trunks and branches (rarely on rocks); diplolepidous .	
Leaves crisped when dry; basal cells yellow , thick -walled and in diagonal rows; WC	<i>Ulota</i> †
Leaves not crisped when dry; basal cells undifferentiated ; WS*	<i>Orthotrichum</i> †
Plants in tufts, cushions and mats on rocks ; haplolepidous .	
Calyptrae large, campanulate , plicate and lacerate at base.	
Leaves ovate to obovate; WS (W)	<i>Jaffueliobryum</i>
Leaves ovate- lanceolate and biplicate ; N*	<i>Coscinodon</i>
Calyptrae small, cucullate or mitrate .	
Capsules systylious ; calyptrae short ; in wetter habitats; WS	<i>Schistidium</i> †
Capsules not systylious; calyptrae reaching operculum; in dryer habitats; WS	<i>Grimmia</i> †
Plants on soil primarily.	
Cells intermediate in length; capsules pendent and pyriform ; WS	<i>Bryum</i> †
Cells short (\pm isodiametric); capsules mostly erect and cylindrical ; WS	<i>Desmatodon</i> †

*Group A10 – Leaves with lamellae, ridges, or filaments***Group A10**

Leaves with green , sheet-like lamellae .	
Leaves with a very broad costa covered by >20 lamellae.	
Leaves mostly bistratose ; caducous awns ; peristome lacking ; A/A	<i>Lyellia</i>
Leaves mostly unistratose ; peristome present .	
Lamellar apical cells papillose ; capsules \pm terete .	
Leaves subtubulose ; lamellar apical cells elliptic- pyriform ; WS	<i>Polytrichastrum</i>
Leaves oblong lanceolate ; lamellar apical cells \pm rounded ; WS	<i>Pogonatum</i>
Lamellar apical cells smooth or ridged; capsules sharply 4-5 angled ; WS	<i>Polytrichum</i>
Leaves with a narrow costa having <20 lamellae.	
Lamellae on both surfaces of leaves; leaves unbordered; 5-15 lamina; WC, NW	<i>Oligotrichum</i>
Lamellae restricted to the upper surface of leaves.	
Leaves with awns ; 2-4 lamellae; plants \pm bulbiform ; WS	<i>Pterygoneurum</i>
Leaves with cilia at leaf shoulder; 5-15 lamellae; WA, BC, AK	<i>Bartramiopsis</i>
Leaves bordered by hyaline , elongate cells; 2-8 lamellae; WS	<i>Atrichum</i>
Leaves bordered by hyaline , short , diagonally oriented cells; 5-15 lamellae; A/A.	<i>Psilopilum</i>
Leaves with ridge -like lamellae on the back (dorsal side) of the costa.	
Stems tomentose (wooly; white to rusty brown); alar cells hyaline and yellow -brown; WS	<i>Dicranum</i> †
Stems smooth ; alar cells not pigmented.	
Costa broad ($>1/3$ leaf width); ridges weak (1-2 cells); cells short- rectangular ; WS	<i>Campylopus</i> †
Costa narrow ($<1/3$ leaf width); ridges strong (>6 cells); cells rounded- oblate ; N	<i>Dryptodon</i>
Leaves with green , branched filaments .	
Leaves " fleshy ": filaments on lamina and costa, but covered by inrolled leaf margins; WS*	<i>Aloina</i>
Leaves thin ; filaments on costa only; leaf margins reflexed to revolute; W	<i>Crossidium</i>
Leaves with fine, white , threadlike filaments in a tangled, cobwebby weft ; N*	<i>Saelania</i>

*Group A11 – Leaves undulate***Group A11**

Leaves complanate (attached all around the stem but twisted into one plane); E	<i>Aulacomnium</i> †
Leaves with lamellae on the costa; WS	<i>Atrichum</i> †
Leaves lacking any of the above unique characteristics; N	<i>Dicranum</i> †

Group A12 – Leaves involute

Group A12

Leaf margins involute **wet** or dry.

Leaf margins **infolded/inflexed** over **photosynthetic** lamellae or filaments.

Leaves with green, sheet-like **lamellae**; WS

Polytrichum[†]

Leaves with green, branched **filaments**; WS*

Aloina

Leaf margins **inrolled** over laminae **lacking** lamellae or filaments.

Leaf cells **papillose**.

Capsules **exserted** and **operculate**; WS

Weissia

Capsules **immersed** to emergent, **cleistocarpous**; E

Astomum

Leaf cells **smooth**; laminae bistratose, **spirally** inrolled and above a sheathing base; AK

Indusiella

Leaf margins involute when **dry**; **plane** to erect when **wet**; cells **bulging** on upper surface.

Leaves **±toothed** above; costa with **two** stereid bands; peristome **lacking**; E

Hyophila

Leaves **±entire**; costa with **one** stereid band; peristome **present**; FL, GA

Neohyophila

Group A13 – Leaves ±all costa

Group A13

Leaves channeled and **subtubulose**; E

Leucobryum

Leaves **flat** on the upper side; FL, LA.

Octoblepharum

Group A14 – Leaves with a broad, single costa

Group A14

Leaves **bristle-like** (setaceous) or with distinct hair-points.

Leaves with costa of **3(4)** cell **layers** (middle & dorsal layers **green** & “**stripped**”); N*

Paraleucobryum

Leaves **crowded** at stem tips; reddish, axillary **hairs** common; WS

Leptobryum

Leaves **lacking** any of the above unique characteristics.

Leaves with **strongly differentiated** alar cells (inflated and hyaline).

Inner basal cells **pale**, **enlarged** and **extending** up along the costa; N*

Dicranodontium

Inner basal cells **little** differentiated; WS

Campylopus

Leaves with alar cells **little** differentiated.

Leaves **>3mm**; upper cells **elongate**; MO

Campylopodiella

Leaves **<3mm**; upper cells rectangular to **linear**.

Costa with median **row** of **green** cells; **brood leaves** common; E

Brothera

Costa **lacking** median row; brood leaves **lacking**; WS

Dicranella[†]

Leaves **oblong-lanceolate**; capsules elongate, curved and with a conspicuous neck.

Upper leaf cells pale, **lax**, thin-walled and **oblong-hexagonal**; N

Amblyodon

Upper leaf cells short **rectangular**, but **not** lax; N

Meesia[†]

Reminder: The costa in Groups A15 through A19 is long and single.

Group A15 – Leaves with bases distinctly incurved to expanded and clasping

Group A15

Leaves squarrose-recurved .	
Leaves subulate / setaceous ; subula roughened throughout by cell ends; N	<i>Trichodon</i>
Leaves ovate- lanceolate , strongly apiculate and with apical teeth ; SW	<i>Rhexophyllum</i>
Leaves subulate / setaceous (needle or bristle-like).	
Cells intermediate in length and prorulose/papillose ; upper cells \pm bistratose ; WS	<i>Bartramia</i> [†]
Cells intermediate in length and smooth .	
Capsules with distinct , very long necks ; WS	<i>Trematodon</i>
Capsules lacking a distinct neck.	
Plants minute ; peristome double with entire , papillose teeth; NT	<i>Pseudoditrichum</i>
Plants larger ; peristome single with forked teeth.	
Teeth divided to base , round and papillose ; WS	<i>Ditrichum</i> [†]
Teeth divided to mid-point , flat and pitted-striolate ; WS	<i>Dicranella</i> [†]
Cells short and smooth .	
Upper cells \pm bistratose ; capsules inclined , asymmetric and strumose ; WS	<i>Oncophorus</i> [†]
Upper cells unistratose ; capsules erect , symmetric and cylindrical ; SW	<i>Symblepharis</i>
Leaves with lamellae or ridges on their laminae or costa.	
Leaves with a very broad costa covered by >20 lamellae.	
Leaves mostly bistratose ; caducous awns ; peristome lacking ; A/A	<i>Lyellia</i>
Leaves mostly unistratose ; peristome present .	
Lamellar apical cells papillose ; capsules \pm terete .	
Leaves subtubulose ; lamellar apical cells elliptic- pyriform ; WS	<i>Polytrichastrum</i>
Leaves oblong lanceolate ; lamellar apical cells \pm rounded ; WS	<i>Pogonatum</i>
Lamellar apical cells smooth or ridged; capsules sharply 4-5 angled ; WS	<i>Polytrichum</i>
Leaves with a narrow costa having 5-15 lamellae.	
Lamellae on both surfaces of leaves; leaves unbordered ; WC, NW	<i>Oligotrichum</i> [†]
Lamellae on upper surface of leaves only; cilia at leaf shoulder; WA, BC, AK	<i>Bartramiopsis</i>
Leaves bistratose with spirally inrolled margins; AK	<i>Indusiella</i>
Leaves lacking any of the above unique characteristics; cells strongly bulging on upper surface; endostome of 64 papillose filaments ; WS	<i>Timmia</i>

Group A16 – Leaves with long decurrencies

Group A16

Shoots angular in cross-section; leaves squarrose recurved; cells short and papillose .	
Leaves 3-ranked ; stems smooth ; CA	<i>Triquetrella</i>
Leaves 5-ranked ; stems densely tomentose ; calcareous wetlands ; N	<i>Paludella</i>
Shoots terete (round in cross-section); capsules pyriform or pendulous .	
Leaves distinctly toothed \pm throughout.	
Marginal teeth paired ; sterile stems \pm erect and round ; WS	<i>Mnium</i>
Marginal teeth single ; sterile stems prostrate and complanate ; WS	<i>Plagiomnium</i>
Leaves entire to \pm serrulate or \pm toothed at apex.	
Leaves predominantly broader near the middle ; capsules pendent .	
Leaves commonly bordered ; median cells <4:1 ; WS	<i>Bryum</i> [†]
Leaves not bordered ; median cells >4:1 ; WS	<i>Pohlia</i> [†]
Leaves predominantly broader at the base ; setae very long ; capsules \pm inclined ; N	<i>Meesia</i> [†]

Group A17 – Leaves with a distinct group of hyaline cells

Group A17

Note: hyaline cells may not be clearly distinct in very old leaves that have lost their chlorophyll.

Hyaline cells at apex of leaves; plants whitish .	
Stems often forked or branched, especially at stem apices.	
Cells papillose (simple and forked); capsules immersed ; peristome lacking ; WS	<i>Hedwigia</i>
Cells smooth ; capsules exserted with extremely long necks; peristomate ; A/A	<i>Plagiobryum</i> †
Stems rarely branched; leaves apiculate ; capsules pendent ; cells smooth ; WS	<i>Bryum</i> †
Hyaline cells as marginal wedges broadest at the base of leaves.	
Leaves squarrose-recurved and serrulate above; upper cells pleuripapillose ; S	<i>Pleurochaete</i>
Leaves spreading and crenulate to entire .	
Leaves lingulate with rounded-obtuse apices; upper cells bulging ; GC	<i>Luisierella</i>
Leaves acute to acuminate; upper cells pleuripapillose ; WS	<i>Tortella</i>
Hyaline cells in abruptly differentiated , ±oval " windows " (cancellinae) in the lower 1/3 of leaves.	
Leaves with linear, intramarginal cells; calyptrae persistent , clasping and split; FL	<i>Calymperes</i>
Leaves lacking linear, intramarginal cells; calyptrae deciduous and cucullate.	
Leaf margins revolute ; peristome of 32 twisted teeth; 1* ; WS	<i>Tortula</i> † (<i>Syntrichia</i>)
Leaf margins plane ; peristome of 16 straight teeth; 2* ; E(GC)	<i>Syrhodon</i>
Hyaline, inflated and thin-walled cells across the lower 1/3 of leaves. [#]	
Leaves abruptly serrate at the shoulder and whorled at branch points; 2* ; WS	<i>Eucladium</i>
Leaves toothed above; 2*	
Older leaves brick-red ; stems lacking a hyalodermis; WS	<i>Bryoerythrophyllum</i>
Older leaves brownish-green ; stems with a hyalodermis ; BC	<i>Paraleptodontium</i>
Leaves with erect, bistratose margins; 1* ; WC, AZ	<i>Trichostomopsis</i>
Leaves revolute at least below; 1* .	
Leaves ± rounded with short to long awns; cells 10-13μ ; peristome present.	
Peristome of 32 twisted teeth on a high basal membrane; WS	<i>Tortula</i> †
Peristome of 32 ± erect teeth on a low basal membrane; WS	<i>Desmatodon</i> †
Leaves ± acute ; cells 15-20μ ; peristome none or rudimentary ; WS	<i>Pottia</i> † (<i>Microbryum</i>)
Leaves lacking any of the above unique characteristics.	
Cross walls of basal cells thick and brown ; calyptrae long campanulate ; 1* ; WS	<i>Encalypta</i> †
Cross walls of normal thickness; calyptrae cucullate .	
Stems with a hyalodermis ; papillae usually bifid ; 2* .	
Stems with a central strand (small cells); NW, WC, GC	<i>Trichostomum</i>
Stems lacking a central strand; WS	<i>Oxystegus</i>
Stems lacking a hyalodermis; papillae usually C-shaped ; 1* .	
Peristome of 32 twisted teeth on a high basal membrane; WS	<i>Tortula</i> †
Peristome of 32 ± erect teeth on a low basal membrane; WS	<i>Desmatodon</i> †

[#]: *Note: Many taxa with short, papillose, medial cells possess basal cells that are somewhat differentiated, i.e., pale (translucent), less papillose, somewhat elongated and/or colored, especially near the insertion. The taxa in this Group A17 represent the extreme, strongly differentiated condition of a gradient while those taxa with the less differentiated basal cells are found in Group A25.*

Group A18 – Leaves with a distinct marginal border

	Group A18
Leaves ciliate at the margins.	
Plants primarily protonemata ; capsules inclined, ovoid and ventricose ; WS*	<i>Buxbaumia</i>
Plants leafy ; capsules not differentiated as above.	
Leaves with 4-9 lamellae on costa; cilia at leaf shoulder ; WA, BC, AK	<i>Bartramiopsis</i>
Leaves lacking lamellae; cilia at leaf base ; WA, AK	<i>Oedipodium</i>
Leaves with a border of elongate cells contrasting with shorter medial cells.	
Plants erect, rosulate -foliate and large; from horizontal, underground stems; WS	<i>Rhodobryum</i>
Plants strongly flattened ; leaves twisted into one plane (complanate); WS	<i>Plagiomnium</i>
Plants with red stems .	
Stems tomentose .	
Rhizoidal initials in longitudinal rows ; endostome fused into a dome ; N	<i>Cinclidium</i>
Rhizoidal initials not in rows; endostome segments free ; N*	<i>Rhizomnium</i>
Stems smooth .	
Leaves ±rugose ; cells thin-walled and very large (to 150x50μ); WC, NW, CO	<i>Roellia</i>
Leaves 4-ranked and dimorphic (dorsal leaves smaller); WC	<i>Epipterygium</i>
Leaves lacking the above unique characteristics; cells strongly bulging ; AK	<i>Trachycystis</i>
Plants lacking the above unique characteristics.	
Leaves with lamellae on the costa; WS	<i>Atrichum</i>
Leaves with abruptly differentiated cancellinae (hyaline basal cells); E (GC)	<i>Syrhropodon</i> †
Leaves with paired teeth on margins; WS	<i>Mnium</i> †
Leaves with distinct single teeth or serrulations on margins.	
Leaf cells >3:1 .	
Leaves rounded-obtuse and apiculate; upper cells in oblique rows; N*	<i>Pseudobryum</i>
Leaves acute to awned; cells not in oblique rows.	
Capsules pendent and pyriform ; WS	<i>Bryum</i> †
Capsules erect and ±cylindric ; GC, SW, SA	<i>Brachymerium</i> †
Leaf cells <2:1 ; WS	<i>Plagiomnium</i>
Leaves with entire margins.	
Leaf cells >3:1 .	
Capsules pendent and pyriform ; WS	<i>Bryum</i> †
Capsules erect .	
Leaves rounded-obtuse ; upper cells in oblique rows; N*	<i>Pseudobryum</i>
Leaves broadly acute ; cells not in oblique rows; WS	<i>Entosthodon</i> †
Leaf cells 1-2:1 ; A/A	<i>Cyrtomnium</i>
Leaves bordered by hyaline, diagonally oriented cells; 5-15 lamellae on costa; A/A.	<i>Psilopilum</i>
Leaves with short-rhombic marginal cells at the rounded- obtuse apex; GC, SW	<i>Splachnobryum</i>
Leaves with margins differing in color and/or opacity from the medial laminae.	
Margin darker because 3-5 cell layers thick; plants blackish ; on rocks in rivers; WC, NW	<i>Scouleria</i>
Margin paler and yellowish due to thick -walled, less papillose cells.	
Leaves distinctly toothed above; basal membrane lacking ; 2* ; SE	<i>Leptodontium</i> †
Leaves entire ; basal membrane present; 1* .	
Peristome (32) spirally twisted above a high basal membrane; WS	<i>Tortula</i> †
Peristome (16) obliquely slanted above a low basal membrane; WS	<i>Desmatodon</i> †
Margin greener (cells thin -walled & less papillose) and spirally revolute; 1* ; WC, SW	<i>Pseudocrossidium</i> †
Leaves with an intramarginal "border", i.e., differentiated cells just inside short marginal cells.	

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Continued from Group A18 above

Leaves with an **intramarginal** "border", i.e., differentiated cells just inside short marginal cells.

"Border" of **long, narrow, pellucid** cells along leaf bases.

Basal **cancellinae** (hyaline, inflated cells) present; plants **green**; on **soil**; FL

Calymperes†

Basal cancellinae **lacking**; plants **blackish**; on **rocks** in rivers; WC, NW

Scouleria

"Border" of **rounded, yellow** to orange, **thick-walled** cells; **1***; W

Crumia

Group A19 – Leaves with distinct alar cells

Stems **tomentose**; alar cells **inflated, hyaline** and **±yellow-brown** towards the margin; WS

Group A19

Stems **not** or indistinctly tomentose; alar cells **not** as above.

Dicranum

Costa **broad**, **>1/3** leaf width; alar cells **inflated**, and hyaline to brownish to **reddish**.

Costa **3(4)** cell **layers** thick (middle & dorsal layers **green** & "**stripped**"); **N***

Paraleucobryum

Costa **lacking** the above unique characters.

Inner basal cells **pale, enlarged** and extending up along the costa; **N***

Dicranodontium

Inner basal cells **little** differentiated; WS

Campylopus

Costa **narrow**, **<1/3** leaf width.

Alar cells enlarged to **inflated** and **yellowish** to **brownish**.

Capsules **curved** and **strumose** (goiter-like swellings); on **rocks**; A/A

Kiaeria

Capsules **obovoid** to **pyriform**; on **rocks**.

Capsules **ribbed** (dry); peristome teeth wide-**flaring**, **±split** and **striolate**; **N**

Arctoa

Capsules **smooth** (dry); peristome teeth **erect**, **±entire** and **papillose**; **N***

Blindia

Capsules **cylindrical**; substrates **various**.

Cells with **cuticular ridges**; peristome teeth **±entire** and **papillose**; **N***

Dicranoweisia

Cells **smooth**; peristome teeth **forked** and **pitted-striolate** below; WS

Dicranum

Alar cells **sub-quadrate** and **pale**; cells **±thick-walled** and often **nodulose**; WS

Grimmia†

Group A20 – Leaves with costa extremely reduced to lacking

Leaves in **clusters** of **branches** around a central stem and a **network** of green and hyaline cells; WS

Group A20

Leaves **distichous, decurrent** and **confluent**; protonemata **luminous**; "Goblin Gold"; WS*

Sphagnum

Leaves **complanate**; cells **pleuripapillose**; on tree **bark**; GC

Schistostega

Leaves **awned**; cells **smooth**; on tree **bark**.

Erpodium

Leaves with conspicuous **primordial utricles**; peristome **lacking**; TX

Erpodium

Leaves **lacking** utricles; peristome **present**; OK and TX

Venturiella

Leaves **spinose** serrate; protonemata **persistent**; cells **smooth**; pygmy **ephemerals**; WS

Ephemerum†

Leaves **lacking** the above unique characters.

Cells **papillose**; capsules **exserted** and **valvate** (4x); plants reddish-**black**; on **rocks**; **N***

Andreaea†

Cells **smooth**.

Capsules **exserted** with **4 prominent teeth**; on undersides of **rock overhangs**; **N**

Tetrodontium†

Capsules **sessile** and **gymnostomous**; pygmy **ephemerals**; on **soil**; WS

Micromitrium

Reminder: Definitions for cell length to breadth ratios are found in the Introduction and the Overview in addition to below. Abbreviations for the number of stereid bands in costa cross sections are found in the Introduction in addition to below. An expanded explanation of the difference between "Distinct" and "Indistinct" surface ornamentation is found in the Introduction.

Cells = medial, laminal cells; cells ~2/3 of the way from insertion to apex, midway between the costa and the margin.

Length to breadth **ratios** of medial, laminal cells:

Long cells: >5:1; commonly termed linear.

Intermediate cells: 2-5:1; commonly termed elongated, rectangular, hexagonal, or rhomboidal.

Short cells: <2:1; commonly termed isodiametric, quadrate, rounded-quadrate, or sub-quadrate.

Number of **stereid bands** evident in costa cross-sections:

2* = costa with two stereid bands

1* = costa with one stereid band

0* = costa lacking stereid bands, i.e., ±homogeneous

Group A21 – Cells long (>5:1) and smooth

Leaves **flexuose-twisted** (dry); cell walls ±**thickened**; capsules mostly **erect**; SA, CA
Leaves **little** altered (dry); cell walls **not** thickened; capsules inclined to **pendulous**; WS

Group A21
Orthodontium†
Pohlia†

Group A22 – Cells intermediate (2-5:1) and distinctly papillose

Leaves broadly **spathulate** with **rounded, crenulate** apices; papillae **C-shaped**; FL
Leaves **ovate** and abruptly narrowed to a **short** acumen; papillae **simple**; W, VT
Leaves linear-lanceolate to **subulate** from an **erect** base; papillae **simple**; WS

Group A22
Gymnostomiella
Philonotis†
Bartramia†

Group A23 – Cells intermediate (2-5:1) and distinctly prorulose

Leaves **julaceous** and **5-ranked**; peristome teeth **fused** at tip; A/A
Leaves and peristome teeth **otherwise**.
Setae **flexuose**; capsules **symmetric** and **rugulose**; peristome **reduced**; NC, TN
Setae **straight**; capsules **asymmetric** and **furrowed**; peristome teeth **lanceolate**.
Leaves with **bistratose** margins and/or lamina; **mesic** habitats; WS
Leaves **unistratose**; **hydric** habitats; WS
Setae **short**, capsules **immersed**
Leaves ±**linear-lanceolate** and ±**spinulose** above; protonemata **persistent**; WS
Leaves ±**subulate** and **serrulate** above; protonemata **ephemeral**; WS

Group A23
Conostomum
Bartramidula
Bartramia†
Philonotis†
Ephemerum†
Bruchia†

Group A24 – Cells intermediate and smooth (or indistinctly ornamented)[#]**Group A24**

Leaves predominantly **broader near** or **above** the middle (\pm oblong or obovate).

Plants **small, winter annuals** on soil.

Capsules clearly **exserted**.

Costa **strong**; protonemata **ephemeral**; peristome **lacking**; WS

Physcomitrium

Costa **weak**; protonemata **persistent**; peristome **present**; WS*

Discelium

Capsules \pm **immersed** and \pm **pyriform**.

Leaves \pm **concave-obovate** and **serrulate**; capsules **operculate**; WS

Physcomitrium

Leaves \pm **concave-ovate** and **entire**; capsules **cleistocarpous**; WS

Bruchia[†]

Plants **otherwise**.

Leaves with an **obtuse** apex bordered with **short-rhombic** cells; GC, SW

Splachnobryum

Leaves commonly bordered by **linear** cells; capsules pyriform and **pendent**; WS

Bryum

Leaves **unbordered**.

Medial cells strongly **bulging** on both sides; AK

Bryobrittonia

Medial cells **smooth** and **>5:1** (linear rhomboidal); capsules **pendent**; WS

Pohlia[†]

Medial cells **smooth** and **<4:1**; capsules inclined to **erect**.

Peristome of **4** massive teeth; plants **bud-like**; costa **weak**; on **rocks**; N

Tetrodontium

Peristome of **16** teeth; costa **strong**; on **soil**.

Capsules with well-**differentiated** necks; calyptrae **mitrate**; N*

Tayloria

Capsules **lacking** a distinctive neck; calyptrae inflated **cucullate**.

Capsules **inclined** and **asymmetric**; WS

Funaria

Capsules **erect** and **symmetric**; WS

Entosthodon

Peristome **lacking**; capsules **erect** and **symmetric**; calyptrae **mitrate**; WS

Physcomitrium

Leaves predominantly **broader** near the **base** (\pm lanceolate).

Plants **small, winter annuals** on soil; capsules \pm **immersed** and **cleistocarpous**; WS

Bruchia[†]

Plants **otherwise**; capsules **exserted** and **peristomate**.

Leaves \pm **subulate** / **setaceous**.

Capsules **ovoid**; plants minute to very **small**; on **calcareous** rocks; WS (N)

Seligeria[†]

Capsules long **cylindric**; peristome teeth **round**, fully **split** and **papillose**; WS

Ditrichum

Capsules \pm **oblong**, often **curved**; peristome teeth **flat**, **split** 1/2 and **pitted**; WS

Dicranella

Leaves flexuose-**twisted** (dry); cells \pm **thick**-walled; SA, WC

Orthodontium[†]

Leaves with expanded, **sheathing** leaf bases; WS

Dicranella

Leaves **lacking** any of the above unique characteristics.

Leaves **>1mm**; capsules **terminal**.

Costa **percurrent**; capsules **erect** to inclined; peristome **single**.

Upper cells \pm **linear**; peristome teeth **long** & **split**; WS

Ditrichum

Upper cells **broad**; peristome teeth **short** & **irregular**; N

Catoscopium

Costa **subpercurrent**; capsules \pm **pendant**; peristome **double**; WS

Pohlia[†]

Leaves **<1mm**; capsules **lateral**; peristome **single**; on **Cu** or **S** rich soils; N*

Mielichhoferia

[#] Cells bulging, mammillose (cells both bulging and papillose), or with low papillae or projections.

Group A25 – Cells short (<2:1) and distinctly papillose

		Group A25
Leaves with expanded , sheathing bases; cells strongly bulging on upper surface; WS		<i>Timmia</i> †
Leaves distinctly toothed in the upper half.		
Cells pleuripapillose ; leaves ±squamose -recurved; 2* .		
Leaf lamina ±bistratose ; stem hyalodermis present; peristome lacking ; SW		<i>Rhexophyllum</i>
Leaf lamina unistratose ; stem hyalodermis lacking ; peristome present; SE		<i>Leptodontium</i>
Cells unipapillose or mammillose; ventral stereid band weak or lacking .		
Leaves ±broad ; cells mammillose ; capsules smooth ; WS		<i>Dichodontium</i>
Leaves ±narrow ; cells coarsely papillose; capsules furrowed ; N		<i>Cynodontium</i> †
Leaves with large, curved, projecting papillae at extreme apex; cells mammillose : NW		<i>Dichodontium</i>
Leaves ligulate and rounded- obtuse ; cells pleuripapillose ; 0* ; WS*		<i>Gyroweisia</i> †
Leaves with revolute margins and smoother , greener marginal cells; 1* ; WC, SW		<i>Pseudocrossidium</i>
Leaves lacking the above unique characteristics.		
Cells collenchymatous and stellate ; 2* .		
Leaves squamose-recurved (wet); cells pleuripapillose ; A/A		<i>Geheebia</i>
Leaves ±erect (wet); cells unipapillose ; A/A		<i>Aulacomnium</i> †
Cells pleuripapillose ; but neither collenchymatous nor stellate.		
Papillae flower-like (massive and multifid); peristome lacking ; 2* ; SE		<i>Tuerckheimia</i>
Papillae forked ; basal cells with brown cross-walls; calyptrae long- cylindric ; WS		<i>Encalypta</i>
Papillae C-shaped .		
Basal cells with brown cross-walls; calyptrae long- cylindric ; 1* ; WS		<i>Encalypta</i>
Basal cell walls uncolored ; calyptrae cucullate .		
Peristome teeth long and twisted ; 2* ; WS		<i>Barbula</i> †
Peristome teeth short and erect ; 1* ; WS		<i>Desmatodon</i> †
Papillae conical .		
Cells with 4-7 papillae; peristome reduced to lacking .		
Stems repeatedly forked; capsules elongate and urn-shaped ; 2* ; WS		<i>Amphidium</i>
Stems sparsely forked; capsules ±pyriform ; 1* or lacking; WS*		<i>Zygodon</i>
Cells with 1-4 papillae.		
Costa with two stereid bands.		
Leaf margins revolute on both sides; peristome present.		
Papillae crowded ; basal cells hyaline ; peristome twisted ; WS		<i>Barbula</i> †
Papillae scattered ; basal cells green ; peristome ±oblique ; WS		<i>Didymodon</i> †
Leaf margins revolute on one side only; peristome lacking ; WS		<i>Hymenostylium</i>
Leaf margins plane ; peristome lacking .		
Leaves >2 mm ; sporophytes lateral ; A/A		<i>Molendoa</i>
Leaves <2 mm ; sporophytes terminal ; WS		<i>Gymnostomum</i>
Costa with one stereid band; peristome lacking .		
Sporophytes lateral ; stem rounded- triangular ; WS		<i>Anoetangium</i>
Sporophytes terminal ; stem round ; WS		<i>Gymnostomum</i>
Costa lacking stereid bands; peristome present .		
Basal marginal cells with thickened cross-walls; WS		<i>Ulota</i> †
Basal marginal cells ±undifferentiated ; WS		<i>Orthotrichum</i> †
Cells unipapillose ; but neither collenchymatous nor stellate.		

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Continued from Group A25 above

Cells **unipapillose**; but neither collenchymatous nor stellate.

Leaves **serrulate** at apex; stems **tomentose**; **gemmae** on stem extensions; WS

Aulacomnium†

Leaves **entire**.

Capsules **exserted**; peristome of **32 twisted teeth**; plants on **soil** and rocks; **2***; WS

Barbula†

Capsules **±emergent** and **valvate** (4x); **blackish** plants on **rocks**; **0***; N*

Andreaea†

Capsules **±immersed** with **16 ±reflexed** teeth; plants on **trees** and rocks; **0***.

Basal marginal cells with **thickened** cross-walls; WS

Ulota†

Basal marginal cells **±undifferentiated**; WS

Orthotrichum†

Group A26 – Cells short (<2:1) and smooth (or indistinctly ornamented[#])

Group A26

Leaves ±obovate (broadest in upper third; shaped like an upside-down egg), concave and broadly obtuse ; 1* .	
Leaves cucullate ; costa subpercurrent ; TX	<i>Globulinella</i>
Leaves muticous to piliferous ; costa subpercurrent to excurrent ; NW	<i>Stegonia</i>
Leaves ±oblong-spathulate (broad in the middle and even broader above).	
Leaf margins inrolled when dry (erect or plane when wet); cells bulging on upper surface.	
Leaves 1.5-3 mm and ±toothed above; peristome lacking ; 2* ; E	<i>Hyophila</i>
Leaves 1-2 mm and ±entire above; peristome present; 1* ; FL, GA	<i>Neohyophila</i>
Leaf margins usually revolute , at least in part; cells flat .	
Leaves ±bordered with longer cells; peristome teeth short and erect ; 1* ; WS	<i>Desmatodon</i> [†]
Leaves ±bordered with shorter cells; peristome teeth long and twisted ; 1* ; WS	<i>Tortula</i> [†]
Leaves with intra-marginal border of enlarged, thick-walled , orange cells; 1* ; W	<i>Crumia</i>
Leaves unbordered .	
Propagula on basal leaf surfaces ; sporophytes unknown ; 1* ; SE	<i>Rhacithecium</i>
Propagula axillary ; peristome of 32 spirally twisted teeth ; 2* ; WS	<i>Barbula</i> [†]
Leaf margins plane ; cells flat and large (>15μ); peristome none or rudimentary; 1* ; WS	<i>Pottia</i> [†]
Leaves ±oblong-lingulate (tongue-shaped) or oblong-ligulate (strap-shaped).	
Leaves ±lingulate ; cells 2(3)stratose ; awns on perichaetial leaves; capsules sessile ; E, BC	<i>Diphyscium</i>
Leaves ±ligulate ; cells unistratose ; perichaetial leaves ±acute ; capsules exserted .	
Leaves acute ; capsules gymnostomous (lacking a peristome); 1* ; WS	<i>Scopelophila</i>
Leaves obtuse ; capsules peristomate (peristome present); 0* ; WS*	<i>Gyroweisia</i> [†]
Leaves ±ovate (broadest in lower third; egg-shaped) and revolute ; peristome of 32 teeth; 2* ; WS	<i>Barbula</i> [†]
Leaves ovate-lanceolate to lanceolate (broadest near the base; lance-shaped).	
Leaves 3-ranked ; setae very long ; plants of calcareous wetlands; N	<i>Meesia</i>
Leaves falcate-secund ; capsules valvate ; plants saxicolous and blackish ; NW	<i>Andreaeobryum</i>
Leaves with expanded, sheathing leaf bases.	
Cells bulging on upper surface; capsules symmetric and oblong-ovoid ; WS	<i>Timmia</i>
Cells smooth ; capsules asymmetric and strumose (goiter-like swelling); WS	<i>Oncophorus</i>
Leaves with paired teeth on bistratose margins.	
Margins revolute below; cells with cuticular ridges ; perichaetia terminal ; N*	<i>Plagiopus</i>
Margins plane ; cells smooth ; perichaetia lateral (basal); GC	<i>Pyrrhobryum</i>
Leaves with an intramarginal band of long, narrow cells at base; WC and NW	<i>Scouleria</i>
Leaves bistratose , at least in part.	
Leaves subtubulose (dry); cells bulging on upper surface; 2* ; WC, SW, TX	<i>Timmiella</i>
Leaves curved to crisped (dry); cells bulging or flat.	
Calyptrae mitrate , lobed and plicate ; 2* ; WS	<i>Ptychomitrium</i>
Calyptrae cucullate , entire and smooth ; 1* ; WC, AZ	<i>Trichostomopsis</i> [†]
Leaves lacking any of the above unique characters.	

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Continued from Group A26 above

Leaves **lacking** the above unique characteristics.

Capsules split along 4 sutures ; plants saxicolous and blackish ; N*	<i>Andreaea</i> †
Capsules with 4, massive teeth; leaves pellucid ; terminal gemmae cups ; WS	<i>Tetraphis</i>
Capsules with 8, 16 or 32 lanceolate teeth.	
Plants in tufts on tree trunks (rarely on rocks); diplolepidious .	
Leaves crisped when dry; basal cells yellow , thick -walled; WC	<i>Ulota</i> †
Leaves not crisped when dry; basal cells ±undifferentiated ; WS*	<i>Orthotrichum</i> †
Plants in tufts , cushions or mats on rocks .	
Peristomes diplolepidious (double).	
Basal cells very thick -walled, yellow and radiating from costa; WS	<i>Ulota</i> †
Basal cells ±thick -walled, neither yellow and nor radiating; WS	<i>Orthotrichum</i> †
Peristomes haplolepidious (single).	
Plants very small (<2 mm); setae cygneous (wet); N	<i>Seligeria</i> †
Plants larger (>2 mm).	
Capsules systylious ; calyptrae short ; in wetter habitats; WS	<i>Schistidium</i> †
Capsules not systylious; calyptrae longer ; in dryer habitats; WS	<i>Grimmia</i> †
Plants on soil primarily.	
Setae cygneous .	
Capsules yellow-orange with red ribs ; calyptrae cucullate ; A/A	<i>Oreas</i>
Capsules yellowish and smooth ; calyptrae mitrate ; N*	<i>Campylostelium</i>
Setae bent at capsule base; capsules strumose and purple-red ; leaves revolute throughout and serrate apically; upper cells ±square ; WS	<i>Ceratodon</i>
Setae straight .	
Capsules ribbed ; in crevices of cliffs and boulders.	
Peristome teeth divided to half their length; N	<i>Cynodontium</i> †
Peristome teeth undivided ; E	<i>Rhabdoweisia</i>
Capsules smooth (or wrinkled when dry).	
Setae very long ; capsules inclined ; peristome double ; in fens ; N	<i>Meesia</i>
Setae shorter ; capsules erect ; peristome single ; on mineral soils .	
Basal cells hyaline ; peristome teeth twisted ; WS	<i>Barbula</i> †
Basal cells green ; peristome teeth ±oblique ; WS	<i>Didymodon</i> †

Cells bulging, mammillose (cells both bulging and papillose), or with low papillae.

End.