

Dichotomous key to European species of *Sphagnum*

Taken from the book "Handbook of European Sphagna, ed. 2 - Institute of Terrestrial Ecology"

1

Cortical cells or branches (and usually at least the internal one of stems) with spiral fibrils. Apices of branch leaves blunt and hooded, appearing minutely roughened. On the convex surface due to projecting, partly resorbed, hyaline cells. Plants usually robust. Section
Sphagna
2

Cortical cells without fibrils. Branch leaf apices usually acute, truncate or, if hooded, then smooth on the convex surface. Plants robust or small. **5**

2 - Section Sphagna

Internal commissural walls of branch leaf hyaline cells (at least in the lower lateral parts of leaves) with papillae or sparse to dense lamellae or crests (ie appearing as though the photosynthetic cells have papillose or ornamented walls). Plants green, yellow, ochre or brown, never crimson. **3**

Internal commissural walls smooth throughout. Plants, except for capitula, usually green or crimson-tinted. **4**

3

Internal commissural walls finely to rather coarsely papillose. Photosynthetic cells in TS, urn-shaped with oval lumina and thick adaxial walls. Plants often ochrous: widely distributed and locally abundant on oligotrophic to slightly mesotrophic mires. *Sphagnum papillosum*

Internal commissural walls with scattered dense, oblique to transverse crests or lamellae ('comb fibrils'). Photosynthetic cells in TS, broadly triangular with triangular lumina: thin-walled. Plants dull brown to orange-brown, rarely green or yellowish: local to rare in, mainly lowland, oligotrophic to slightly mesotrophic mires. *Sphagnum imbricatum*

4

Plants usually with at least some flecks of crimson, often entirely deep, wine-red. Spreading branches usually blunt. Photosynthetic cells not, or rarely, exposed on the concave leaf surface: in TS, oval and mostly enclosed by hyaline cells. Plants widespread but local (and then often abundant) on oligotrophic mires.

Sphagnum magellanicum

Plants never red (sometimes pinkish-brown or grey-purple, especially in the capitulum). Spreading branches long-tapering. Photosynthetic cells well exposed on the concave leaf surface: in TS, trapezoid to narrowly oval-triangular. Plant common in mesotrophic mires or parts of mires.

Sphagnum palustre

4a

4a - *Sphagnum palustre*

Photosynthetic cells in TS oval-triangular to trapezoid: thin-walled. Plant widespread and common in the south: becoming rarer further north.

Sphagnum palustre
var. *palustre*

Photosynthetic cells in TS, oval to urn-shaped with strongly thickened adaxial walls. Plant widespread in the north (ie boreal and sub-arctic): confined to montane areas further south.

Sphagnum palustre
var. *centrale*

5

Branch leaves large (more than 1.5 mm) and broad. Hyaline cells of upper mid-leaf rhomboid, not more than 5 times longer than wide. Stem cortex 2-or more layered. Photosynthetic cells oval in TS, immersed or almost so.

6

Branch leaves narrow or, if broad, then hyaline cells long and narrow, more than 6 times as long as wide, and stem cortex usually 1-layered. Photosynthetic cells (except *S. wulfianum*) obviously exposed on one or both surfaces.

8

6

Branch leaves large. Stem leaves very small (< 1.1mm), triangular: convex surface of hyaline cells intact. Branch cortical cells all alike, most or all with a single large pore. Capitula ± hidden among upwardly directed branches.

Section
Rigida 7

Branch and stem leaves of similar size. Stem leaves lingulate to rectangular: convex surface of hyaline cells resorbed. Branch cortical cells of 2 kinds; groups of 2-3 retort

Section
Insulosa

cells (large cells each with a distal, protuberant pore) and smaller, narrower imperforate cells. Capitula not ± hidden. *Sphagnum aongsroemii*

7 - Section Rigida

Branch leaf photosynthetic cells deeply immersed between hyaline cells: in TS, thin-walled, oval. Internal commissural walls smooth. Older stems dark brown. Plants densely tufted: widespread and common, typically on wet heath or along the margins of flarks (large pools in patterned boreal peatlands). *Sphagnum compactum*

Branch leaf photosynthetic cells narrowly exposed, at least on the convex leaf surface: in TS, with thickened abaxial walls. Internal commissural walls minutely papillose. Stems pale. Plants usually pallid with squarrose branch leaves: local to rare on shallow peat near Atlantic coasts. *Sphagnum strictum*

8

Fascicles of mature plants consisting of at least 7 (usually 8 or more) branches. Stem leaves small (less than 1.2 mm). Photosynthetic cells in TS, oval. Plants rigid with dense, acute branch leaves and conspicuously large capitula. A continental species of moderately wet coniferous forest and, rarely; damp heath. Section **Polyclada** *Sphagnum wulfianum*

Fascicles never with more than 7 (usually fewer than 6) branches. Stem leaves usually over 1.2 mm long. Photosynthetic cells in TS, triangular, trapezoid or barrel-shaped. Capitula small to well-developed. **9**

9

Photosynthetic cells in TS, triangular or trapezoid with widest exposure on convex leaf surface, or ± barrel-shaped and ± equally exposed on both leaf surfaces. Plant, if small-leaved, not red. **10**

Photosynthetic cells in TS, triangular or trapezoid with widest exposure on concave leaf surface. Includes small-leaved (ie under 1.6 mm long) red plants. Section **Acutifolia**

34

10

Stem leaves large, lingulate, never fibrillose in mature plants; border not expanded below. Plants often robust, with large branch leaves that may be abruptly narrowed and reflexed at mid-leaf. Never red.

Section
Squarrosa

11

Stem leaves various, if lingulate and efibrose, then with borders markedly expanded below. Branch leaves rarely squarrose. Plants sometimes red, then with very large (>2 mm long) branch leaves

12

11 - Section Squarrosa

Branch leaves small (less than 2.2 mm long), usually with apices erect or only slightly spreading (if squarrose, then branches long and attenuated) so that branches appear cylindrical and tumid. Plants green or, usually, brownish. A local to frequent species (common in the Arctic) of eutrophic mires.

Sphagnum
teres

Branch leaves large (usually over 2.3 mm long), usually distinctly squarrose, giving the plant a prickly appearance. Plants green or yellowish, rarely brownish, robust. Common in mesotrophic mires.

Sphagnum
squarrosum

12

Mature plants without branches or with, at most, 1-2 short, small-leaved branches per fascicle. Stem leaves much larger than branch leaves, overlapping and concealing stems. Leaves sometimes with resorption gaps but never with clearly defined pores. Plants purple to blackish or dark brown, rarely dull olive-green: ± aquatic: very rare in NW France and NW Spain.

Section
Hemitheca
Sphagnum
pylaesii

Mature plants with well-developed fascicles, rarely of fewer than 3 branches (if fewer, then stem leaves not conspicuously larger than branch leaves, not concealing stems, or at least some branch leaves with clearly defined pores).

13

13

Branch leaf hyaline cells short and proportionately broad (less than 6 times as long as broad). Stem leaves almost as large as branch leaves, both ovate and concave. Branches appearing 'beaded' because of widely spaced, concave branch leaves.

Section
Mollusca
Sphagnum
tenellum

Plants small, delicate and pale green or yellowish. A common species of damp oligotrophic mires and wet heath.

Branch leaf hyaline cells long and narrow (at least 6 times as long as broad). Stem leaves various but, if similar to branch leaves, then plants not delicate. Branches not 'beaded' Plants mostly of medium size or robust.

14

14

Leaves from middle of branch, ovate, less than twice as long as wide, with broad, ± hooded apices (if narrower, then stem cortex with pores). Branch leaf hyaline cells with few to numerous small, normally thick-ringed, pores along the commissures on the convex or both leaf surfaces (very rarely only on the concave). Photosynthetic cells of branch leaves almost equally exposed on both leaf surfaces.

Section
Subsecunda

15

Leaves from middle of branch, lanceolate, at least twice as long as wide, never with hooded apices (apices often apparently acute due to inrolled margins). Stem cortex never with pores. Branch leaf hyaline cells with pores various but rarely numerous on convex leaf surface, and then not normally along the commissures. Photosynthetic cells with much wider exposure on the convex leaf surface, often not reaching the concave surface.

Section
Cuspidata

20

15 - Section Subsecunda

Stem leaves ± as large as branch leaves, strongly fibrillose almost or quite to insertion. Stems pale, greenish, yellowish or pale brown, never dark brown or blackish. Plants medium-sized to robust, ± flaccid.

16

Stem leaves much smaller than the largest branch leaves, sometimes minute, fibrillose in the upper two-thirds at most. Stems pale or dark. Plants sometimes small.

17

16

Branch leaves short and strongly concave throughout. Branches blunt. Stem cortex 2-layered (1- or 3-layered in parts): outer cells occasionally with a large pore or thinning. Plants dull green or olive, sometimes purplish but never red. Local to rare in mesotrophic locations which are, at least periodically, flooded.

*Sphagnum
platyphyllum*

Upper branch leaves longer and narrower than the lower. Branches blunt or, commonly, somewhat, acute and tapering. Stem cortex 1-layered, rarely with

*Sphagnum
auriculatum*

occasional pores. Plants sometimes distinctly red. Common and widespread in oligotrophic to mesotrophic pools and ditches or hollows; also on dripping rocks.

17

Stem, cortex of 2 or more layers. Internal cylinder, of stems always pale, pale brown, never dark brown or blackish. Plants small-leaved. *Sphagnum contortum*
Rare to locally frequent in eutrophic mires.

Stem cortex always single-layered. Internal cylinder of stem commonly dark brown or blackish, at least in part. Plants small or, large-leaved. Frequent to common in oligotrophic to mesotrophic mires or pools, on wet rocks or along seepage lines.

18

18

Stem leaves small (less than 1.2 mm long): fibrillose only near the apex (fibrils often incomplete, rarely absent). Branch leaves small, the lower usually curved, asymmetric and secund. Fascicles of fully developed plants with 5-6 branches (if small-leaved but with 3-4 branches per fascicle and stem leaves fibrillose for more than one third of length, see *S. auriculatum*) *Sphagnum subsecundum* subsp. *subsecundum*

Stem leaves at least 1.2 mm long: fibrillose at least in upper quarter and commonly to about two-thirds from apex. Branch leaves rarely under 1.3 mm long, the lower curved or straight. Fascicles of fully developed plants commonly with only 3 or 4 branches.

19

19

Fascicles of 3-4, rarely 5, branches. Branch leaves mostly symmetrical, ± suberect and convolute. Branches ± tumid, often curved and horn-like. Stem leaves lingulate to spatulate: fibrillose at least in upper third and often to below half-way. Hyaline cells of stem leaves with fewer pores on the adaxial surface than on the abaxial: abaxial pores often in regular rows along the commissures. Plants often very robust, sometimes tinged wine-red. Common in oligotrophic or mesotrophic hollows and pools, springs and seepage lines and on wet rocks.

Sphagnum auriculatum

At least some fascicles with 5 well-developed branches (except in weak plants). Branch leaves often curved and asymmetric near the branch bases, mostly erect-spreading. Branches rarely tumid, never curved and horn-like. Stem leaves triangular-lingulate, narrowed above the insertion: fibrillose one quarter to one third from apex, rarely to mid-leaf. Hyaline cells of stem leaves with more numerous pores on adaxial surface than on abaxial, or both surfaces multiporose. Plant often

Sphagnum subsecundum subsp. *inundatum*

orange but never red. An uncommon species of mesotrophic mires and stream-sides.

20 - Section Cuspidata

Stem leaves shortly lingulate, as wide or wider above than at insertion; fimbriate with a wide zone of apical resorption: hyaline cells enlarged and lacking fibrils. Stems dark brown to almost black. Plants-brown.

21

Stem leaves as wide as, or narrower above than, at insertion: subacute to obtuse; if narrowly fimbriate, then stems and plants pale. If plants brown, then stem leaves either ± acute or with fibrils. Stems mostly pale, sometimes dark.

22

21

Plants robust. Stem leaves large (ca 1.0 mm wide): expanded above and fimbriate across the whole upper part. A widespread plant of the boreal to arctic area of N and NE Europe.

Sphagnum lindbergii

Plants small. Stem leaves small (less than 0.8 mm.wide): not, or only slightly wider at apex than insertion and fimbriate only across the narrowed apex. A rare arctic to sub-arctic species of the extreme NE of Europe.

Sphagnum lenense

22

Branch leaves (except for a few basal ones) narrowly lanceolate to linear-lanceolate, more than 3 times (often more than 5 times) as long as wide. Hyaline cells on convex surface of branch leaves without pores, or with a single pore in the apical angle. Stem leaves ± acute; fibrillose above. Plants yellowish green to pale green: common in pools and wet hollows.

23

Branch leaves (especially those of pendent branches) mostly less than 3 times as long as wide or, if longer, then hyaline cells with abundant pores or stem leaves without fibrils. Stern leaves various, mostly with acute apices. Plants various, sometimes brown.

24

23

Photosynthetic cells of branch leaves in TS, trapezoid, widely exposed on both leaf surfaces. Branch leaves commonly more than 4 times as long as wide. Fascicles with poorly differentiated or undifferentiated pendent branches. Plants often pale green: widespread, usually in bog

Sphagnum cuspidatum

pools or wet hollows.

Photosynthetic cells of branch leaves in TS, triangular, not, or barely, reaching the concave leaf surface. Branch leaves rarely more than 3 times as long as wide. Fascicles with slightly to moderately differentiated pendent branches bearing ovate-lanceolate to lanceolate leaves.

Plants usually deep green.

Sphagnum recurvum
var.
mucronatum

24

Plants green, yellowish or tinged brown: if overall brown, then stem leaves acutely pointed or apparently mucronate, strongly deflexed; non-fibrillose.

25

Plants brown, except in shade: if paler, then stem leaves spreading, obtuse and concave; mostly fibrillose, at least near apex.

30

25

Stem leaves triangular to oval-triangular: apices acute or mucronate due to incurved or 'pinched' margins: if narrowly obtuse, then branch leaves strongly 5-ranked, more than 1.4 mm long and stem cortex ± distinct around whole of circumference.

26

Stem leaves shortly lingulate to triangular-lingulate: apices broadly rounded-obtuse, sometimes notched, torn or fimbriate: if apparently mucronate, then branch leaves mainly less than 1.4 mm long and stem cortex distinct only adjacent to leaf and fascicle insertions.

27

26

Branch leaves widest one quarter to one third above, insertion. Stems pale, green or yellowish. Branches long (usually more, than 15 mm). Plants green to yellow-orange, occasionally olive-brown. Common and widespread, often forming extensive carpets in mesotrophic mires.

Sphagnum recurvum var.
mucronatum

Branch leaves widest at, or just below, half-way. Stems brownish, rarely pale. Branches Short (usually less than 15 mm). Plants gold, golden brown or rich brown. Local in lowlands, mainly towards south and west.

Sphagnum pulchrum

27

Stem leaves deeply notched or bifid, appearing as if partially torn down the middle. Branch leaf apices narrow, slightly spreading when dry, \pm acute and composed of undifferentiated prosenchymatous cells (except in weak plants). Plants robust: shade-tolerant in wet oligotrophic to mesotrophic mires. A sub-arctic and boreal species, common in the north but more local or rare in the south.

*Sphagnum
riparium*

Stem leaves not deeply notched or bifid, sometimes minutely notched. Branch leaf apices narrowly truncated and composed of both hyaline and photosynthetic cells.

28

28

Stem leaves shortly triangular to oval-triangular, \pm equilateral: apices obtuse, often slightly concave, rarely pinched to give a mucronate appearance. Pendent and spreading branches strongly dimorphic.

*Sphagnum
angustifolium*

Hyaline cells of pendent branch leaves distinctly wider at apical end. Leaves of spreading branches rarely more than 1.5 mm long.

Stem leaves triangular-lingulate: apices rounded or truncate. Pendent and spreading branches weakly dimorphic. Hyaline cells of pendent branch leaves not distinctly wider at apical end. Leaves of spreading branches rarely less than 1.5 mm long.

29

29

Photosynthetic cells in TS, triangular, not, or rarely, exposed on concave leaf surface. Hyaline cells of lower lateral parts of branch leaves with few to many small, faint pores remote from the commissures (strong staining required). Branch leaves 5-ranked, \pm uniform along branch. Plants robust, green or yellowish, in wet mesotrophic to eutrophic mires: often periodically submerged. Scattered to locally frequent, rare in south and extreme north.

*Sphagnum
obtusum*

Photosynthetic cells in TS, trapezoid, exposed on concave leaf surface. Hyaline cells of lower lateral parts of branch leaves without small, faint pores. Branch leaves not consistently 5-ranked: distal leaves of spreading branches often linear. Branch leaf apices with photosynthetic cells as wide as hyaline cells. Plants medium-sized to rather robust, green or ochre, in wet mesotrophic mires. Widespread but less common in the north and confined to montane areas in the south.

*Sphagnum
flexuosum*

30

Plants small. Fascicles often of only 3 branches. Branch leaves small (up to 1.6 mm), often curved and secund. Branch leaf hyaline cells with pores and pseudopores confined to commissures on convex leaf surface. Stem leaves proportionately large, spreading, concave: apices rounded-obtuse. Pendent branch leaves, at least in lower lateral parts, with conspicuous: large resorption gaps in the apical angles of hyaline cells. A species of wet oligotrophic mires, often forming extensive 'lawns'. Common in the north and east: more scattered further south and west.

*Sphagnum
balticum*

Plants medium-sized to robust. Fascicles rarely of fewer than 4 branches. Branch leaves rarely less than 1.5 mm long: seldom secund. Branch leaf hyaline cells with few to many pores, remote from commissures on the convex leaf surface (if lacking such pores, then stem leaves ± triangular and strongly deflexed). Apical resorption gaps, when present, not conspicuously large (ie less than 12.0 µm).

31

31

Stem leaves triangular to oval-triangular, strongly deflexed: apices narrowly obtuse to, apparently, mucronate. Branch leaf hyaline cells in upper mid-part of leaf on convex surface without pores, or with 1-2 pores confined to apical and upper lateral angles. A lowland species, scattered in the south and west.

*Sphagnum
pulchrum*

Stem leaves short-lingulate, concave, ± spreading (sometimes weakly deflexed): apices broadly obtuse. Branch leaf hyaline cells in upper mid-part of leaf on convex surface with few to numerous pores not confined to cell angles. Northern or alpine species.

32

32

Hyaline cells of branch leaves with numerous pores on convex leaf surface; pores absent or few on concave surface. Photosynthetic cells of branch leaves widely exposed on the concave leaf surface. Plants lax: long-leaved.

*Sphagnum
majus*

Hyaline cells of branch leaves with numerous small pores on both leaf surfaces. Photosynthetic cells mostly immersed on concave leaf surface, or only narrowly exposed. Plants lax or firm: not notably long-leaved.

33

33

Branch leaf hyaline cells with numerous, small pores in one or 2 rows, remote from commissures, on both leaf surfaces. A widespread but uncommon boreal to arctic species of oligotrophic mires. *Sphagnum jensenii*

Branch leaf hyaline cells with pores usually, along the commissures; seldom numerous or in regular rows on the concave surface. Rare boreal or sub-arctic species. *Sphagnum annulatum*

34 - Section Acutifolia

Outer edge of branch leaf border resorbed, forming a furrow (seen as a notch in TS). Stem leaves large: strongly fibrillose and:at least in upper halves, ± identical in structure to branch leaves. Plants medium-sized but low-growing: usually pale, tinged with pink. Locally frequent in the west on shallow peat of wet heaths. *Sphagnum molle*

Outer edge of branch leaf border intact. Stem leaves various, without fibrils or weakly fibrillose (strongly fibrillose in *S. angermanicum*), not identical to branch leaves in upper part. 35

35

Stem leaves lingulate to spatulate (wider above the middle than at insertion), with patches of enlarged hyaline cells above base and also just below apex: hyaline cells never fibrillose: apices rather narrowly to widely fimbriate. Stem cortex with large, distinct pores. Stem bud conical and ± projecting from capitulum. Branch leaves never 5-ranked. Plants pale green to pale ochre, never red or dark brown. 36

Stem leaves various; if wider above the middle, then hyaline cells at least partly fibrillose, branch leaves .5-ranked, or plants red or brown: cells above base not markedly enlarged. Stem cortex without pores, or pores indistinct (sometimes pores more distinct in *S. russowii*): Stem buds rarely projecting from capitulum. Plants often with at least some red or brown coloration (sometimes confined to internal cylinder of stems and branches). 37

36

Stem leaves expanded above and resorbed-fimbriate around the whole upper part. Stem buds conspicuous, projecting: Plants often tall and thin. Common, especially in the south, in mesotrophic mires, frequently in shade. Fruit common. *Sphagnum fimbriatum*

Stem leaves not widely expanded above, fimbriate only across the apices. Stem buds slightly, but inconspicuously, projecting. Plants not usually attenuated-looking. Local in south, common in north in mesotrophic mires and wet woodlands. Fruit rare. *Sphagnum girgensohnii*

37

Stem leaves wider at mid-leaf than at insertion: hyaline cells strongly fibrillose. Branch leaves easily flattened: apices broad, not inrolled, strongly dentate. Capitula with projecting stem buds: Plants flaccid, often rather pale: rare in weakly mesotrophic mires. *Sphagnum angermanicum*

Stem leaves at mid-leaf as wide as, or narrower than, at insertion: hyaline cells rarely strongly fibrillose. Branch leaves difficult or impossible to flatten because of inrolled margins towards apices (at least in lower leaves of branches). Capitula without projecting stem buds.

38

38

Stems brown. Plants usually brown (at least in part), rarely green, never red. Stem leaves mostly without fibrils. Branch leaves never 5-ranked.

39

Stems green, red or violet. Plants green, red or violet (at least in part): if entirely green, then stem leaves distinctly fibrillose near apex. Branch leaves 5-ranked or not.

40

39

Dried plants iridescent when viewed with a lens. Branch leaf hyaline cells on convex leaf surface mostly with a large (12:0-15:0 p,m) pore in the apical angle. Plants small to medium-sized in somewhat mesotrophic habitats rare to local: boreal. *Sphagnum subfulvum*

Dried plants matt, lacking iridescence. Branch leaf hyaline cells on convex surface mostly lacking apical pores: if present, then less than 12:0 pin. Plants small, in oligotrophic mires. Common and widespread in the north: rare to locally frequent towards the south. *Sphagnum fuscum*

40

At least some fascicles with 3 spreading branches. Stem, leaves triangular to triangular-lingulate: usually less than 1.4 mm long. Branch leaves conspicuously 5-ranked. Stem cortex with occasional to frequent faint pores (strong staining *Sphagnum quinquefarium*

required). Plants tall, usually variegated pale green and red. Widespread but mainly southern in rather dry, often shaded, habitats: virtually absent from mires.

Fascicles normally with 2 spreading branches (rarely with an additional branch at a stem bifurcation). Stem leaves lingulate or, if triangular, then over 1.4 mm long and branch leaves not 5-ranked. Stem cortex (except *S. russowii*) without pores.

41

41

Stem leaves triangular: apices markedly pointed, because of inrolled margins: hyaline cells lacking fibrils. Plants iridescent when dry., often rather loose, with large capitula. *Sphagnum subnitens*

Stem leaves lingulate: apices obtuse or \pm acute: hyaline cells mostly fibrillose, at least towards the apex (fibrils sometimes weak): Dried plants not iridescent.

42

42

Branch leaves distinctly 5-ranked, especially near the capitulum. Stem leaf hyaline cells without fibrils, or fibrils weak.

43

Branch leaves not distinctly 5-ranked. Stem leaf hyaline cells strongly fibrillose in upper part.

Sphagnum capillifolium
var. *capillifolium*

43

Stem leaf lingulate: apex broadly rounded or truncate, often fimbriate. Cells of stem cortex with occasional pores or thinnings. Branch leaf hyaline cells with large, circular pores throughout on concave leaf surface. Plants medium-sized to rather small: widely distributed in oligotrophic mires and paludified woods. Species with northern tendencies.

Sphagnum russowii

Stem leaf lingulate to lingulate-triangular: apex narrowly rounded to subacute, not fimbriate. Outer cells of stem cortex without large pores or thinnings. Branch leaf hyaline cells in mid-leaf on concave leaf surface without pores.

44

44

Branch leaf hyaline cells, in upper half of leaf, with small, circular, thick-ringed pores on the convex leaf surface (pores less than 5.0 μ m, including ring). Plants usually *Sphagnum warnstorffii*

deep red, occasionally green with red flecks: in eutrophic habitats. Abundant in the north, but towards the south increasingly confined to montane areas.

Branch leaf hyaline cells with larger (more than 5.0 μm), apparently half-elliptical pores against the commissures. Plants of mesotrophic and oligotrophic habitats.

Sphagnum capillifolium

44a

44a - *Sphagnum capillifolium*

Capitula \pm hemispherical. Branch leaves not consistently 5-ranked. Plants often compact and dense. Branch leaf hyaline cells with pores 10.0-15.0 μm on convex surface at mid-leaf.

S. capillifolium
var.
capillifolium

Capitula \pm flat. Branch leaves 5-ranked. Plants usually lax. Branch leaf hyaline cells with pores 6.0-12.0 μm on convex surface at mid-leaf.

S. capillifolium
var. *rubellum*

