



# **Sphagnum Structure, Terminology & Identification**

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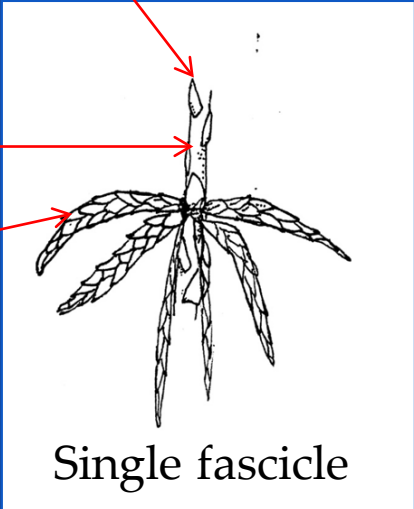
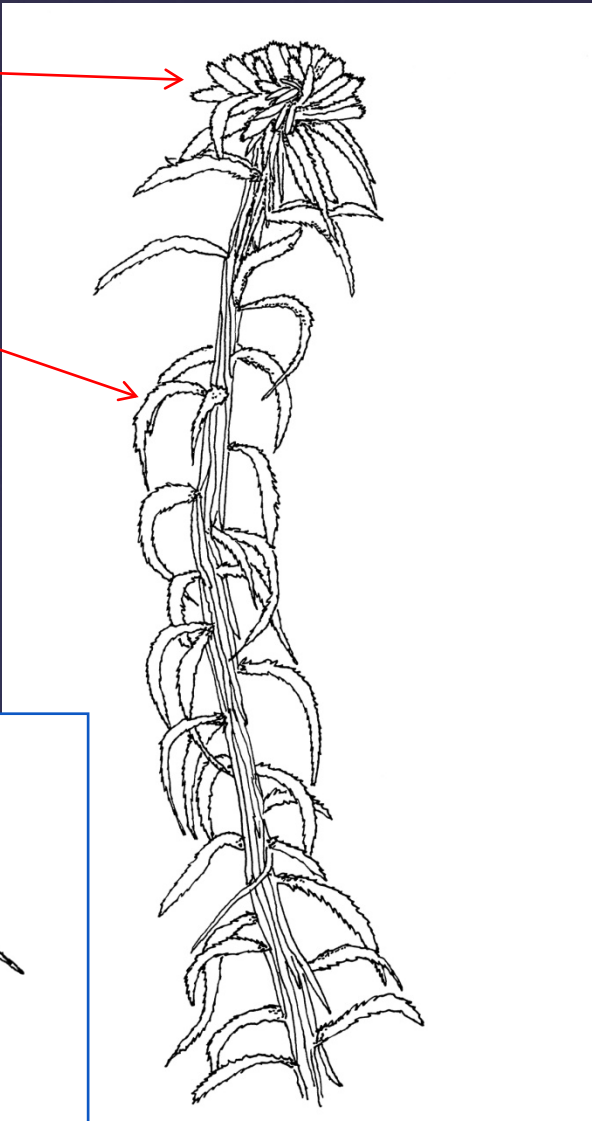
Capitulum

Branch

Stem leaf

Stem

Branch leaf



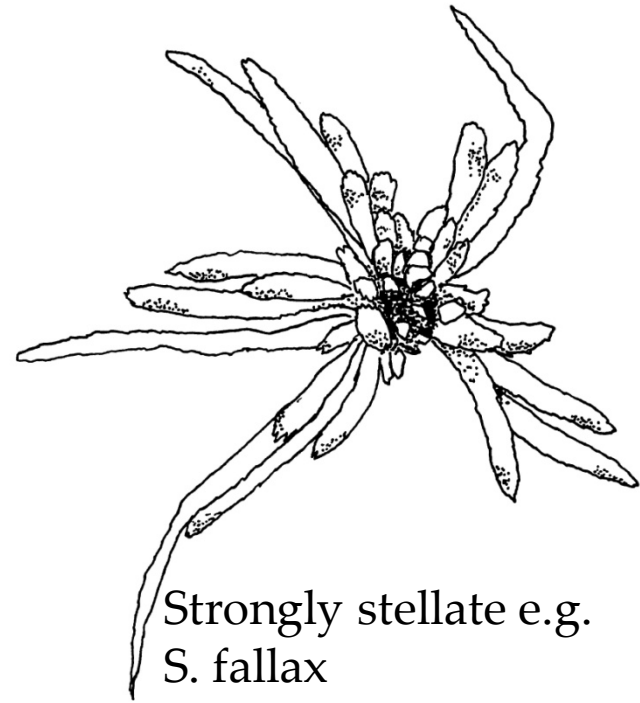
Single fascicle

# SPHAGNUM SHOOT

Prominent terminal bud e.g. *S. teres*



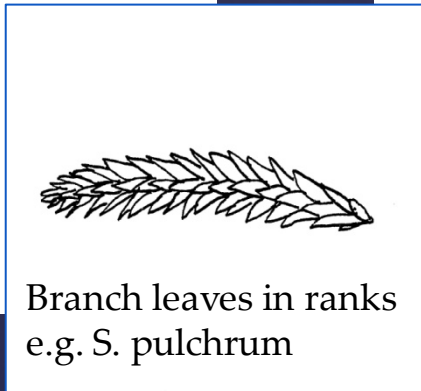
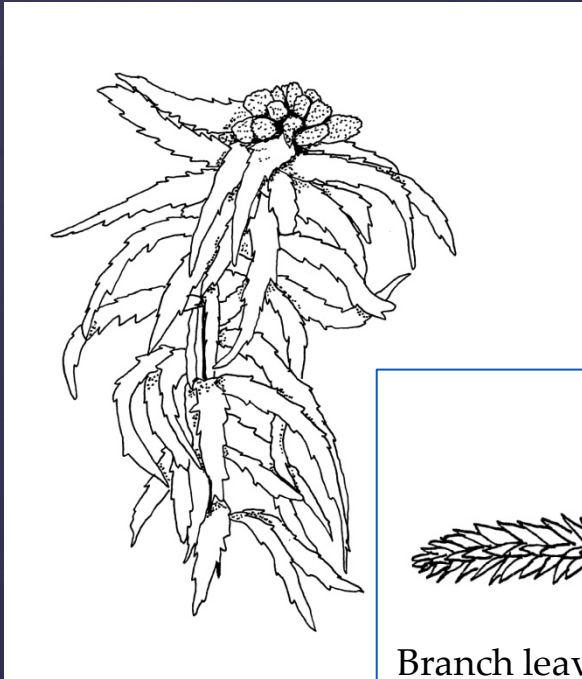
Big bud



Strongly stellate e.g.  
*S. fallax*

# Capitulum

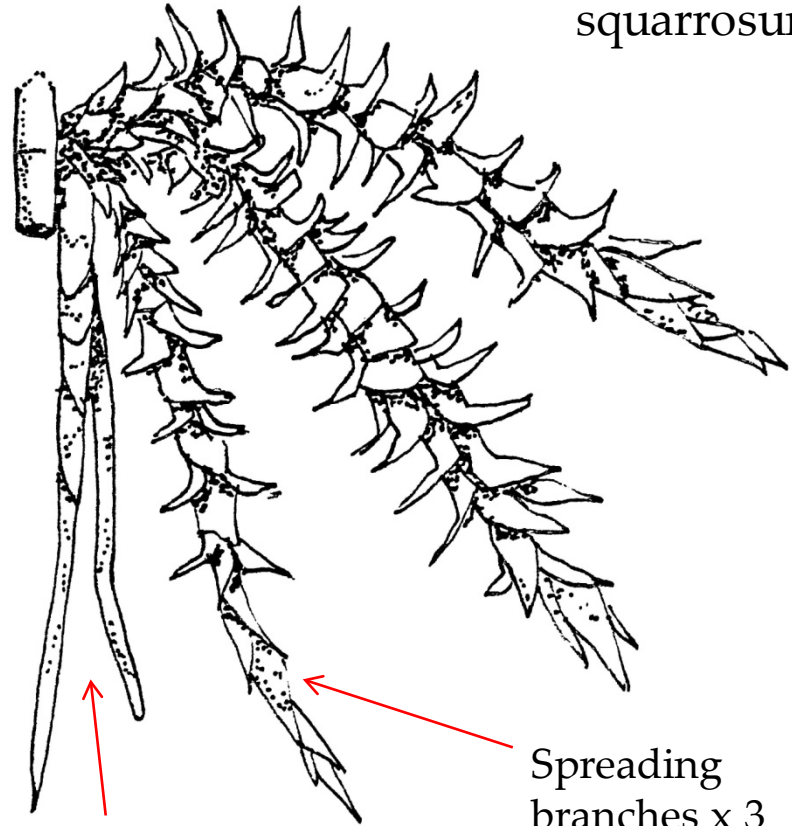
# Branch arrangement



Branch leaves in ranks  
e.g. *S. pulchrum*

Fascicles  
undifferentiated e.g.  
*S. palustre*

Fascicles strongly differentiated e.g. *S. squarrosus*

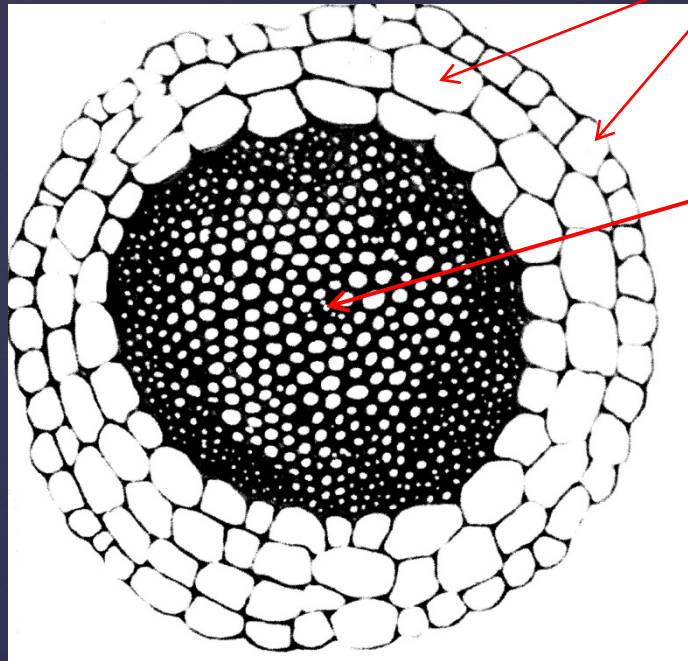


Pendent branches x 2

Spreading  
branches x 3

Stem section showing strongly differentiated cortex (S. papillosum)

From Holzer 2010

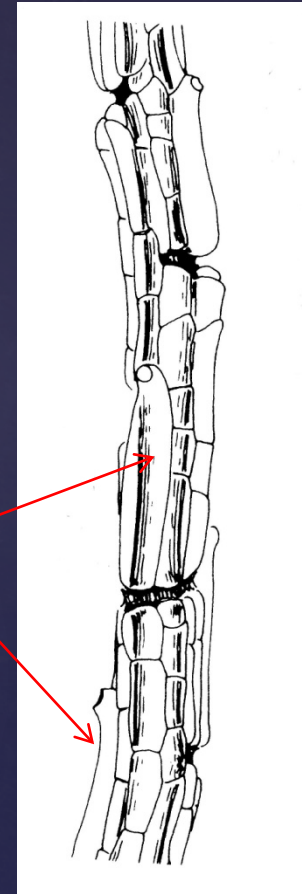


Hyaline cortical cells

Cylinder

Retort cells along branch axis (S. subnitens)

From Daniels & Eddy 1985

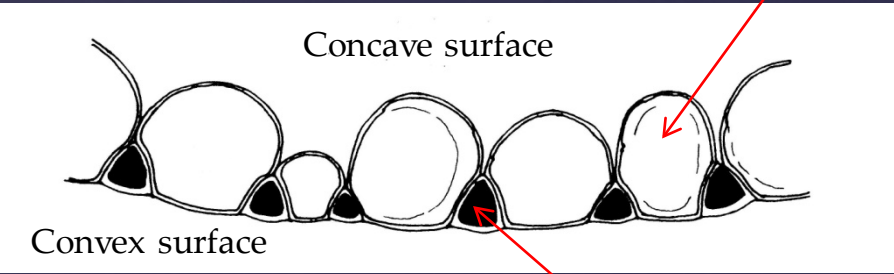


# Stem and branch

All from Daniels & Eddy 1985  
*Sphagnum tenellum*

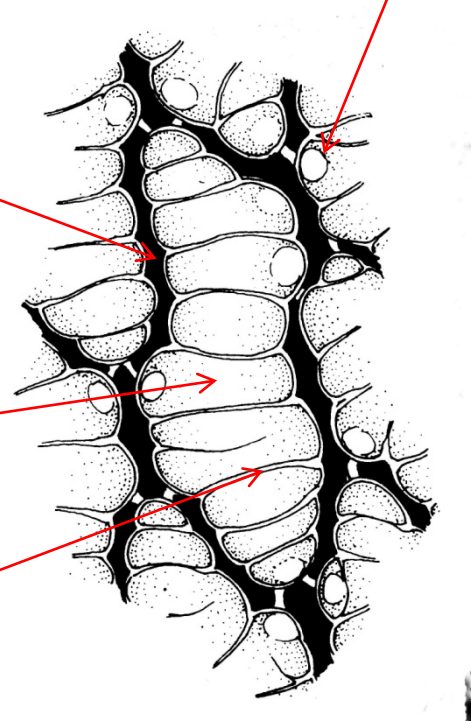
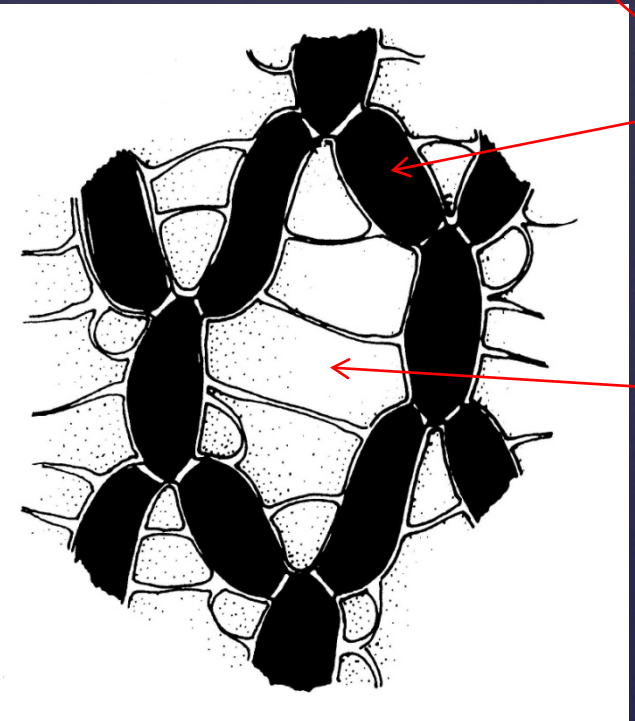
# Leaf cells

Hyalocyst



Branch leaf section

Pore



Convex surface

Concave surface



# Recognising Sphagnum Sections



## Sections

Sphagnum – 6 species

Acutifolia – 12 species

Rigida – 2 species

Squarrosa – 2 species

Cuspidata – 11 species

Subsecunda – 5 species

# British Sphagnum sections

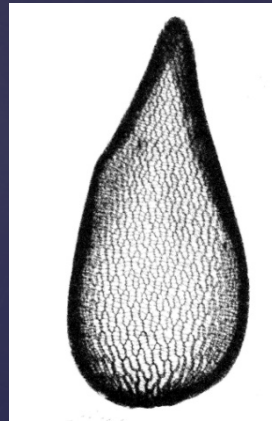
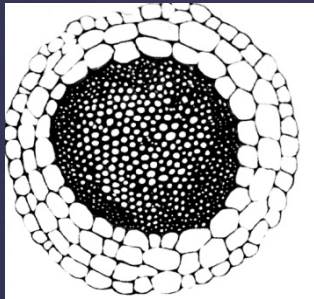


# Section Sphagnum

S. palustre  
S. papillosum  
S. medium  
S. divinum (scarce)  
S. affine (scarce)  
S. austinii (scarce)

## Field characters:

- Plants always robust
- Broad, hooded branch leaves
- Stem cortex  $> 1/3$  stem diameter



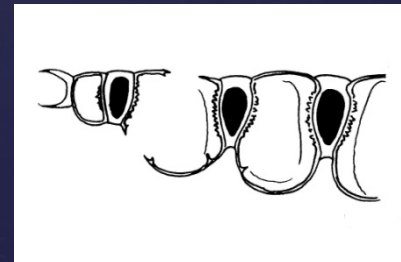
Both from Holzer 2010



S. medium

## Other characters:

- Cortical cells of branches have spiral fibrils
- Branch leaf apices are minutely rough (resorption furrows)
- No retort cells

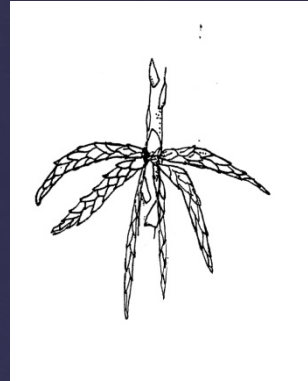


From Daniels & Eddy 1985

# Section Acutifolia

## Field characters:

- Stem leaves always erect
- Red pigments often present
- Plants usually small to medium-sized (except *S. skyense* which is robust)



*S. molle*  
*S. quinquefarium*  
*S. subnitens*  
*S. skyense* (rare)  
*S. fuscum* (scarce)  
*S. beothuk*  
*S. fimbriatum*  
*S. girgensohnii*  
*S. russowii*  
*S. warnstorffii* (scarce)  
*S. capillifolium*  
*S. rubellum*

This is a variable group. Plants with red pigments but without hooded branch leaves can comfortably be placed here. *S. fimbriatum* and *S. girgensohnii* are usually green and other species may have little or no red pigment if growing in shade.

*Beware! S. fallax and S. angustifolium sometimes have pink branches but are not in this group*



*S. capillifolium*

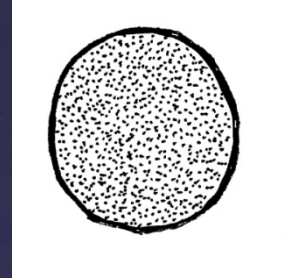
# Section Rigida

*S. compactum*  
*S. strictum* (rare)

## Field characters:

- Low-growing plants
- Branch leaves have a cut-off tip
- Minute triangular hanging stem leaves < 0.5 length branch leaves
- *S. compactum* has crowded, upward-pointing branches concealing very dark stem

*S. compactum* is very common in wet heaths where it forms low mats often with quite bright colours (never red). Leaves look hooded like Section *Sphagnum* but the plant does not have a visible stem cortex.



Stem section of *S. compactum*



*S. compactum*

# Section Squarrosa

*S. squarrosus*  
*S. teres* (scarce)

## Field characters:

- Medium-sized to robust plants
- Large capitulum buds
- Branch leaves slightly to very squarrose when dry
- Stem leaves lingulate (tongue-shaped)

*S. squarrosus* is a robust plant of wet woodland and other shady places. It is always distinctly prickly-looking.

*S. teres* is restricted to base-rich flushes and wet ground, mostly in the uplands.



*S. squarrosus*



*S. teres*

# Section Cuspidata

## Field characters:

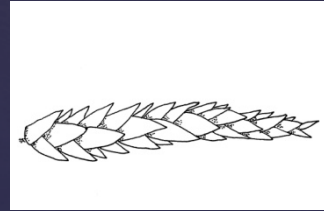
- Very variable
- Often green or with mustard colours
- Capitula often stellate
- Stem leaves hanging or spreading (not erect)

## Other characters:

- Branches have large retort cells

*S. fallax*, *S. angustifolium* and *S. flexuosum* form the so-called *Sphagnum recurvum* complex and look very similar.

*S. tenellum* is immediately identifiable due to its small size and divergent branch leaves.



*S. tenellum* divergent branch apex

*S. tenellum*  
*S. pulchrum* (scarce)  
*S. balticum* (rare)  
*S. lindbergii* (rare)  
*S. riparium* (rare)  
*S. majus* (rare)  
*S. cuspidatum*  
*S. fallax*  
*S. angustifolium*  
*S. flexuosum*  
*S. obtusum* (extinct in Britain)



*S. flexuosum*

# Section Subsecunda

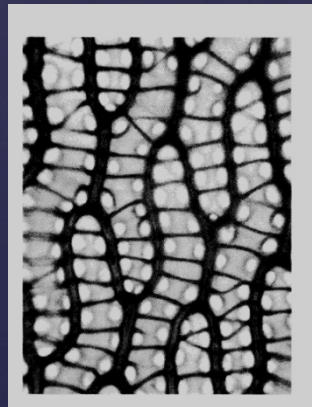
S. contortum (scarce)  
S. subsecundum  
(scarce)  
S. inundatum  
S. auriculatum  
S. platyphyllum (rare)

## Field characters:

- Branches are often curved to one side (*cow's horns*)
- Plants often have yellow, orange or brown pigments

## Other characters:

- Branch leaves have numerous small ringed pores along the edge of hyalocysts



S. denticulatum



S. inundatum and S. auriculatum are very variable and cannot always be easily separated.