Three *Trichophorum* taxa ~ ID & ecology

Jeremy Roberts / Andy Amphlett, April 2018

… some history

… traditionally, a single species, *Scirpus cespitosus* L.; *'Trichophorum cespitosum'*

‘*CTW*’ Ed. 2 (1962)

Two deergrass taxa, LONG known! - here recognised as SUBspecies

Eduard Palla (d. 1922)→ … *T. germanicum*

2. T. cespitosum (L.) Hartman — Deer-grass.

Scirpus caespitosus L.

A *densely tufted* perennial 5–35 cm. *Stems* slender, *terete*, *smooth*. Lower sheaths lfless, light brown, shiny. Spikelet 3–6 mm., 3–6-fld. Glumes sub-acute, the two lower larger than the rest. *Bristles somewhat longer than fr. but shorter than glumes, brownish*. Nut c. 2 mm., ovoid, trigonous. Fl. 5–6. Fr. 7–8. Hs. or Hel.

Ssp. **cespitosum**

Basal sheaths shining; uppermost sheath (Fig. 70 A) fitting tightly round the stem (at least in fresh material), the opening c. 1 mm., hyaline margin narrow. Glumes brown with a yellowish-brown midrib, the lowest ending in a short, stout green point. $2n = 104$.

Ssp. **germanicum** (Palla) Hegi

T. germanicum Palla; *Scirpus germanicus* (Palla) Lindm.

Basal sheaths scarcely shining; uppermost sheath (Fig. 70 B) fitting loosely round the stem, the opening 2–3 mm., with broad hyaline margin. Glumes brown with a green midrib, the lowest ending in a stout, green, often almost lf-like, point which usually equals or exceeds the spikelet.

Native. In damp acid peaty places, particularly blanket bogs and heaths, locally dominant. 104, H40. The distribution of the sspp. is not known in detail, but ssp. *germanicum* is much the commoner; ssp. *cespitosum* is rare and its distribution is imperfectly known. The sp. is scattered throughout much of the British Is., but absent from base-rich soils. W. and N. Europe, local in C. Europe and rare in the south; Himalaya; N. America; Greenland.

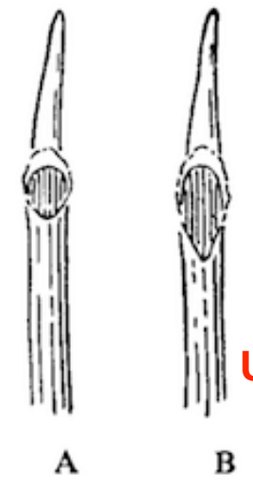

Fig. 70. Uppermost sheaths of *Trichophorum cespitosum*. A, ssp. *cespitosum*; B, ssp. *germanicum*. × 2·5.

←

Useful(ish) drawing!

Sell & Murrell (1996). “... Although there are records of subsp. *cespitosum* they have not been substantiated, but plants intermediate between the subspecies have been recorded in widely scattered localities”.

1999: two SUBspecies – and recognition of a frequent hybrid

[with a not-very-memorable name!]:

Watsonia **22**: 209–233 (1999)

Identification, distribution and a new nothosubspecies of *Trichophorum cespitosum* (L.) Hartman (Cyperaceae) in the British Isles and N. W. Europe

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ABSTRACT

The common form of *Trichophorum cespitosum* (L.) Hartman (Cyperaceae) in Britain and Ireland, growing in acidic peat, is subsp. *germanicum*, while subsp. *cespitosum* is rare in South Northumberland (v.c. 67) in marginal areas of *Sphagnum* mires, with base-enrichment, although specimens exist from elsewhere in Britain and Ireland. The characteristic *Trichophorum* of raised mires in v.c. 67 is a sterile hybrid between subsp. *cespitosum* and subsp. *germanicum*, corresponding to a plant found by E. Foerster in 1970 in the Harz Mountains and elsewhere in N. W. Germany, and for which the name **Trichophorum cespitosum** (L.) Hartman **nothosubsp. foersteri** G. A. Swan, **nothosubsp. nov.** is now proposed. The identification and distributions of these taxa are discussed. Possibly, in earlier times, subsp. *cespitosum* was the plant of raised mires in Britain, as in Norway today, but was displaced by the hybrid except in base-enriched, marginal areas. In Britain, proliferous forms of the hybrid and subsp. *germanicum* also occur.

KEYWORDS: Deergrass, raised mires, Harz Mountains, nothosubsp. *foersteri*, floral proliferation.

2007: two SPECIES – and the hybrid gets a nice binomial!:
the common species is now *"germanicum"*; the rare species is *"cespitosum"*

6 *Trichophorum cespitosum* (L.) Hartm.

Northern Deergrass — *Map 6*

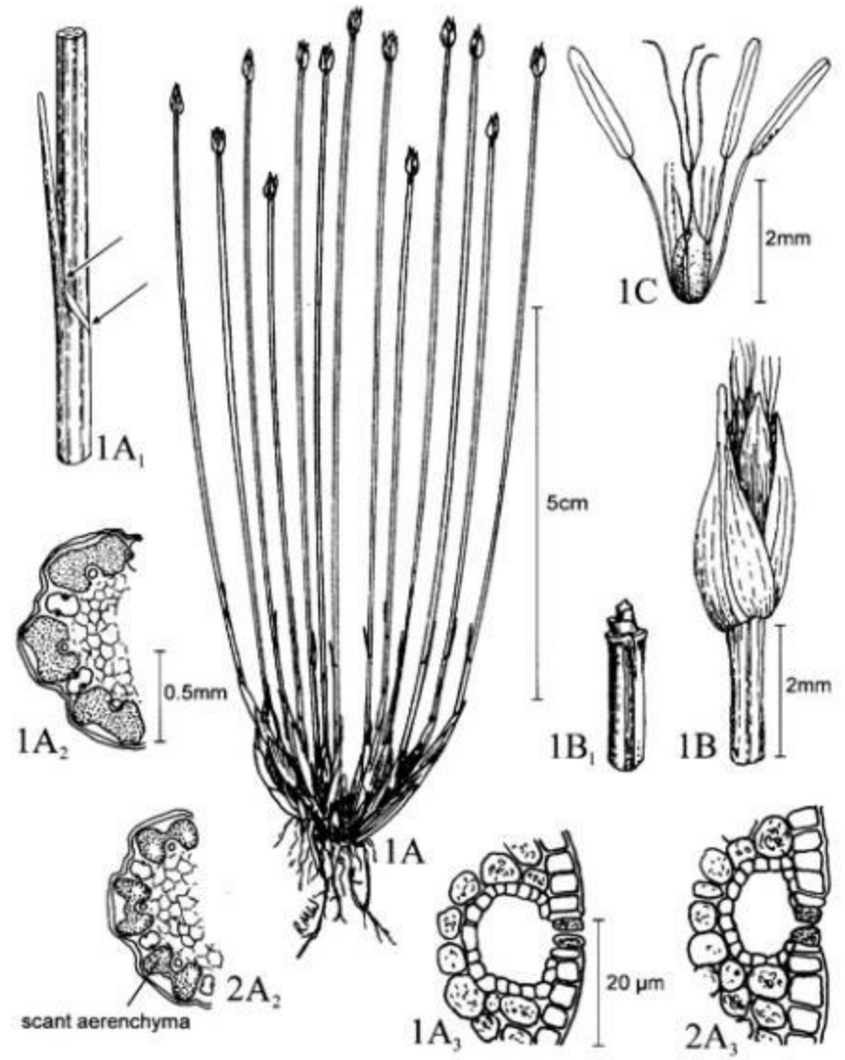
Rhizomes short, forming small ± open tufts. ***Stems*** 5–25 cm × 0.5–0.8 mm, ± terete, smooth, but with distinct ridges; substomatal pits conspicuous in transverse section of stem, 20–26 µm deep; aerenchyma tissue between vascular bundles absent. ***Leaves*** as in **5** *T. germanicum*, but upper leaf-sheath fitting tightly round stem, with a ± transverse and circular opening typically *c.* 1 mm in diameter. ***Inflorescence*** smaller and more compact than in *T. germanicum*, with fewer (3–5) flowers; sometimes up to 20% of the population proliferating (in Northumberland: see Swan 1999); involucral bracts 2, 4–5(–7) mm long, glume-like, brown to orange-brown, with midrib pale yellow-green with an obtuse, green apical projection. ***Glumes*** similar in size and texture to those of *T. germanicum* but sometimes paler brown with the central nerve dominant and the marginal ones indistinct; apex subobtuse, attenuated into a subulate tip. ***Flowers*** and ***nuts*** as in *T. germanicum*.

Fr. 5–7.

The ecology of *Trichophorum cespitosum* is difficult to define owing to the small number of populations found. In Northumberland it appears to be confined to the margins of raised or valley mires where there is some water movement and base enrichment, whilst **5** *T. germanicum* tolerates a wider range of habitats (see Swan 1999). In Perthshire (v.c. 88) it can be found on limestones in open, often stony, calcareous mires with *Carex panicea*, *C. pulicaris*, *C. viridula* subsp. *oedocarpa* and occasionally *C. viridula* subsp. *brachyrrhyncha* with *Schoenus ferrugineus* and *Saxifraga aizoides* (**M11**).

The general morphology of *Trichophorum cespitosum* is similar to that described for **5** *T. germanicum*, with which it can grow. The micro-characters seen in stem section are the best way to confirm it. The species should be looked for in often open and stony, base-rich mires (as described above), which often show a mosaic with residual peat islands where *T. germanicum* will be more common; also in apparently base-poor communities, where it can be dominant (see Swan 1999). In the field it appears as a more slender-stemmed and more open tuft with a distinctive 'jizz'.

The name *Trichophorum cespitosum* has in the past generally been used for *T. germanicum*, which is treated as a subspecies of *T. cespitosum* even by Stace (1997) and Sell & Murrell (1996).



1 ***Trichophorum cespitosum*** **2** ***T.* × *foersteri***
A Plant habit and flowering stems; $\mathbf{A_1}$ Upper sheath with leaf (arrows indicating length of opening); $\mathbf{A_2}$ Partial transverse section of stem (with no or little aerenchyma); $\mathbf{A_3}$ Enlarged portion of stem, showing substomatal pit; **B** Spikelet; $\mathbf{B_1}$ Spikelet rachis, showing glume bases; **C** Floret.

Sedges of the British Isles **(BSBI, 2007)**

– and in Stace 3rd edition (2010)

... so now we have three taxa...

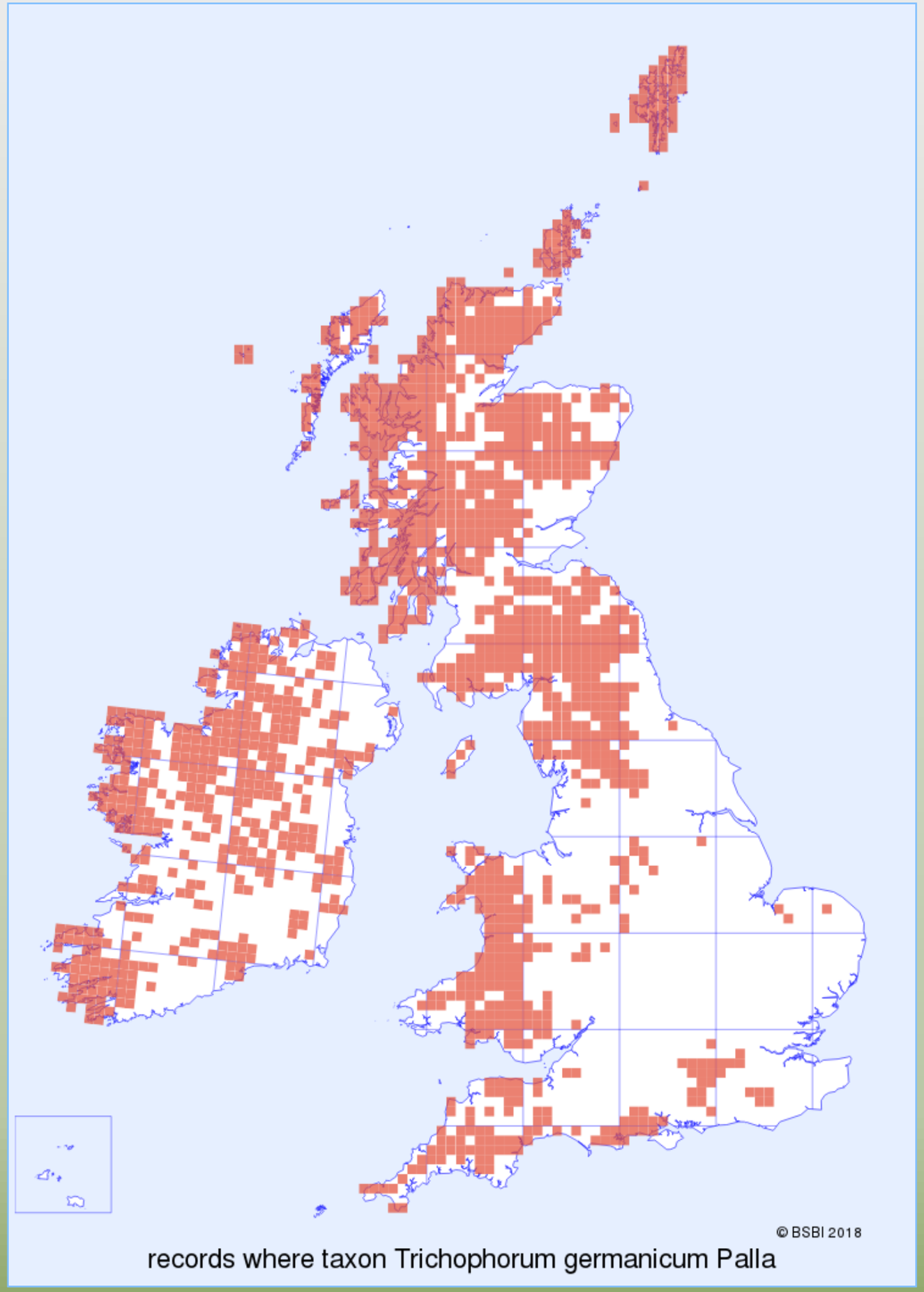
‘Common’ Deergrass

T. germanicum

a local ‘Atlantic-subtlantic’ species

[shallow] peaty soils: eg. blanket bog and wet heath

British Isles, ‘lower regions’ of Sweden, Denmark, France and Germany

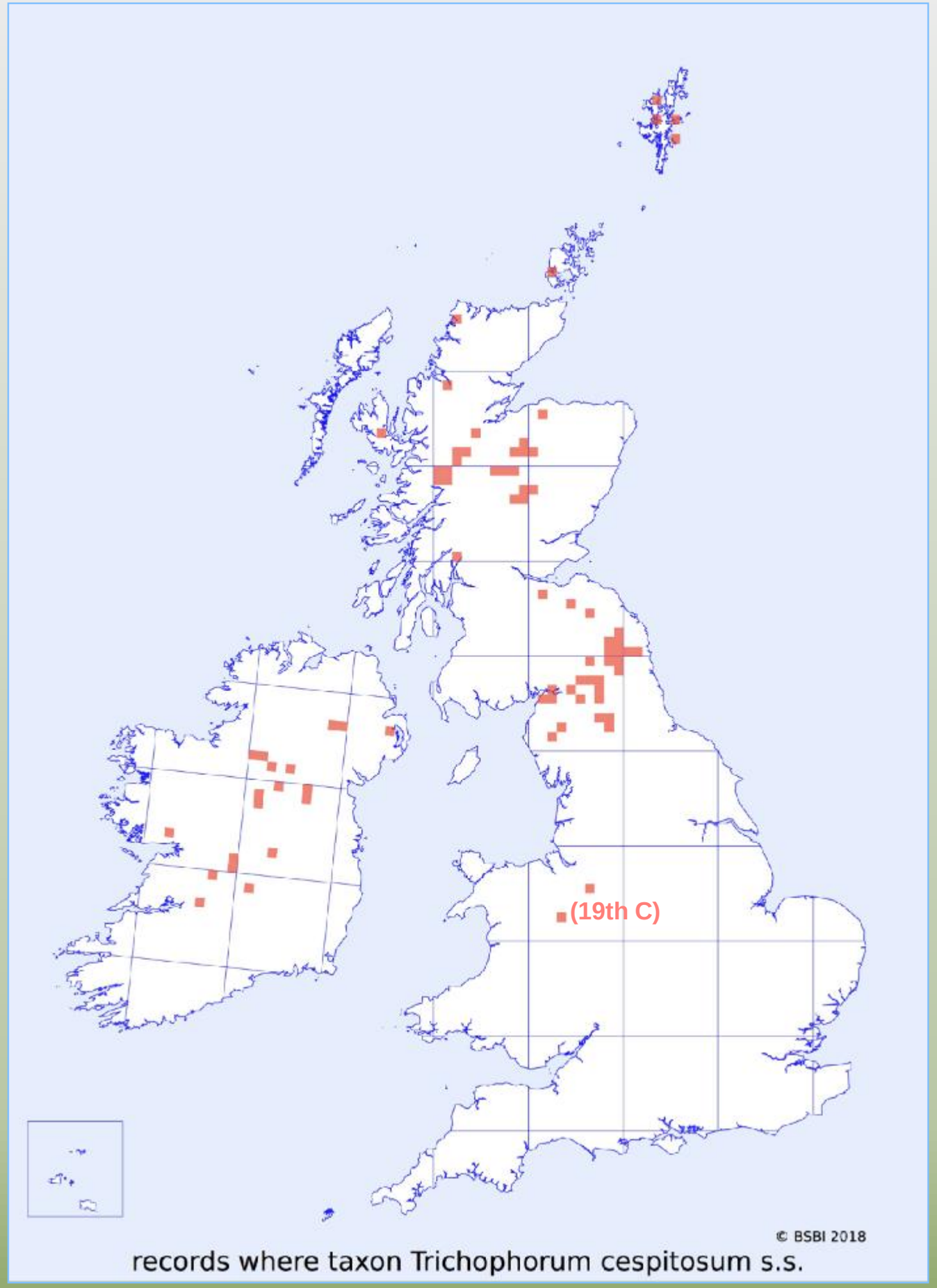


‘Northern’ Deergrass
T. cespitosum s.s.

arctic-alpine; circumpolar

base-rich habitats* and *deep peat mires

Widespread in northern and central Europe



‘Hybrid’ Deergrass

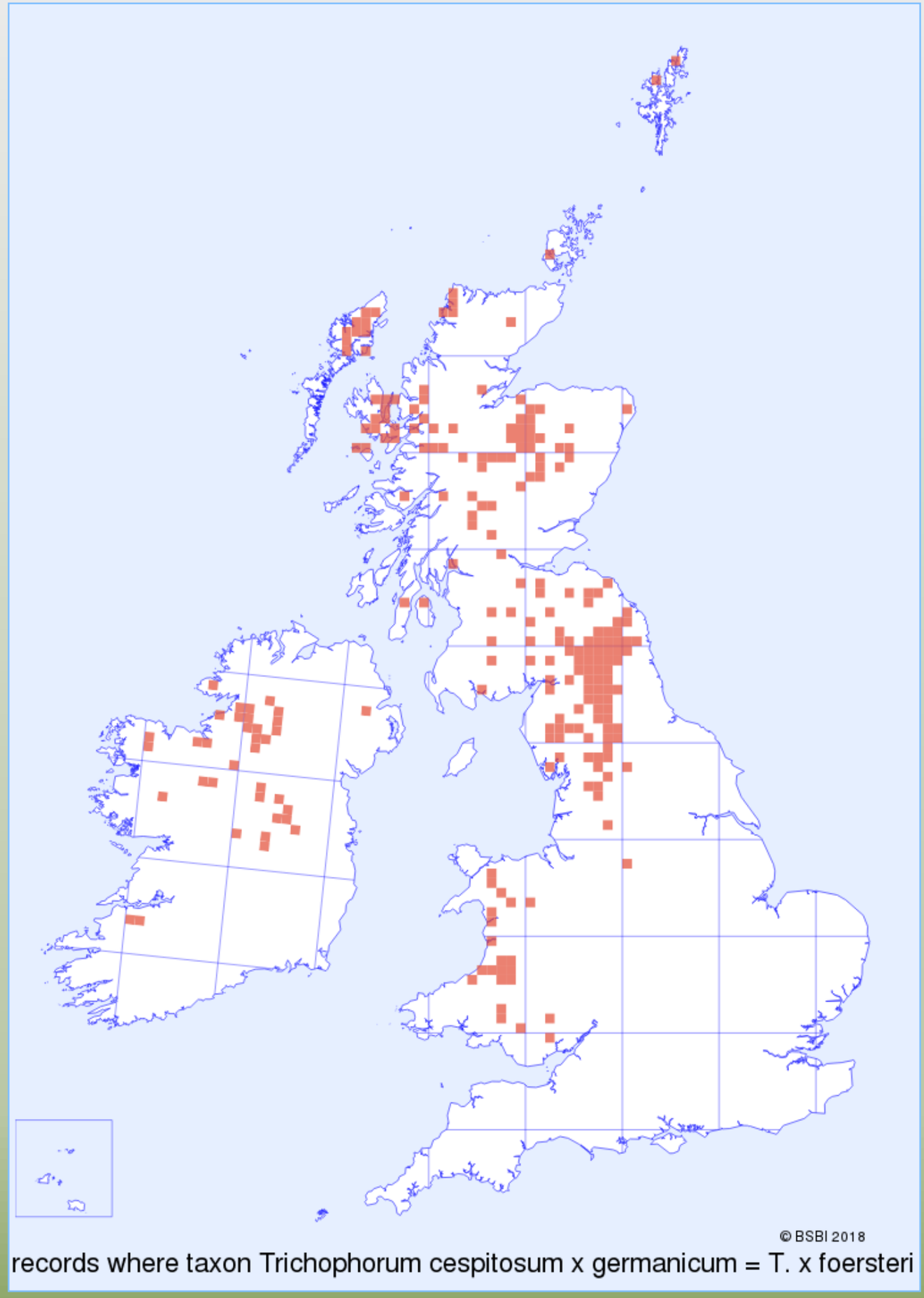
T. × foersteri

in overlap zone of parent species:

‘Atlantic-subtlantic’

base-rich habitats* and *deep peat mires

NB: widespread in Wales, where *cespitosum* parent not yet found



Where to seek Northern Deergrass,
Trichophorum cespitosum s.s.

Occurs in two very different habitats

1: BASIC

calcareous seepages,

Widdybank Pasture, Teesdale ~ 395 metres a.s.l.

Glen Fender Meadows/Monzie – remarkably similar habitat to Widdybank Pasture …

Trichophorum cespitosum
Glen Fender Meadows, with *Triglochin*, *Sax. aizoides*, etc.

Trichophorum cespitosum

Allt Glean Chaorachain, An Teallach, with *Carex panicea* & *Pinguicula*

Where to seek Northern Deergrass,
Trichophorum cespitosum s.s.

Occurs in two very different habitats

2: ACIDIC

lagg zone inflows (slightly mineral-enriched) BUT also far out on **quaking bog**

Muckle Moss, Roman Wall, with abundant hybrid

basin- and raised-mires

Cumbria/Northumberland

T. × *foersteri* dominating on peat-surface …

basin- and raised-mires

Cumbria/Northumberland

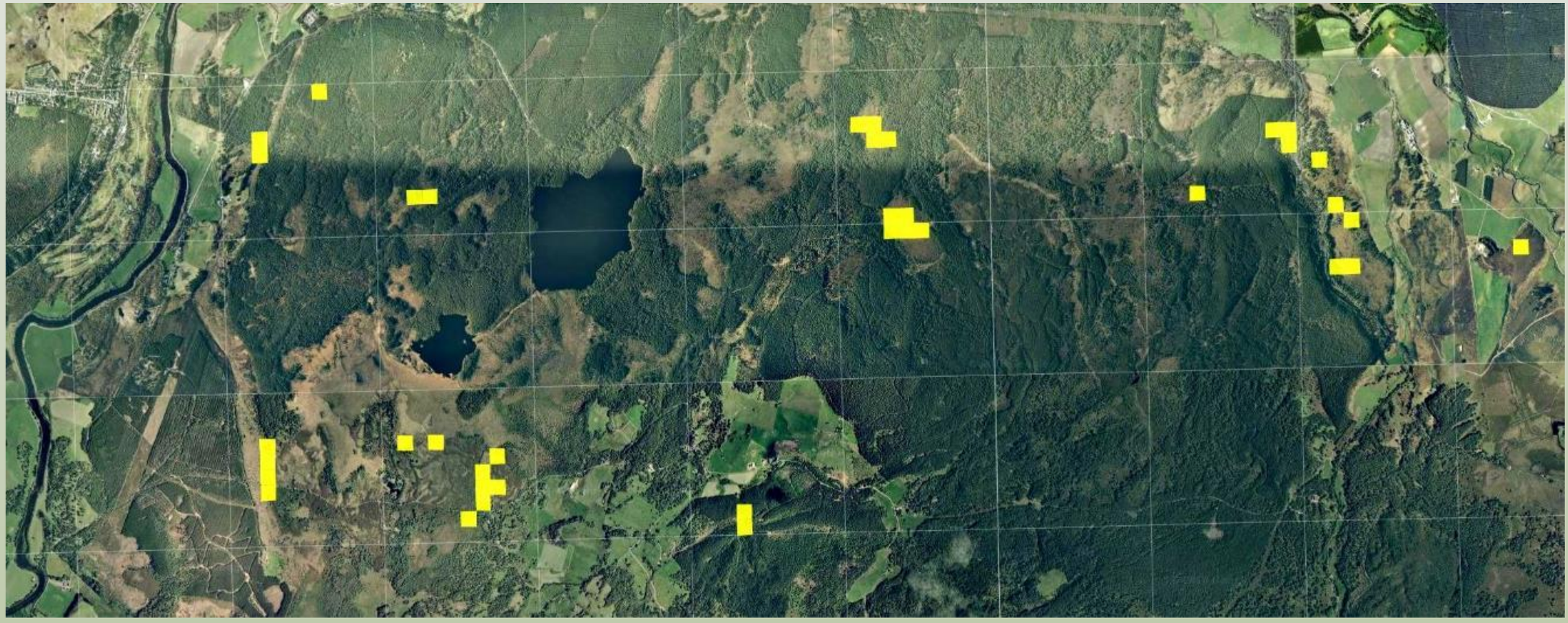
… *T. cespitosum* typically down in hollows, taller hybrid above

Tulloch Moor, Strathspey ~ 220 metres a.s.l.
***T.* × *foersteri* dominant, with *T. cespitosum* occuring in hollows and sphagnum lawns**

Trichophorum cespitosum (Northern Deergrass) and allied taxa in RSPB Abernethy Forest NNR

ANDY AMPHLETT, *RSPB, Forest Lodge, Nethy Bridge, Inverness-shire, PH25 3EF*

BSBI News 119 (2012) pp. 37 - 39



acid and basic habitats

(NB: see website version, with keys)

shows remarkable divergence of associates in basic and acidic sites

Site name		Widdybank Pasture					Muckle Moss		BE	Butterburn Flow			LM **	DM **	Glen Fender		
		Site 1	Site 2	Site 3	Site 4	Site 5	Site 1	Site 2		Site 1	Site 2	Site 3			Site 1	Site 2	Frequ -ency (/15)
	pH*																
Andromeda polifolia	1										y						1
Carex magellanica	2										y						1
Eriophorum vaginatum	2							y				y					2
Narthecium ossifragum	2			y		y	y			y	y	y	y	y			8
Drosera rotundifolia	2		y	y					y		y			y			5
Empetrum nigrum	2													y			1
Erica tetralix	2						y	y		y	y		y			y	6
Calluna vulgaris	2						y	y			y	y	y	y			6
Vaccinium oxycoccus	2						y		y	y				y			4
Trichophorum ×foersteri	2	y		y			y	y	y	y	y			y			8
Potentilla erecta	3	y	y	y	y	y	y									y	7
Luzula multiflora	3	y															1
Myrica gale	3															y	1
Molinia caerulea	3	y	y	y	y	y	y										6
Carex echinata	3						y										1
Juncus acutiflorus	4	y	y	y		y	y										5
Carex panicea	4	y	y	y			y		y								5
Eriophorum angustifolium	4	y			y	y		y									4
Festuca ovina	4		y			y											2
Menyanthes trifoliata	4								y								1
Carex rostrata	4								y								1
Carex pulicaris	5	y	y	y		y	y		y								6
Euphrasia scottica	5								y								1
Salix phylicifolia	5												y				1
Pedicularis palustris	5	y														y	2
Succisa pratensis	5	y		y	y	y							y		y		6
Valeriana dioica	6	y															1
Triglochin palustris	6		y	y											y		3
Saxifraga aizoides	6														y		1
Salix repens	6						y										1
Selaginella selaginoides	6		y			y									y		3
Pinguicula vulgaris	6	y	y	y					y							y	5
Cynosurus cristatus	6	y															1
Equisetum palustre	6								y						y		2
Carex flacca	6	y	y														2
Dactylorhiza incarnata	6	y													y		2
Carex hostiana	6	y	y	y	y	y			y								6
Tofieldia pusilla	7	y	y												y		3
Briza media	7	y		y		y											3
Bartsia alpina	7	y	y														2
Carex ×fulva	7		y														1
Schoenus ferrugineus	7														y		1
Eriophorum latifolium	7	y	y						y							y	4
Gymnadenia borealis	7	y															1
Juncus alpinoarticulatus	7	y													y	y	3
Eleocharis quinqueflora	7	y	y	y					y						y		5
Linum catharticum	7	y		y													2
Kobresia simpliciuscula	8	y	y		y												3
Carex viridula brachyrrhyncha	8	y		y	y	y			y						y		6
Carex capillaris	8	y															1
Primula farinosa	9	y	y			y											3

huge number of associates in basic sites, but very few in acidic sites!

Separation & Identification: 1

Fertile or sterile?

First question: EITHER, 1) Has it got RIPE fruit? - *(end June)* - ***July*** - *(early August)*

If RIPE, then it’s one or other SPECIES, and NOT the sterile hybrid!

but nuts often very inconspicuous in *T. cespitosum* …

… without a pale background…

in *T. cespitosum*, ‘like 1 or 2 black fleas!’

OR:

2) has it got ‘BARE TOPS’ from mid-July?

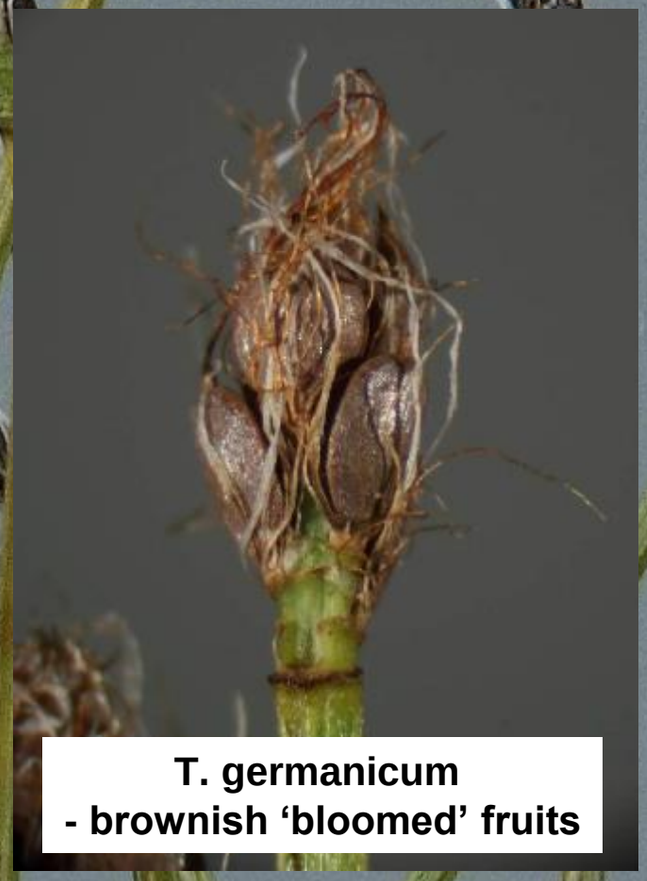
Then it’s EITHER the hybrid, OR perhaps aborted species

When fully ripe:

germanicum	× foersteri	cespitosum
(several bloomed fruits)	(no fruits)	(1-4 glossy fruits)

T. cespitosum

small heads with just a few black shiny fruits - (rarely seen in such good fruit!)



T. germanicum
- brownish ‘bloomed’ fruits

NOTE:

***germanicum* and**

× *foersteri* can be

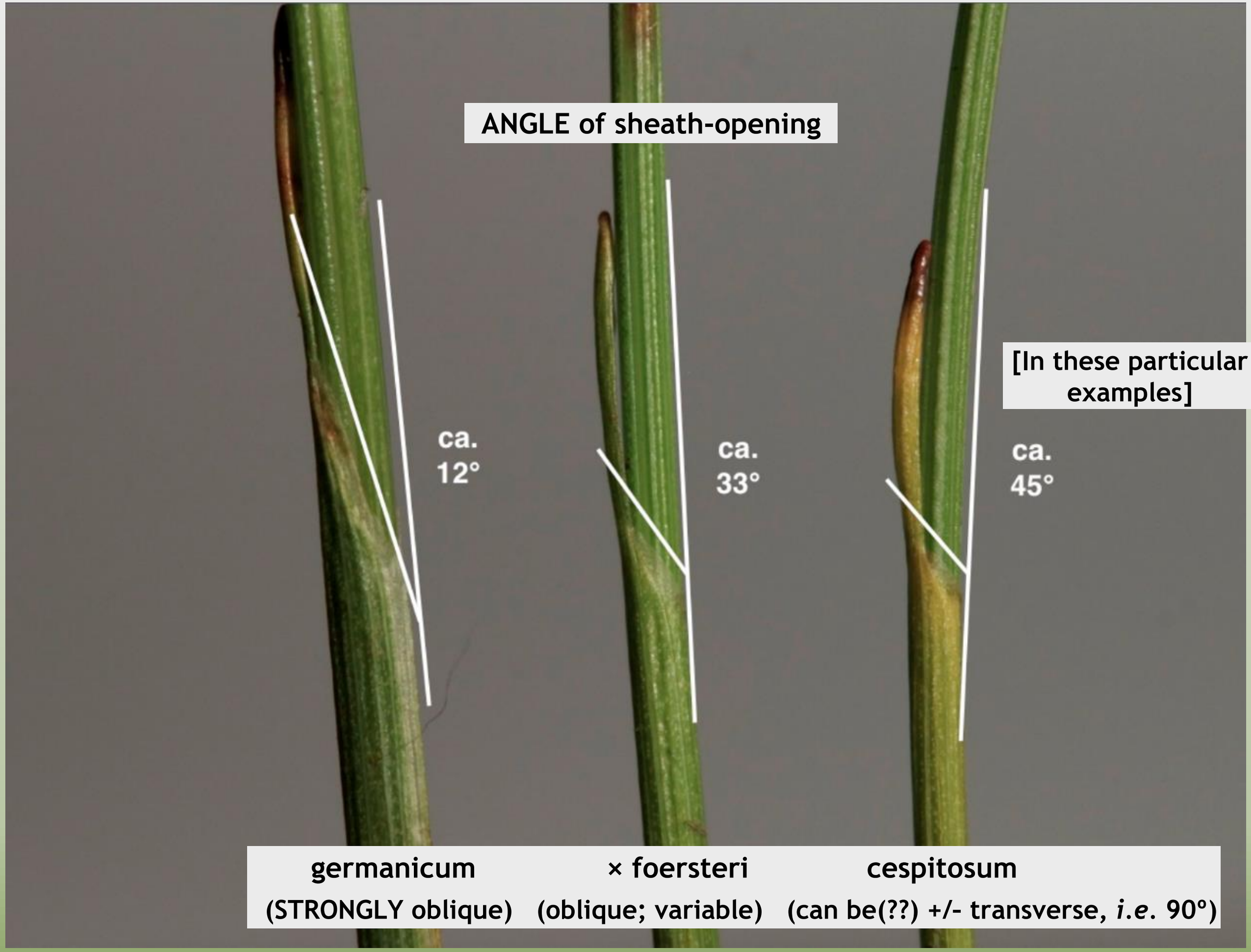
PROLIFEROUS

(prolifery NOT seen in *cespitosum*)

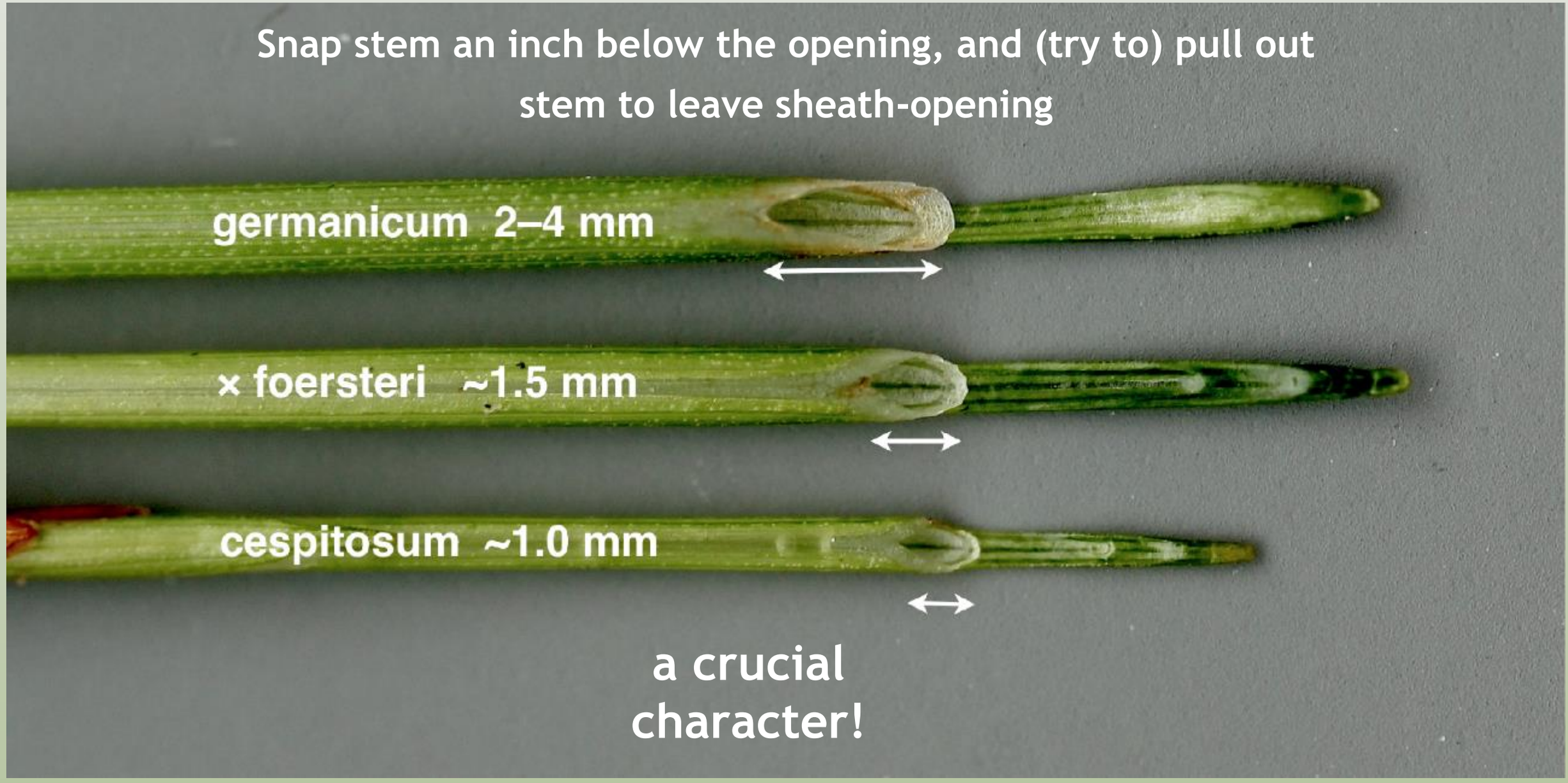
… note this *germanicum* also has some ripening fruits (arrowed)

Separation & Identification: 2

Upper sheath-opening & stem-width


ANGLE of sheath-opening
[In these particular examples]
ca. 12°
ca. 33°
ca. 45°
germanicum (STRONGLY oblique)
× foersteri (oblique; variable)
cespitosum (can be(??) +/- transverse, *i.e.* 90°)

LENGTH of sheath-opening



Stem WIDTHS

cespitosum
(0.45-)0.5-0.6(-0.7) mm

× foersteri
0.7-0.85 mm

germanicum
typically = 1mm
(can be 0.6mm!)

Spikelet size & no. of flowers

always short

never expands, and glumes soon dropped

large and swells, if ripening

[length of basal glumes might be worth exploring as a character]

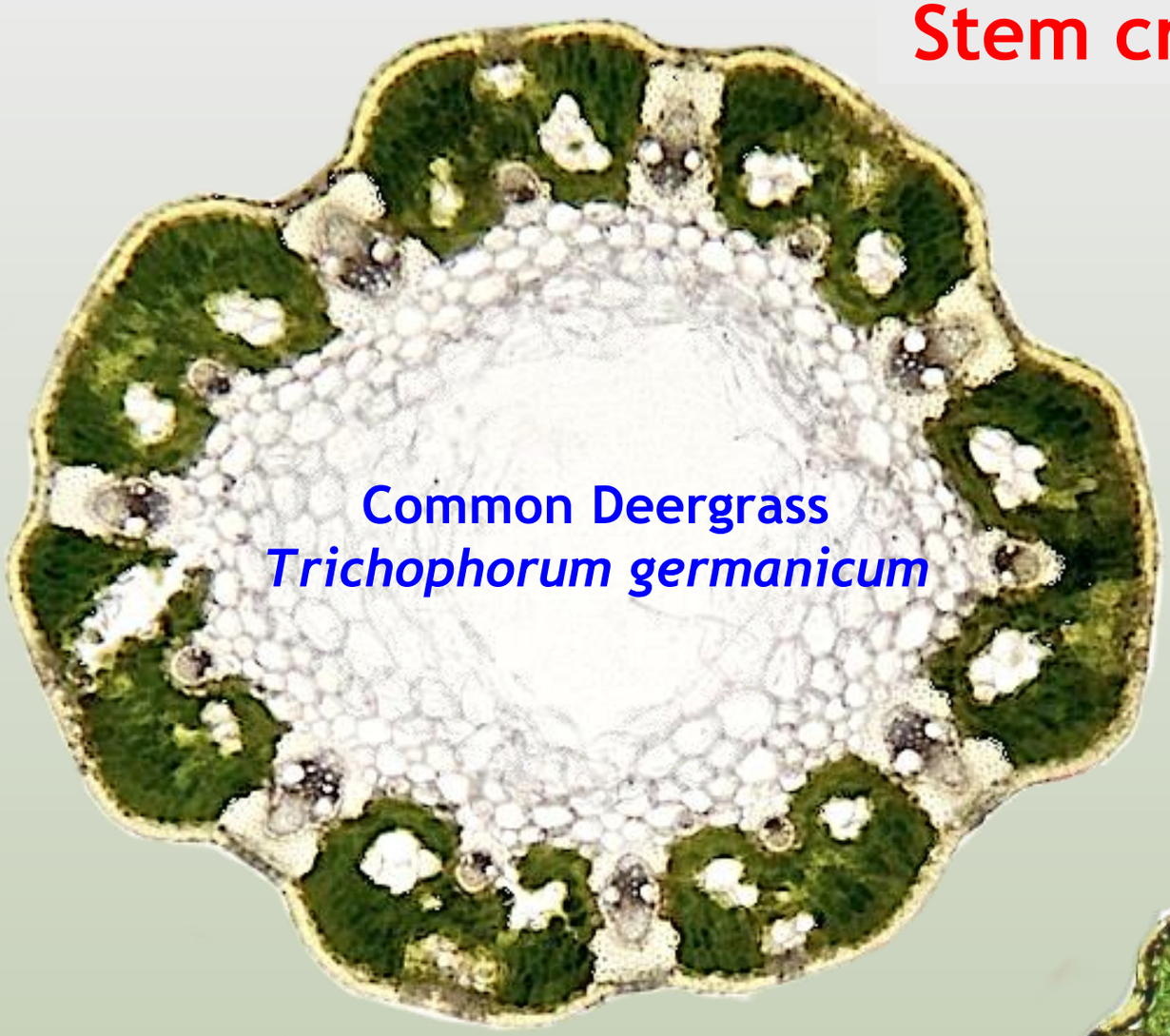
Separation & Identification: 3

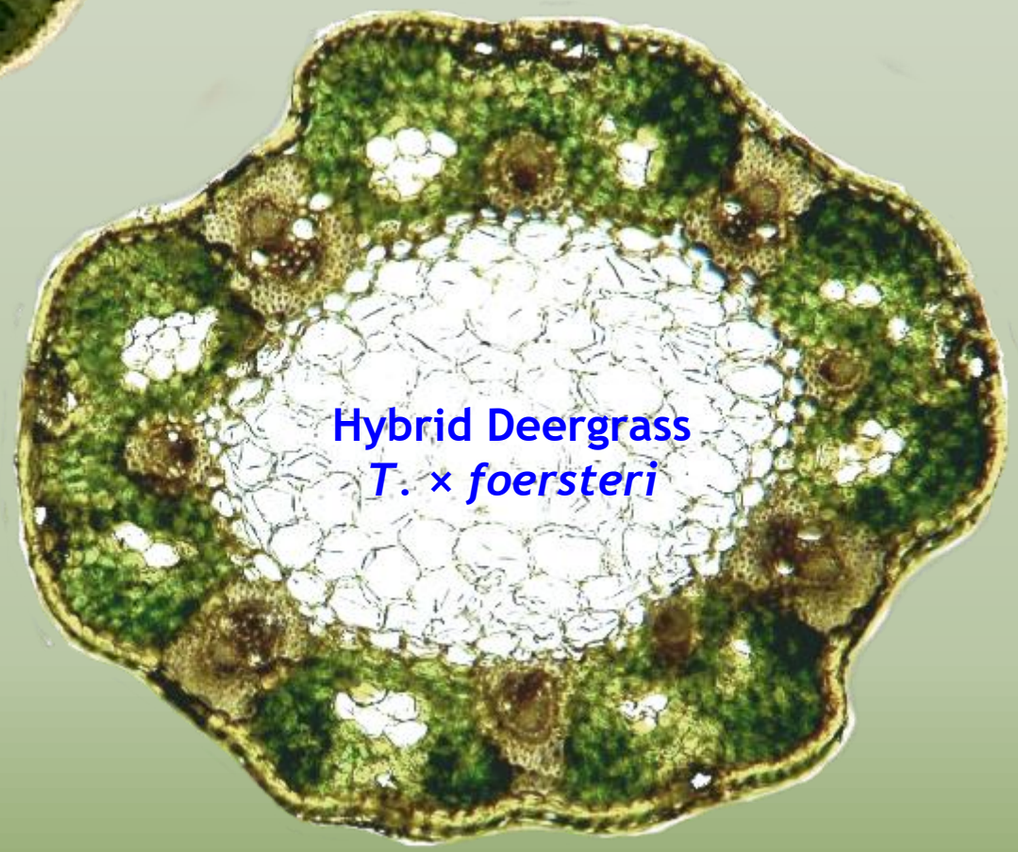
Stem cross-section

[needs compound microscope]

(Stem cross-sections of ‘classic’ examples of T. germanicum are distinctive under a low power stereo microscope)

Stem cross-sections





For links to:

a lot more more information on the

genus,

and the downloadable field-guide:

google for

‘roberts deergrass’