

Lowlands and uplands: cross-pollinating ideas



Peatland Programme

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Upland/Lowland?

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www.gov.uk/natural-england

What we call peatlands and things associated with them. Does it matter?

- Upland and lowland
- Fen and bog
- Minerotrophic and ombrotrophic
- Geogenous and ombrogenous
- Swamp and fen
- Carr and wet woodland

A few questions to consider....

- What do we mean by upland and lowland peatlands? How common is this view/dichotomy of peatlands? UK, Europe, global....?
- What do we perceive as the differences between them?
- Are the perceived differences real? Evidence?
- Are they ecological/hydrological or are they more defined by ownership/land use? Or both?
- Where do the answers to these questions take you?
- Does it matter? How? Why?
- Is the persistence of the divisions between 'upland' and 'lowland' activity actually unhelpful, and masks bigger differences between mire types and their different needs?

'Upland peat'







© Tom Holland

Valley mire in hanging valley, Cumbria



TURAL
GLAND

'Lowland Peat'





TURAL
GLAND

Fort Bog, New Forest



Haining Head Moss,
Northumberland



Upland?

- Above 250m?
 - Above line of enclosure?
 - Abiotic reasoning?
 - Biology?
-
- We commonly make assumptions based on personal or group experience and received information.
 - Often unsupported by wider or detailed consideration.

Some wise words

Arthur Tansley (1939)

- Eschewed the word 'moor' to describe peatlands preferring 'moss' or 'bog' (considering these synonymous).
- He stated that “The plant communities which form and inhabit wet acid peat have often been divided into 'lowland' and 'upland' but they are more naturally classified as valley bog, raised bog and blanket bog – names which refer to real differences in habitat, structure and mode of development”.

Tansley, A.G. (1939). *The British Islands and their Vegetation*. Cambridge University Press, Cambridge.

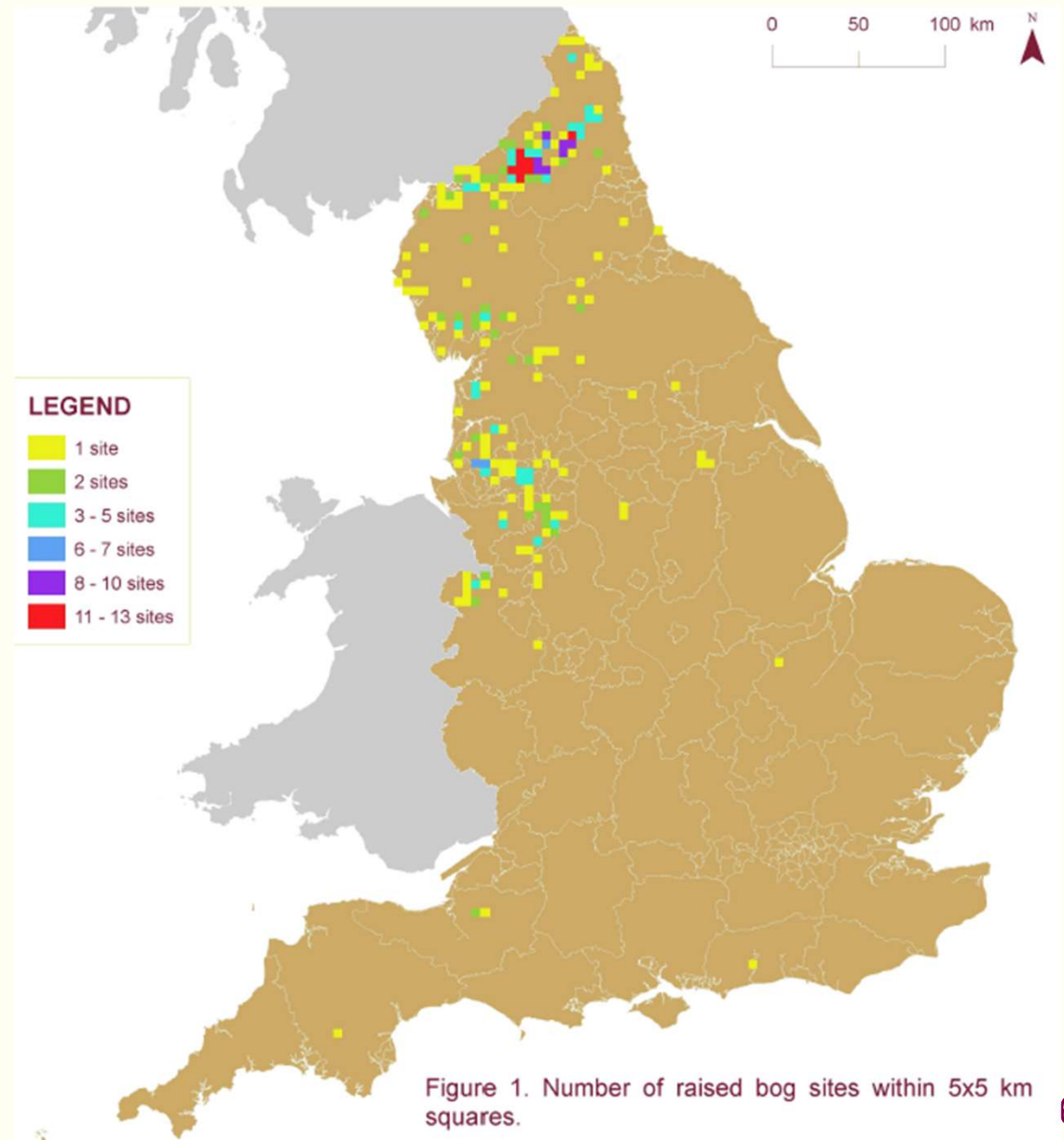
Potential problems/issues



- Failure to recognise what you're looking at or dealing with
 - Management/restoration doesn't work
 - Money/resource wasted
 - Management /restoration causes damage
 - Opportunities missed
 - Inappropriate targets set, e.g. SSSI Common Standards Monitoring

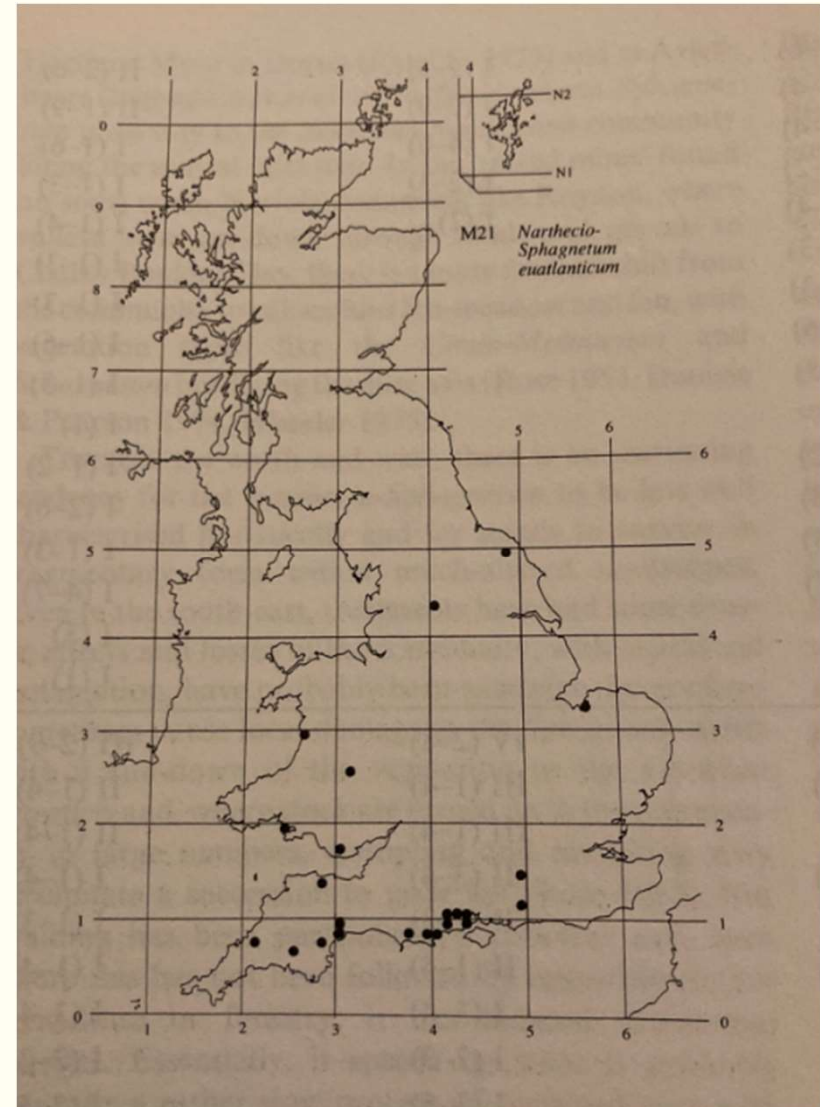
Raised bogs

- 'Lowland' raised bogs – raised bogs do not suddenly stop developing over 250m or beyond line of enclosure.
- The epithet 'lowland' has meant these sites are routinely mapped as blanket bog, because they're 'upland'.
- Leads to under-recording of highly threatened ecosystem
- Leads to inappropriate targets for condition monitoring – lower thresholds for 'passing'.
- Leads to inappropriate restoration plans/ techniques



M21 *Sphagnum papillosum*-bog asphodel community

- Characteristic community of acidic low-nutrient valley mires
- Often groundwater-fed but decreasing dependence further north
- Described as a lowland southern mire vegetation type
- Actually occurs across UK with many examples in Cumbria, Scotland etc

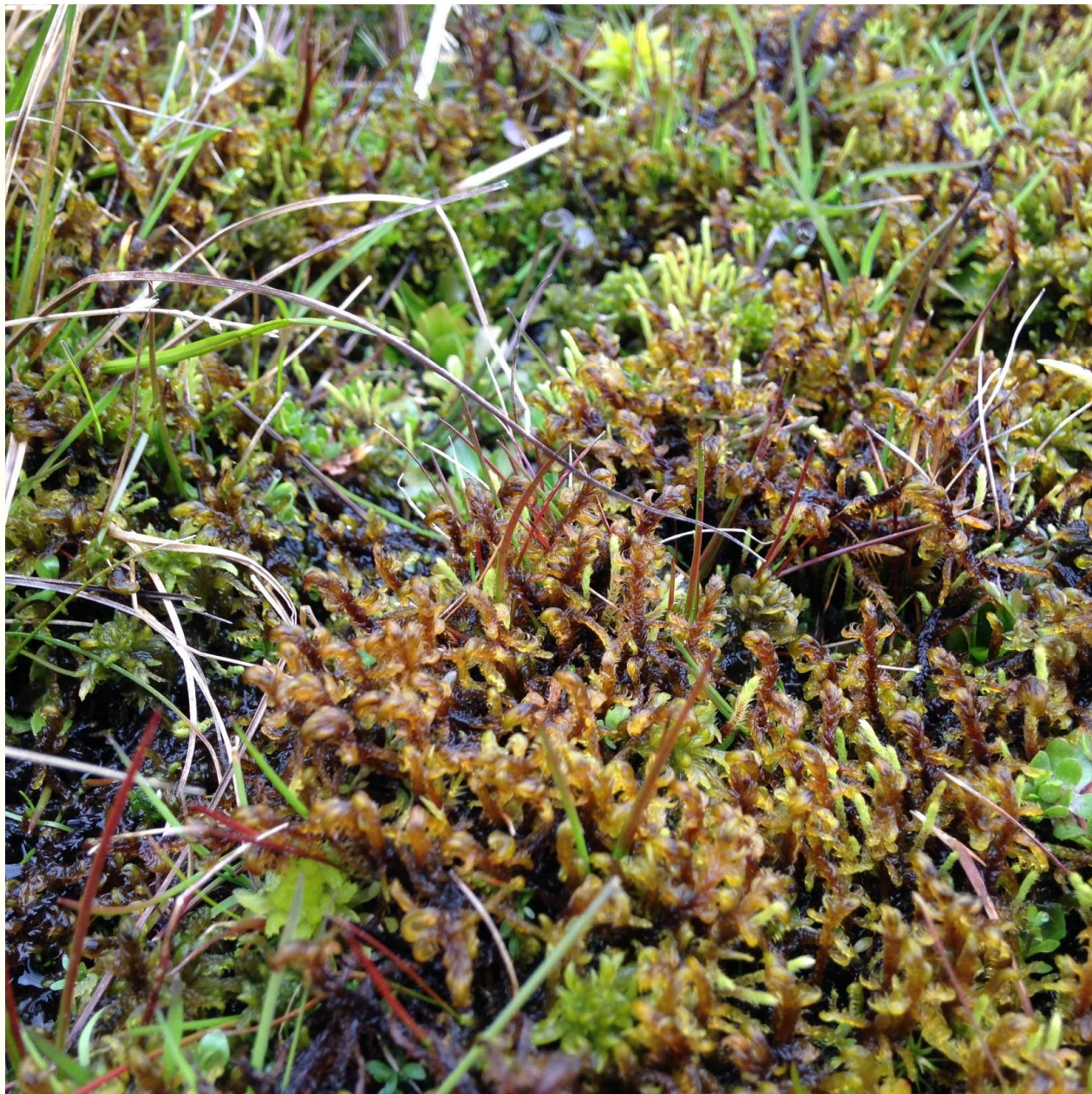




Tomentypnum nitens – very severe decline, now very rare England

*Hamatocaulis
vernicosus*
Sch 8; HD Annex II.

Characteristic of
'neutral' flush –
Wales, western
England – not
really covered by
NVC. pH 5-6,
lowish conductivity.



Some more wise words



‘Whereas every peatland is unique, peatlands worldwide share many characteristics. Too much emphasis on the ‘unique’ character of tropical (or other) peatlands can result in a danger of ignoring global knowledge and common sense.’

Hans Joosten (2021) in *Global Guidelines for Peatland Rewetting and Restoration*. Ramsar Technical Report No. 11

Water source categories of wetlands based broadly on the main reasons why they are 'wet'.

	Telluric water important (minerotrophic)	Maintained by precipitation (meteoric water)
Maintained primarily by high rates of water supply (often sloping)	SOLIGENOUS [FENS] (<i>e.g.</i> seepages, flushes, soakways, water tracks)	OMBROGENOUS [Sloping or Hill BOG] 'blanket bog' <i>p.p.</i>
Water level maintained partly by impeded drainage (basins, floodplains <i>etc.</i>)	RHEO-TOPOGENOUS (significant lateral water flow) TOPOGENOUS [FENS] STAGNO-TOPOGENOUS (limited lateral water flow)	OMBROGENOUS [Topogenous BOG] 'raised bog' <i>p.p.</i> 'buoyant bog' <i>p.p.</i>

Wheeler B.D., Shaw S.C. & Tanner K. (2009). A wetland framework for impact assessment at statutory sites in England and Wales.

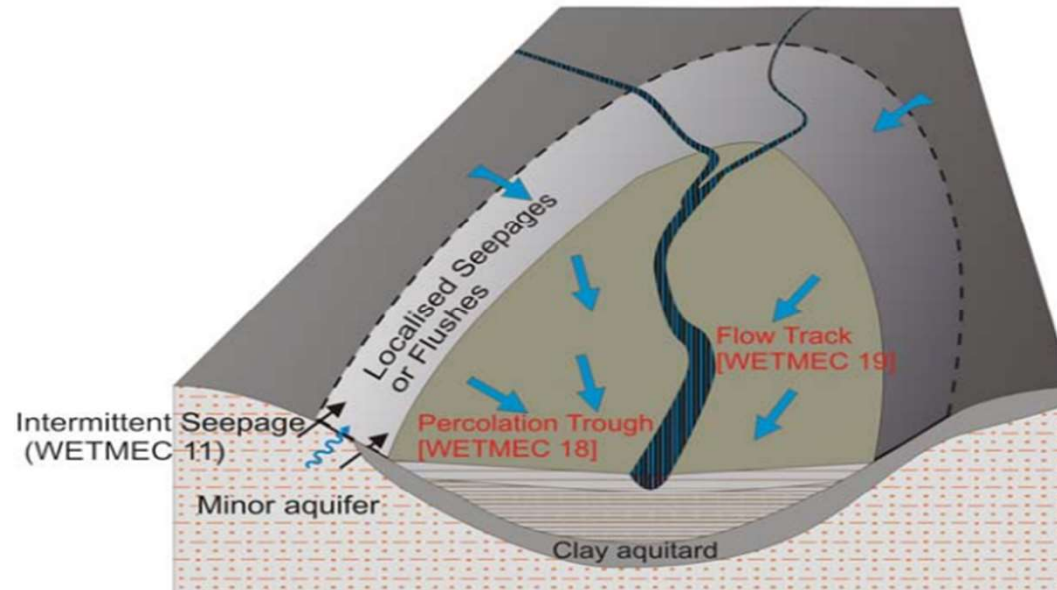
The Framework of Wetland Habitats

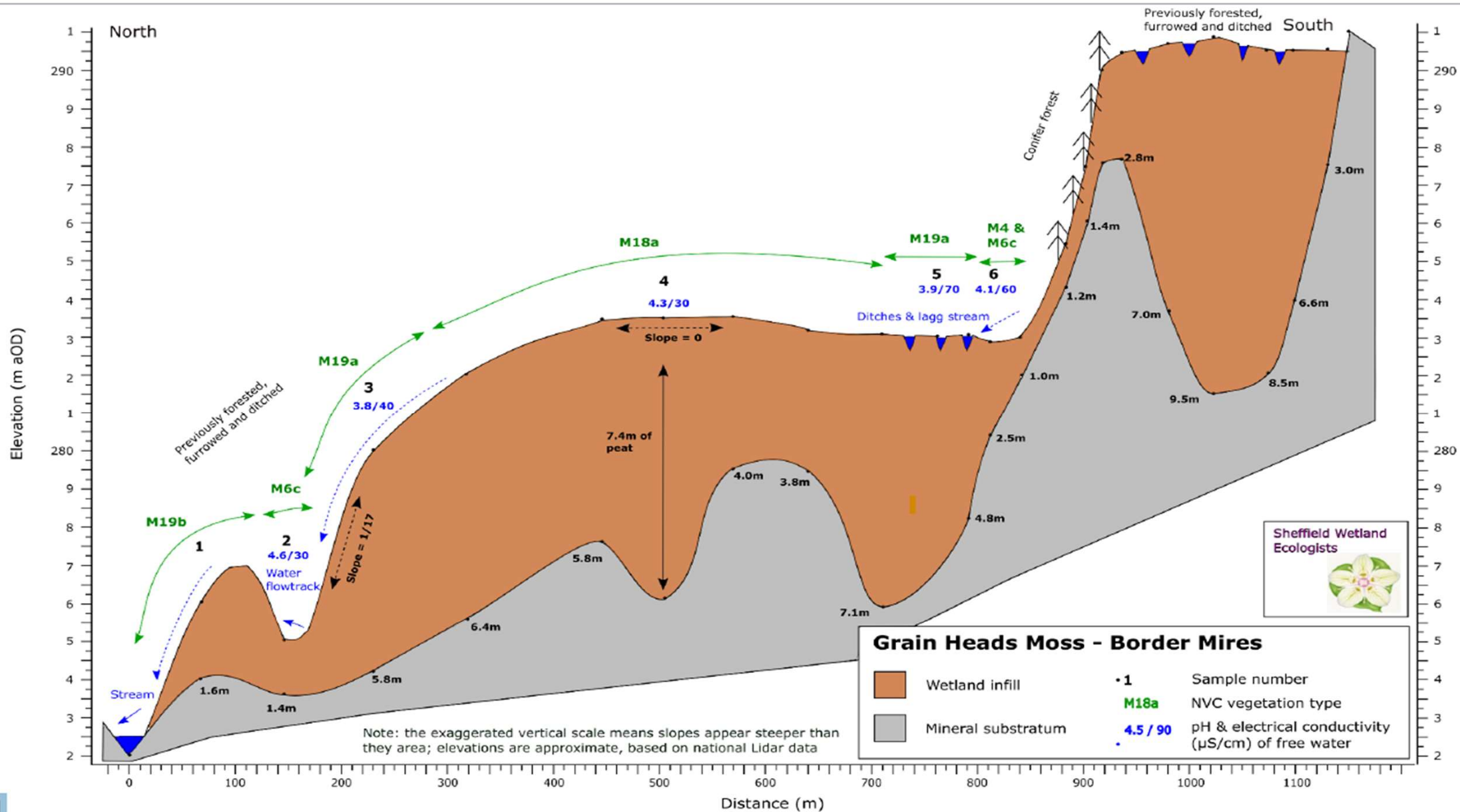
Wetland Landscape Type	Hillslope	Valley-head	VH trough / basin	Basin	Lake-side	Trough	Flood-plain	Coastal Plain	Plateau-Plain	
Base Richness	Highly acidic (<4.0)		Acidic (4.0 – 5.5)		Sub-neutral (5.5 – 6.5)		Base-rich (>6.5)			
Fertility	Oligotrophic		Mesotrophic		Eutrophic		Hypertrophic			
WETMEC	1	2	3	4	5	6	7	8	9	10
	11	12	13	14	15	16	17	18	19	20
Management	Un-managed	Winter Grazed	Winter Mown	Summer Grazed	Summer Mown	Burnt				

WETMEC 18: PERCOLATION TROUGHS and WETMEC 19: FLOW TRACKS

Peat filled Valleyhead Percolation Trough and Flow Track (e.g. Birk Bank Moss)

- significant inputs from rain-generated run-off and precipitation
- importance of groundwater outflow uncertain, but probably small, either because of limited supply from a minor aquifer, or because of top-layer aquitards
- exotelmic stream inflow may produce some lateral recharge of flanking mire, especially during flooding episodes, but water course largely acts as a drain
- flow through trough may be focussed into a series of small subsidiary runnels, soakways and water tracks (not illustrated) or occurs by lateral percolation through loose surface peat and vegetation
- shallow gradient helps retain water
- some valleyhead percolation troughs are former lake basins which have developed into troughs by accumulation of peat up to and above the lip of the original basin





Basis for peatland restoration

- Restoration of natural function
- Understand site development and undamaged state
 - Stratigraphy
 - Water supplies – GW/SW
 - Historic records
 - Similar local undamaged sites
- Landscape situation
- Hydrological inputs
- Site modifications and pressures
- Immovable constraints
- Know your peatland! Don't let *where* it is blind you to *what* it is.

Any questions? What do you think?



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