

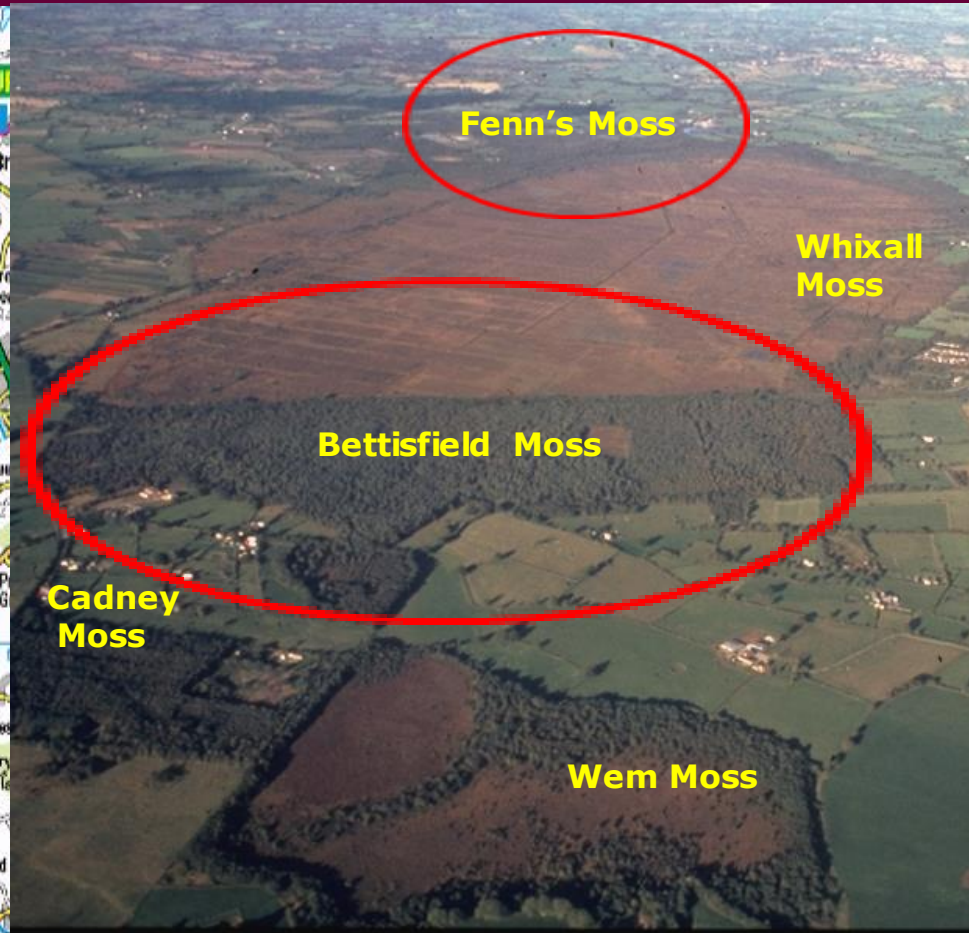
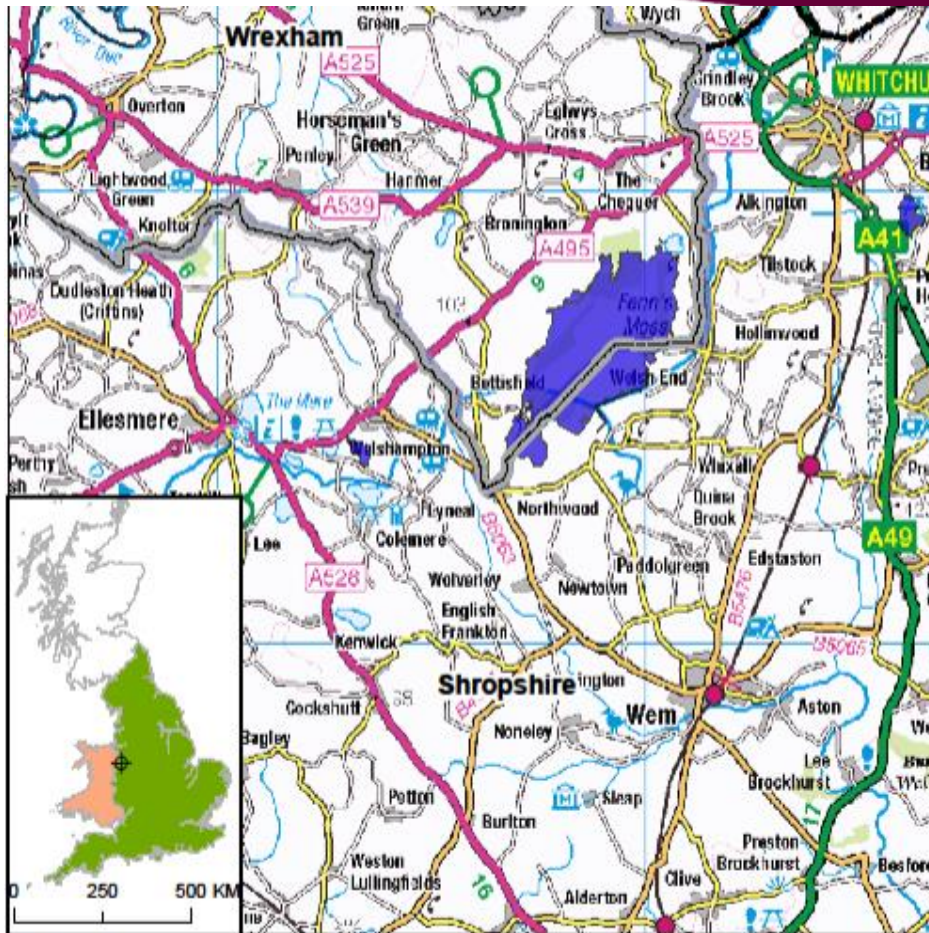
Forest to bog restoration in the lowlands – case study from the Fenn's and Whixall Mosses NNR



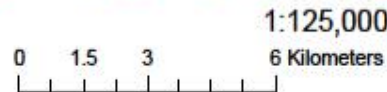
Robert Duff & Dr Joan Daniels
Marches Mosses BogLIFE Project



- 948 ha SAC/Ramsar/NNR - mean peat depth 2.5 - 3m
- the UK's third largest lowland raised bog SSSI
- 220 ha (est) plantation/woodland covered in 1991
- 140 ha reverted to open bog habitat

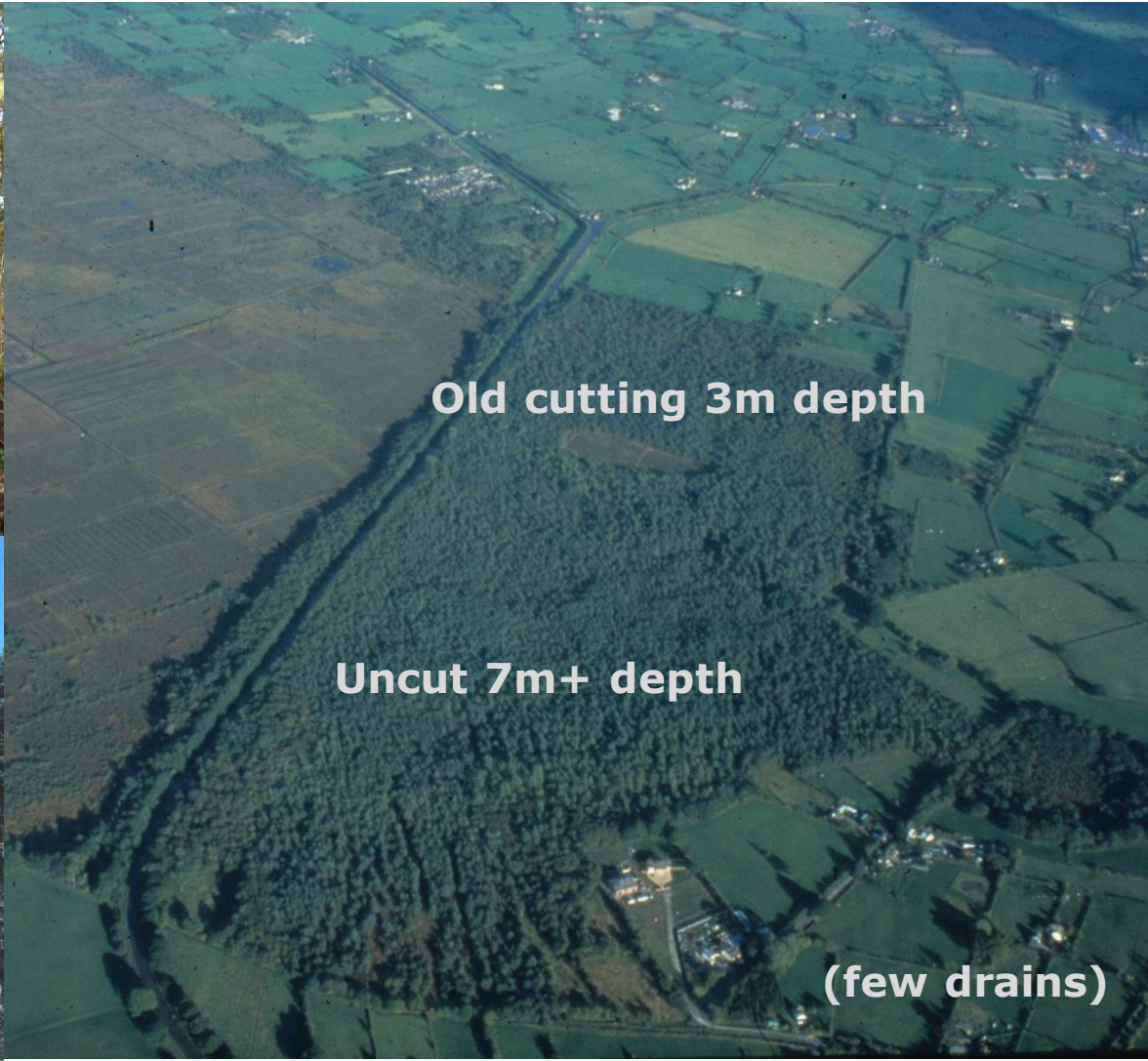


- Legend**
- Special Areas of Conservation
 - County Boundary
 - English/Welsh Border



Bettisfield Moss (57 hectares)

self-seeded & densely covered by 15 m high pine & birch
after burning ceased in mid-70s



Old cutting 3m depth

Uncut 7m+ depth

(few drains)

Trees cleared 2001/2002
– skyline used



Sep 24, 2009



Sign in

Whixall moss

WALES
ENGLAND

Google



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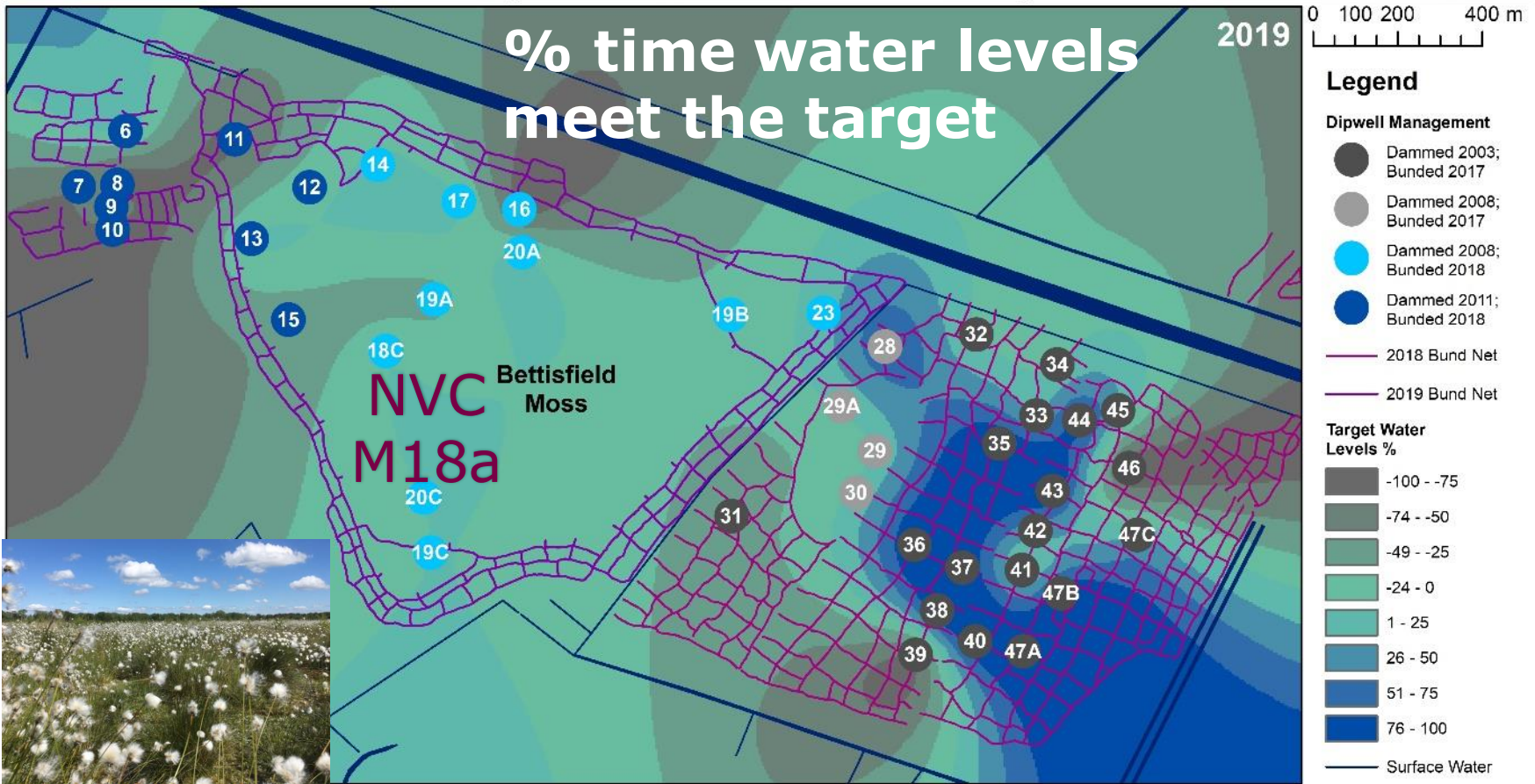
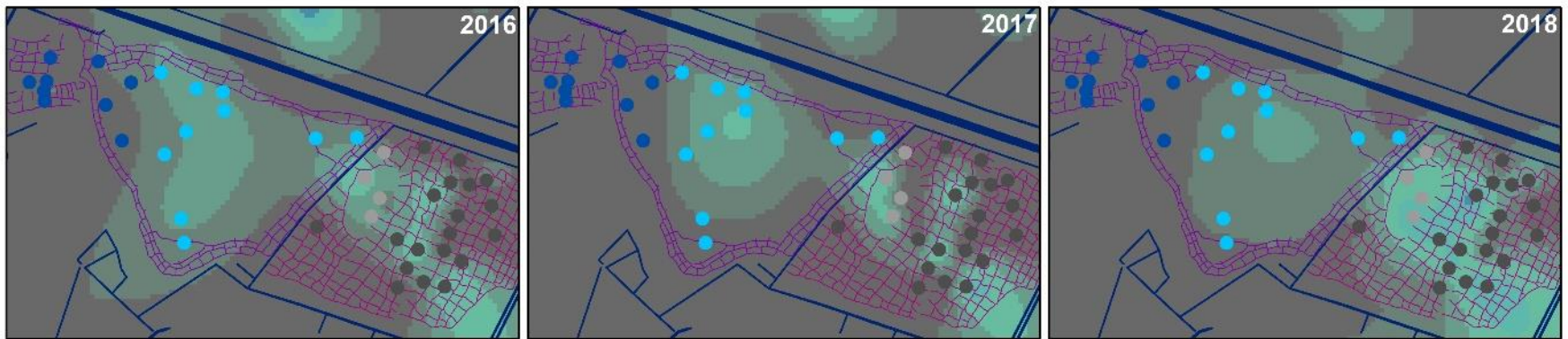
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369 m

ey Ln

Moss Ln



Plantation to bog restoration - Fenn's Moss - bog-edge



**Bunded
2018/19**



2009

Shallow peat



1998



2.5 m

2019

Post-harvesting in 2019 and bunding 2020

Section 48 view north – March 22

Bunding - Excavator used to lift tree root plates along planned bund lines





Forest to Bog Carbon exchange

(Creevy, Payne, Andersen & Rowson, 2020 – *Science of the Total Environment*, 705)

Annual gaseous carbon balance measured for 12 months in 2015/16 (closed chamber)

No forest – uncut peat	- sequestered – 102 g C m ² per year	SINK
6-year post restoration*	- emitting + 35 g C m ² per year	SOURCE
17-year post restoration*	- sequestered – 131 g C m ² per year	<u>BEST SINK</u>

Carbon sink function on damaged peat takes > 10 years to restore

Vegetation type/ cover an important factor eg Sphagnum

(NB study before bunding in 2018/19)