Natural Environment Evidence Review

Philip Sansum (DBRC Botanical & Projects Officer) 16th November 2018

Presented by Harry Barton, CEO of Devon Wildlife Trust

Introduction

- one of six reviews which form part of the evidence base that will advise and support the development of the 2019 Dartmoor National Park Management Plan Review.

- received contributions from Peter Burgess, Steven Falk and John Walters, and the Natural Environment team at DNPA

- DBRC is an independent partnership led organisation, hosted by Devon Wildlife Trust. Its remit is to collate, manage and disseminate biodiversity information into the decision making process

What is Dartmoor?

- The largest upland and area of semi-natural vegetation in southern England.
- The most extensive granite landscape in the country.
- A climate dominated by Atlantic influences.
- Internationally important vegetation communities: blanket bogs (3.5% of England resource); upland heaths (3%); upland oakwoods (13%); and of at least national importance for Rhôs pastures (14%); lowland pastures (2.2%); and valley mires.
- The headwaters of 9 main river catchments and principle source for drinking water to much of Devon
- Deep peat is a store for 10 megatonnes of carbon – the equivalent of one year of CO2 output from UK industry

The vision as summarised in the current management plan for Habitats and Wildlife and for Natural Resources is that:

- ***Dartmoor's internationally and nationally important habitats are expanded and linked and in optimal condition, supporting resilient ecosystems with healthy populations of priority species.***

- ***Dartmoor's distinctive and high quality natural resources are managed and enhanced for environmental and public benefits.***

What is the current state of Dartmoor's natural environment?

- An upper estimate for the coverage of Priority Habitat in the park is 52% (NE Priority Habitat Inventory) with a lower end estimated at c. 30% (based on designated and other mapped wildlife sites known to support areas of priority habitat).

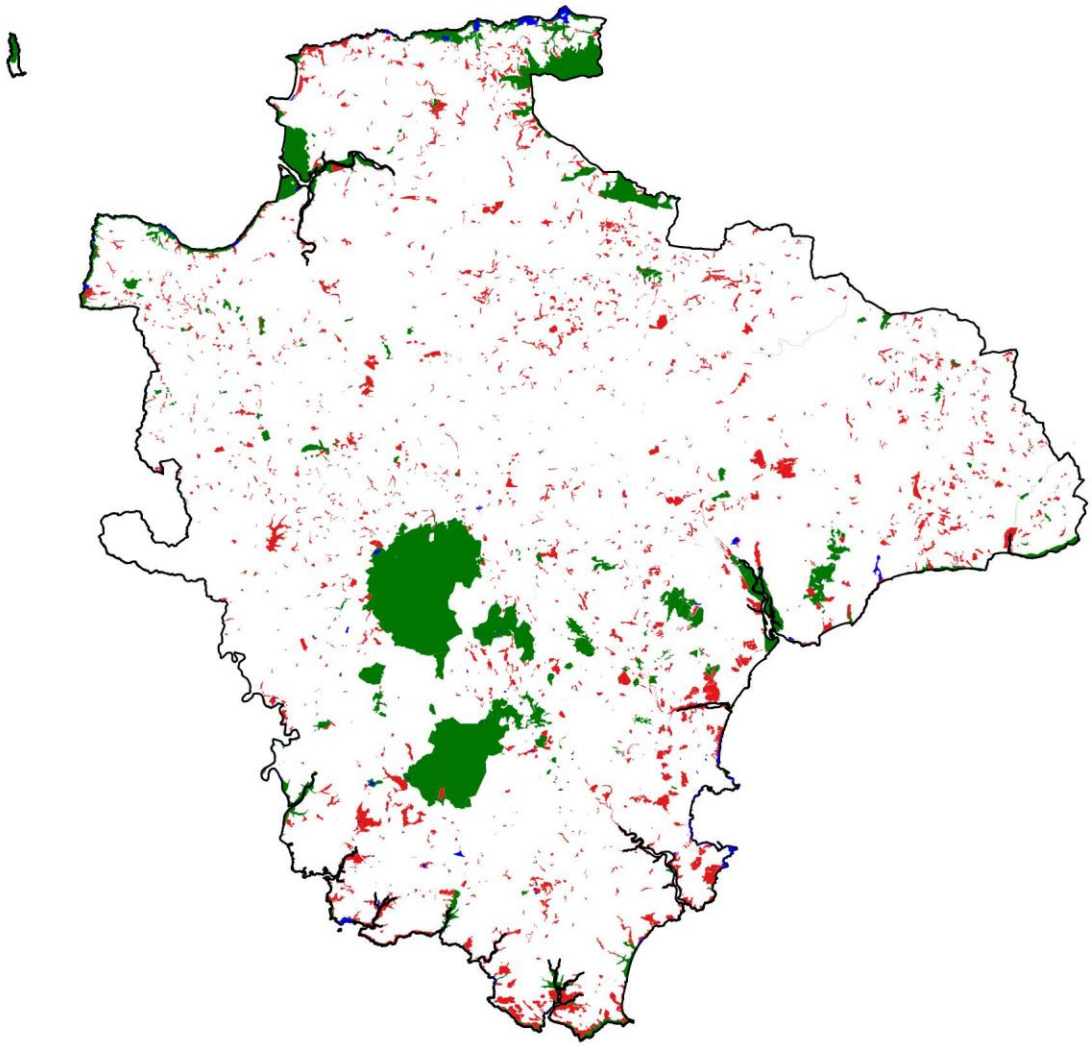
- The uncertainty derives from incomplete recent data on the extent and condition of land outside of designated sites.

Land type & designation

Total Farmed Area: 66%
Improved grassland: 25%

SSSI designation: 27.5%
County Wildlife Site: 2.5%

The distribution of SSSIs and locally designated sites



Site of Special Scientific Interest

County Wildlife Site

Regionally Important Geological Site

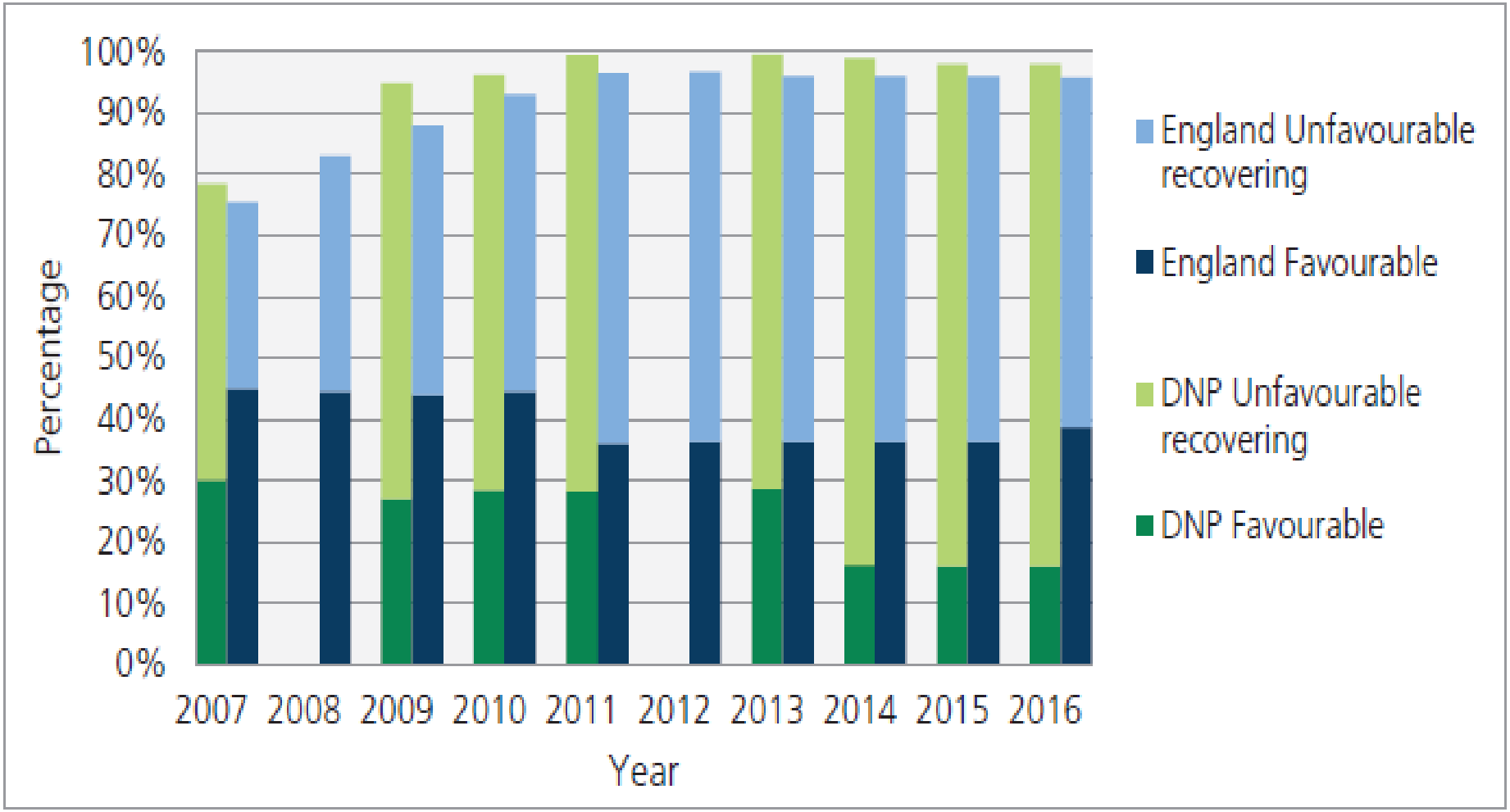
SSSI on Dartmoor

- The 2017 State of the Park report gives a headline figure of 98% of the SSSI area (all habitats) being in favourable or ‘recovering unfavourable’ condition.

- The most recent available figures are for 16% of Dartmoor SSSI in favourable condition (versus 38% in England) and 82% in ‘unfavourable recovering’ (versus 57%).

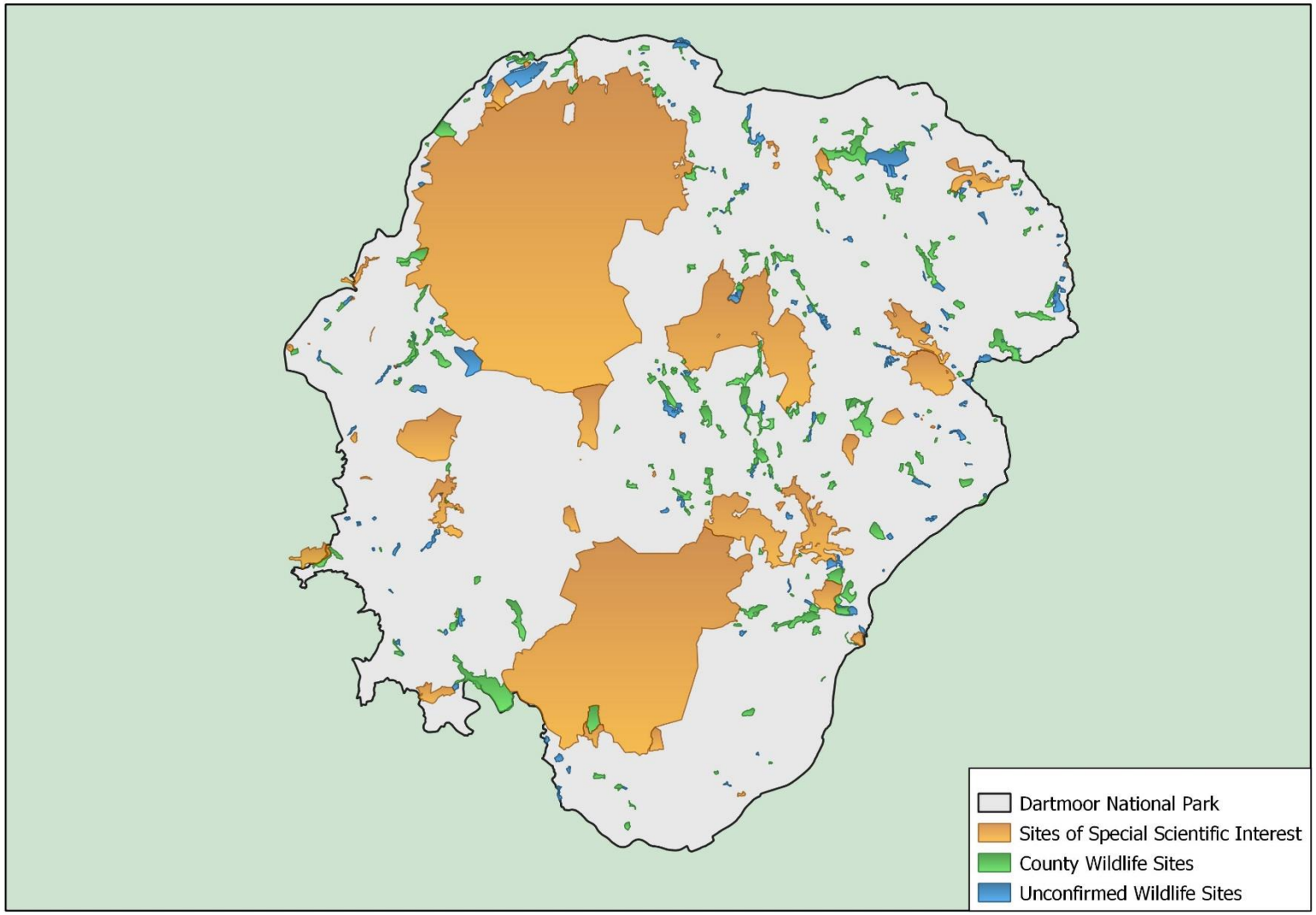
- Figures for the unfavourable recovering category have increased over the last 10 years. In 2013 most of the resource had been in an ‘unfavourable recovering’ condition for 10 years or more.

SSSI condition



Condition of Dartmoor SSSI relative to England (reproduced from State of the Park Report 2017)

County Wildlife Sites



County Wildlife Sites

Based on the subset of 48 sites that have been surveyed since 2007 and have an available condition assessment as a result

- 25% (22% in area terms) in good condition (Green)
- 63% (or 75% in areal terms) were in overall acceptable condition (Amber)
- 8% (1.5% of the area) in declining condition (red).

A further 116 unconfirmed wildlife sites amounting to 1,028ha (43% of the existing CWS area) that have not been formally designated.

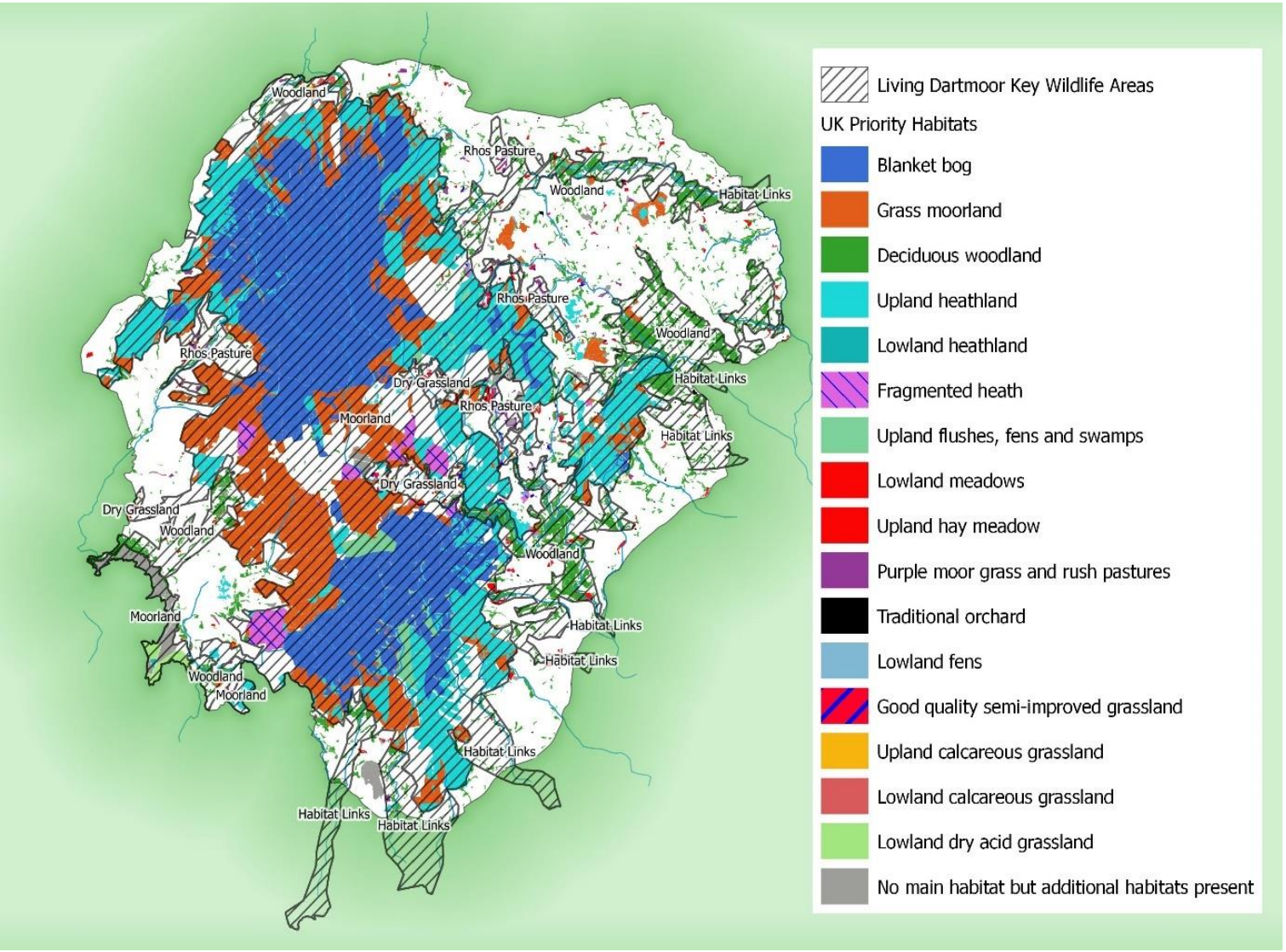
DNPA have completed systematic surveys of woodland, hay meadow and Rhos pasture. However, further unidentified areas of priority habitat may remain

Living Dartmoor Habitats

The Living Dartmoor Strategy (DNPA 2013) targets conservation in 'Key Wildlife Areas' (derived from the South West Nature Map).

- Moorland (Blanket bog, Upland flushes, Fens and swamps, and Upland heathland)
- Woodland (Upland oakwood, Lowland mixed deciduous woodland, some areas of Wet woodland, Veteran trees, Traditional orchards)
- Dry Grassland (Lowland meadow and lowland grassland habitat types)
- Rhôs Pasture (Purple moor grass and rush pasture, Wet Woodland)
- Wider countryside habitats (Rivers and other water bodies, Hedgerows, stone walls and road verges, Rocky outcrops, quarries and caves)

Priority Habitats



Natural England's Priority Habitat Inventory (2015) –indicates the maximum extent of priority habitat – with Living Dartmoor Key Wildlife Areas superimposed.

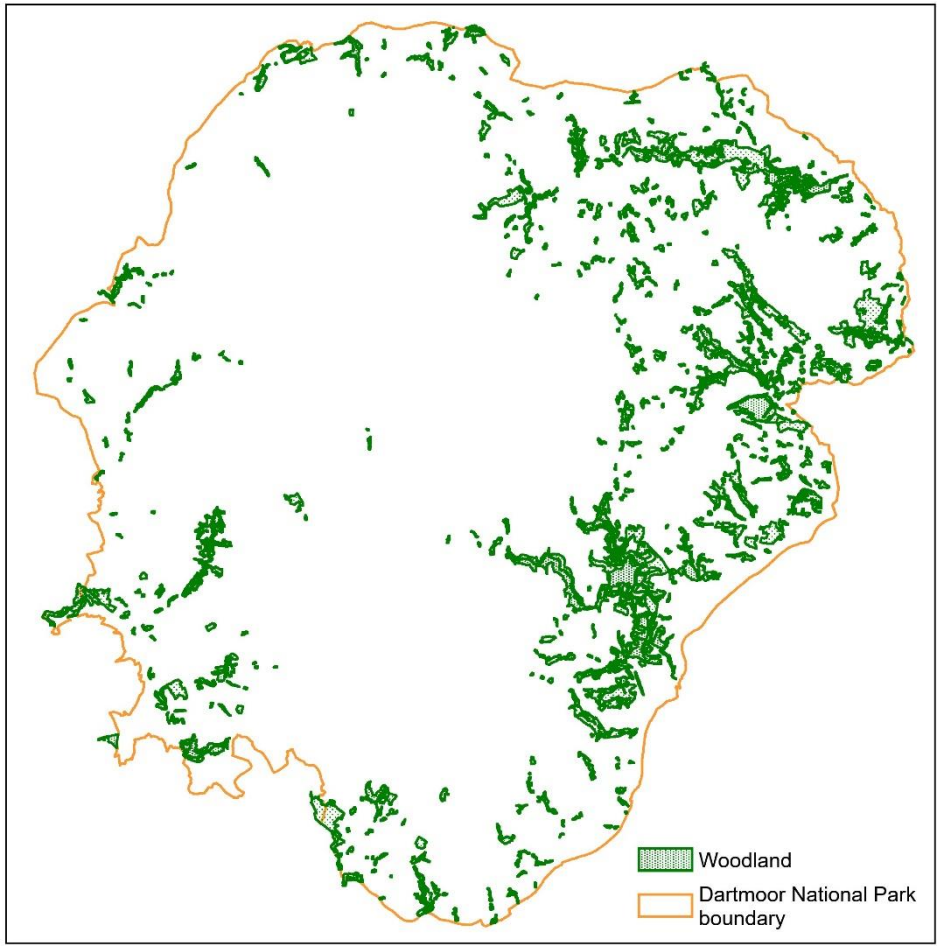
White Space and the wider countryside

- One third of Dartmoor's 31,650 ha lies outside Key Wildlife Areas: the "white space".
- Priority habitat covers c10% (2,860 ha)
- SSSI or Wildlife Site: 1.3%

Improved grassland	52%
Broadleaved woodland	15%
Arable	15%
Acid/other grassland	9%
Developed	4%
Coniferous woodland	3%

Intensively farmed land on Dartmoor fringe

Broadleaved woodland



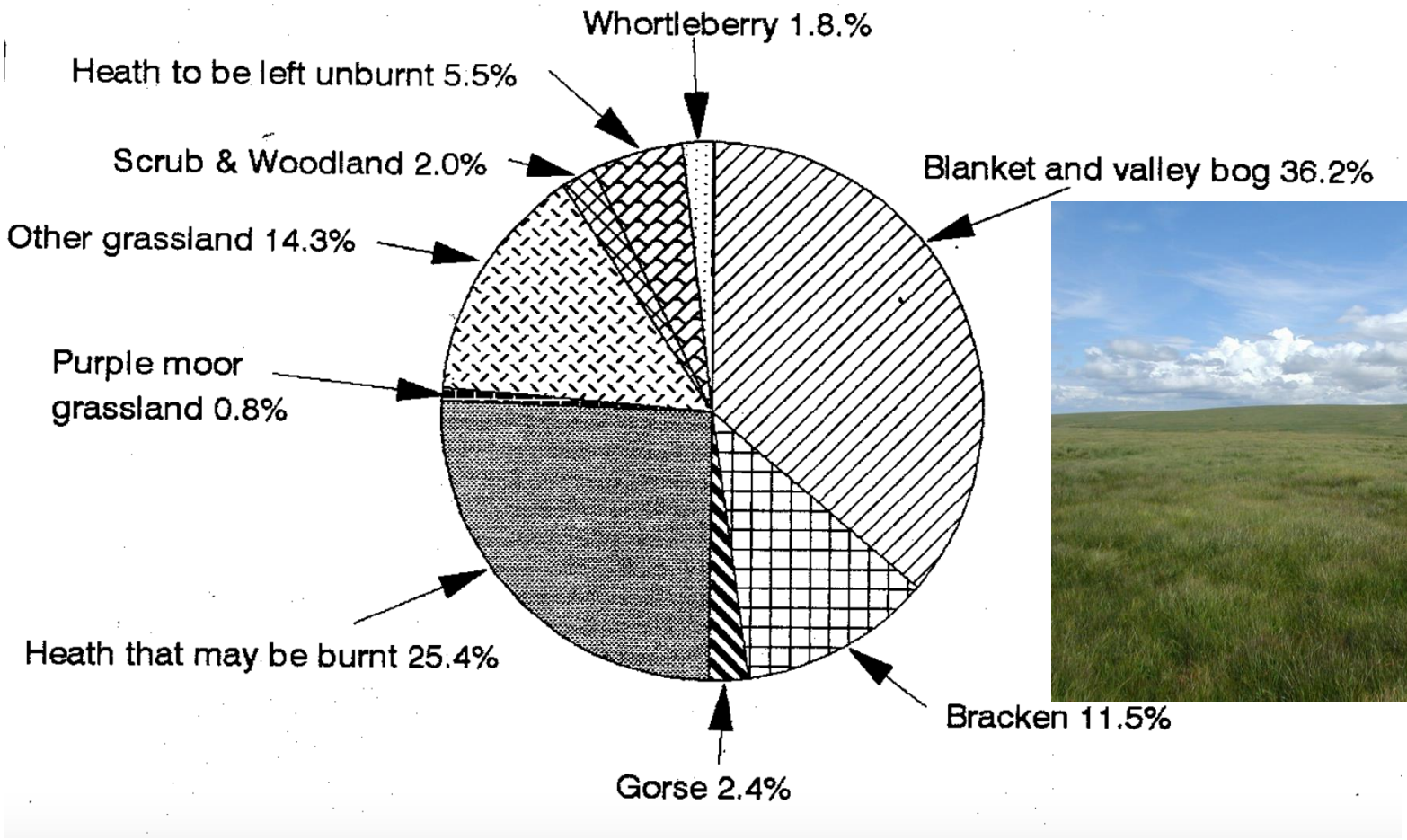
How important is the is the white space for species?

Living Dartmoor Key Wildlife Areas	No. of S41 species (based on localised records only)
Woodland	92
'White Space' (outside boundaries of Key Wildlife Areas)	**86**
Moorland	66
Habitat links	33
Rhôs pasture	31
Dry Grassland	16
Dartmoor total	133

WHITE SPACE CASE STUDY: ROLE OF HEDGEROWS IN MAINTAINING AND BUILDING FUTURE RESILIENCE

- Dartmoor is rich in hedgerows, a large proportion of which are ancient. The extent of the hedgerow resource conforming to the UK Priority Habitat type in the national park is unclear.
- An estimate can be based on the 'Southwest woody habitat corridors' dataset developed from LiDAR (Broughton et al. 2017). This suggests there are in the region of 5,450 km of woody habitat corridors within the park boundary.
- 95% (length basis) of these features lies outside common land but some 248km are closely associated with commons areas.

How has habitat distribution changed?



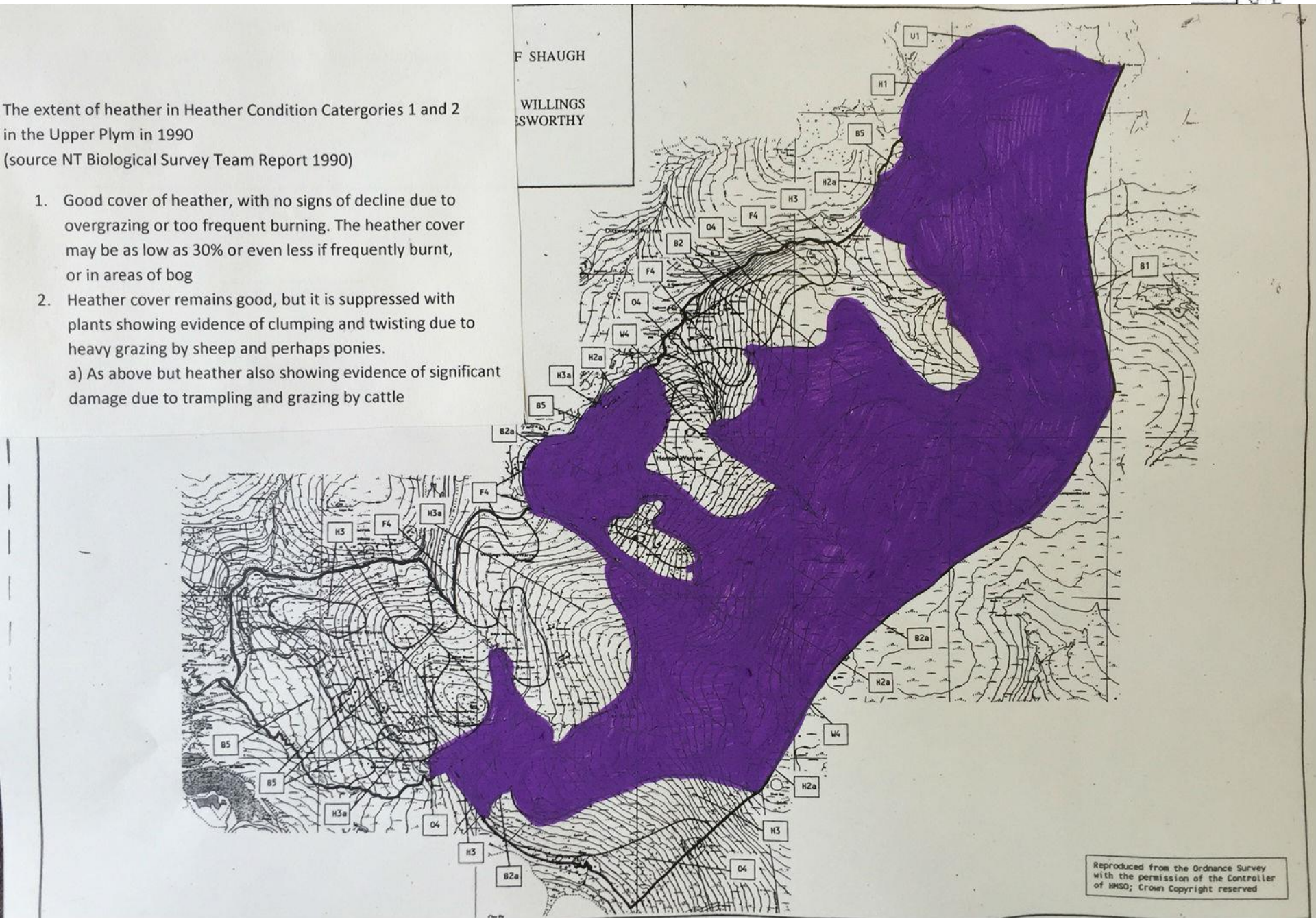
from Wolton et al (1994)

How long has Molinia been dominant?

- Ward et al 1972 ‘One of the striking features of much of the Dartmoor blanket bog is the prevalence of *Molinia*, in some areas in almost pure stands’
- Simmons 1963 ‘Over peat of 4-5m depth a vegetation grows of which *Molinia, Eriophorum* and *Sphagnum* are the chief plants’
- Davies 1941 refers to ‘*Molinia* Moor’ being one of the two main types of vegetation
- Vancouver 1808 ‘The most elevated part of the Forest…..annually teems with a luxuriant growth of the purple melic grass
- *Molinia* has been documented as a prominent component of mire vegetation communities on Dartmoor for over 200 years

The extent of heather in Heather Condition Catergories 1 and 2 in the Upper Plym in 1990
(source NT Biological Survey Team Report 1990)

1. Good cover of heather, with no signs of decline due to overgrazing or too frequent burning. The heather cover may be as low as 30% or even less if frequently burnt, or in areas of bog
2. Heather cover remains good, but it is suppressed with plants showing evidence of clumping and twisting due to heavy grazing by sheep and perhaps ponies.
   a) As above but heather also showing evidence of significant damage due to trampling and grazing by cattle



The extent of heather in Heather Condition Catergories 1 and 2 in the Upper Plym in 2003
(source Dave Boyce survey 2003)

1. Good cover of heather, with no signs of decline due to overgrazing or too frequent burning. The heather cover may be as low as 30% or even less if frequently burnt, or in areas of bog
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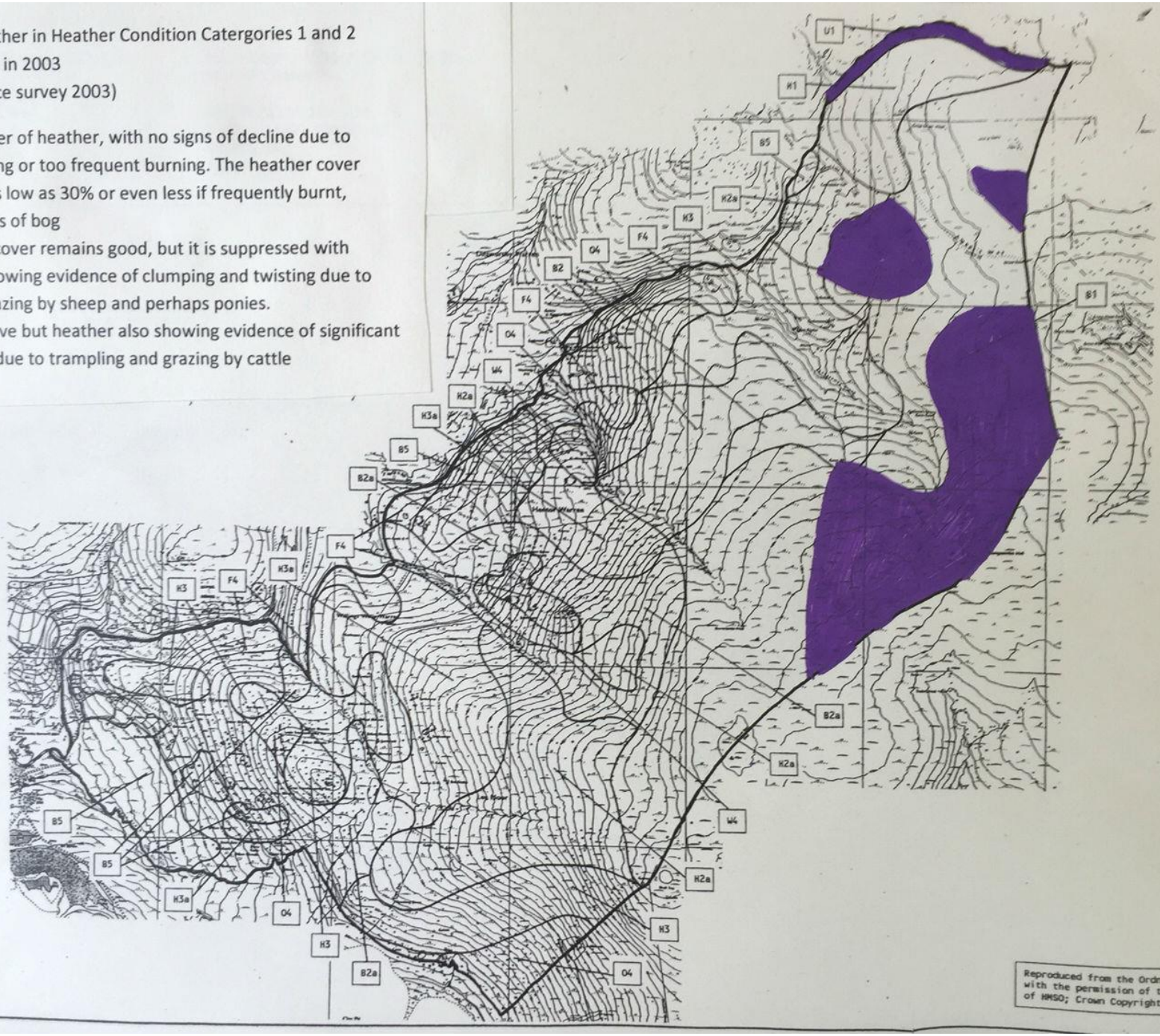
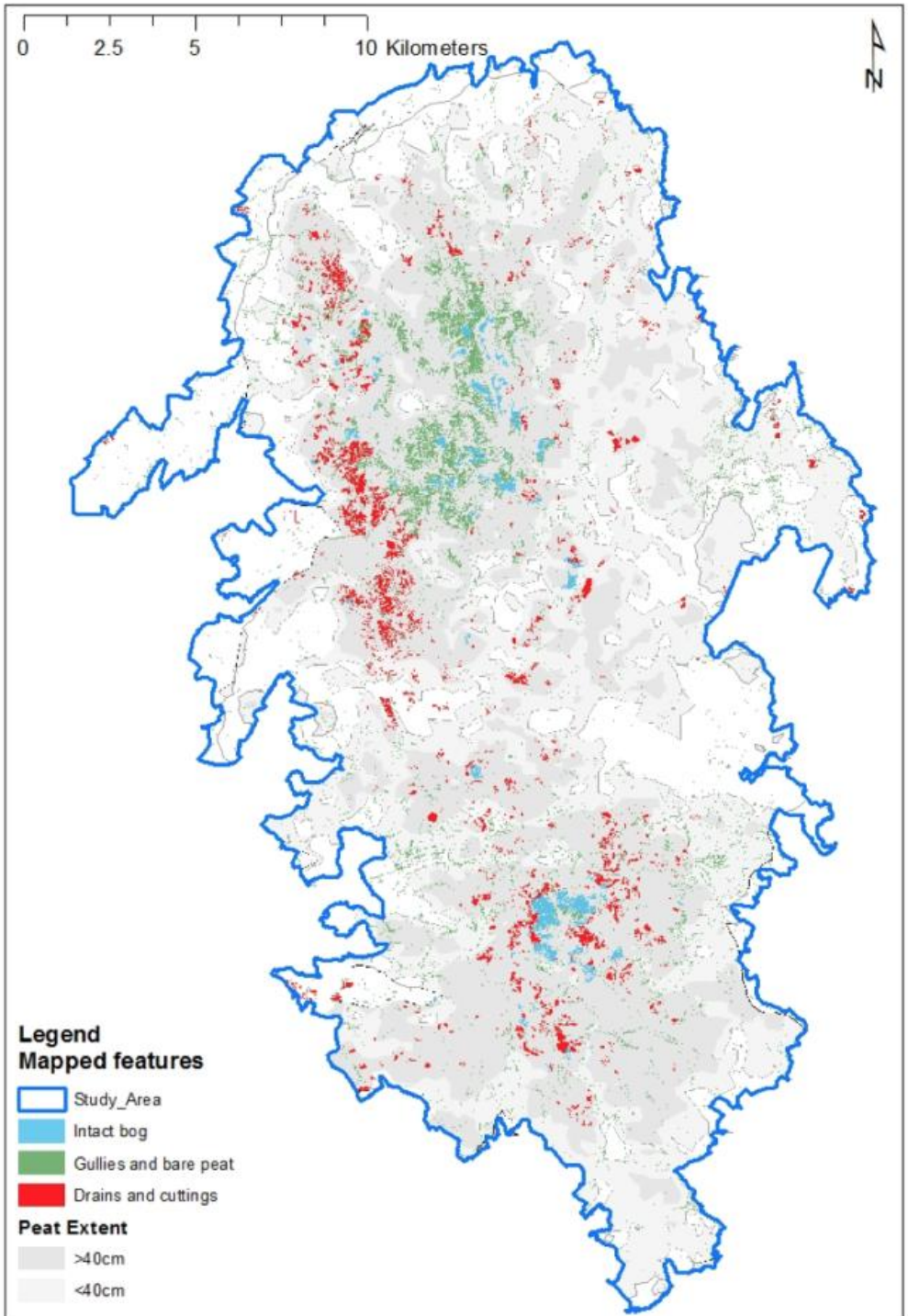
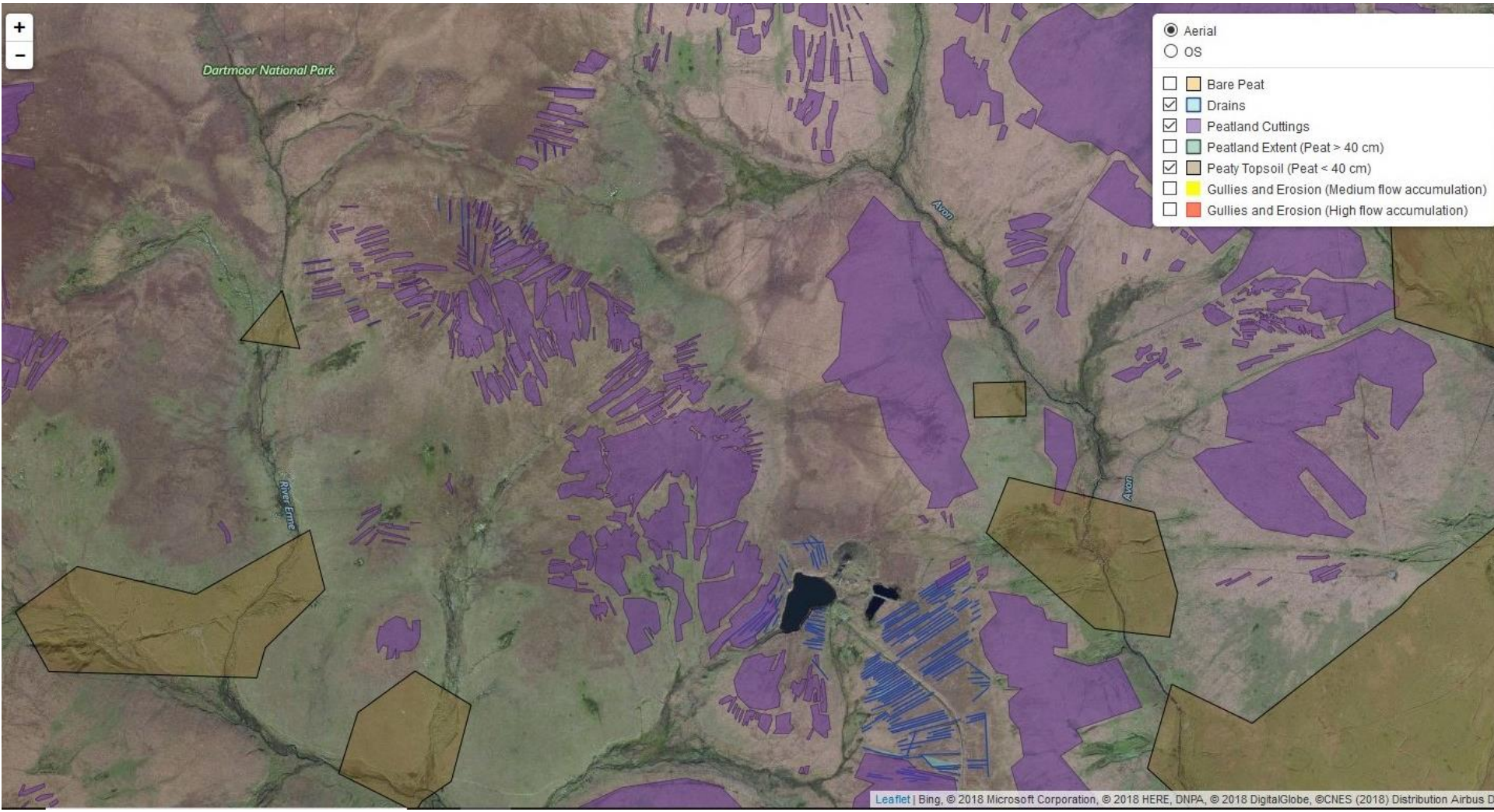




Brazier et al, University of Exeter 2017

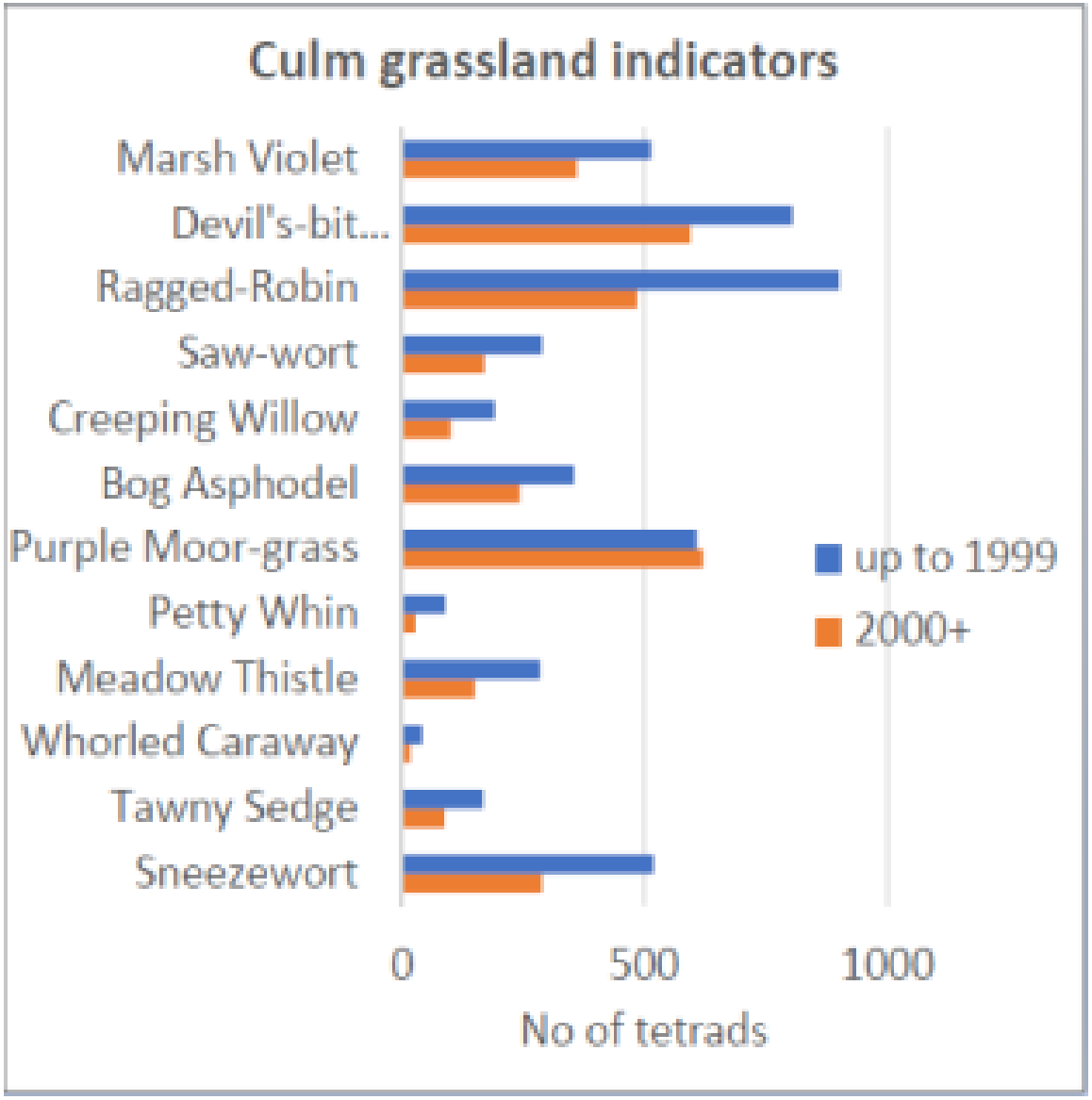


Brazier et al, University of Exeter 2017

Species

- Greater Horseshoe Bat
- Dunlin
- Ring ouzel
- Southern Damsefly
- Marsh, pearl bordered and high brown fritillary butterflies
- Blue Ground beetle
- Bog hoverfly
- Deptford pink
- Vigur's eyebright
- Flax leaved St John's wort

Change in the number of recorded 2km squares for vascular plant indicators of Culm grassland

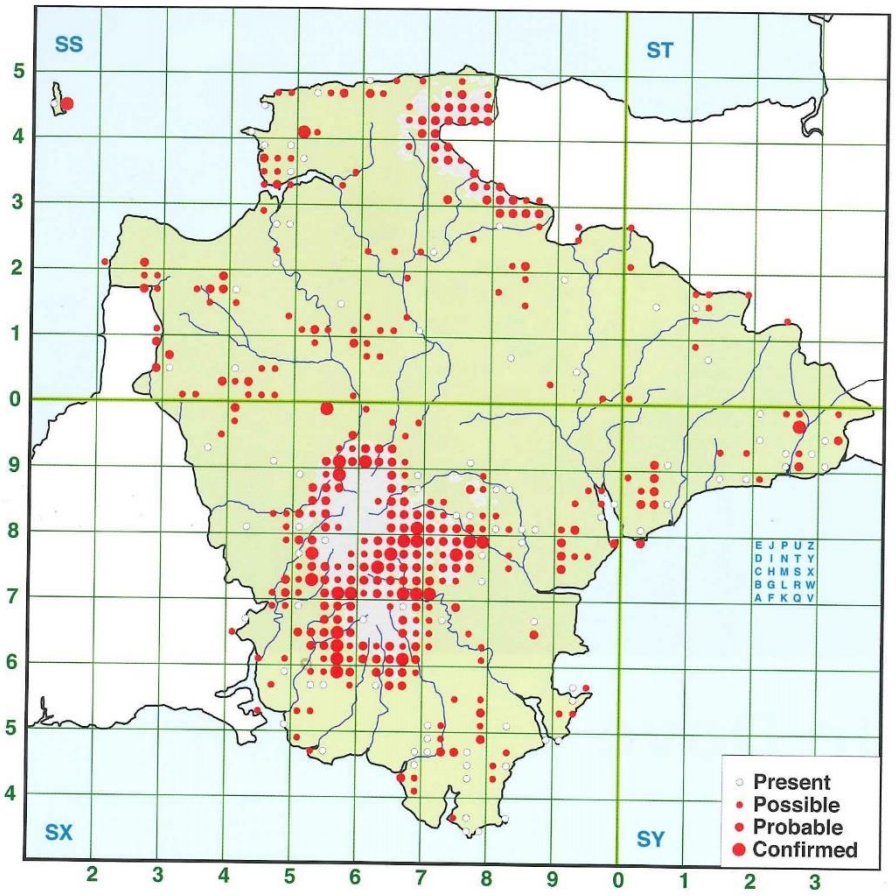


Courtesy of J. Ison

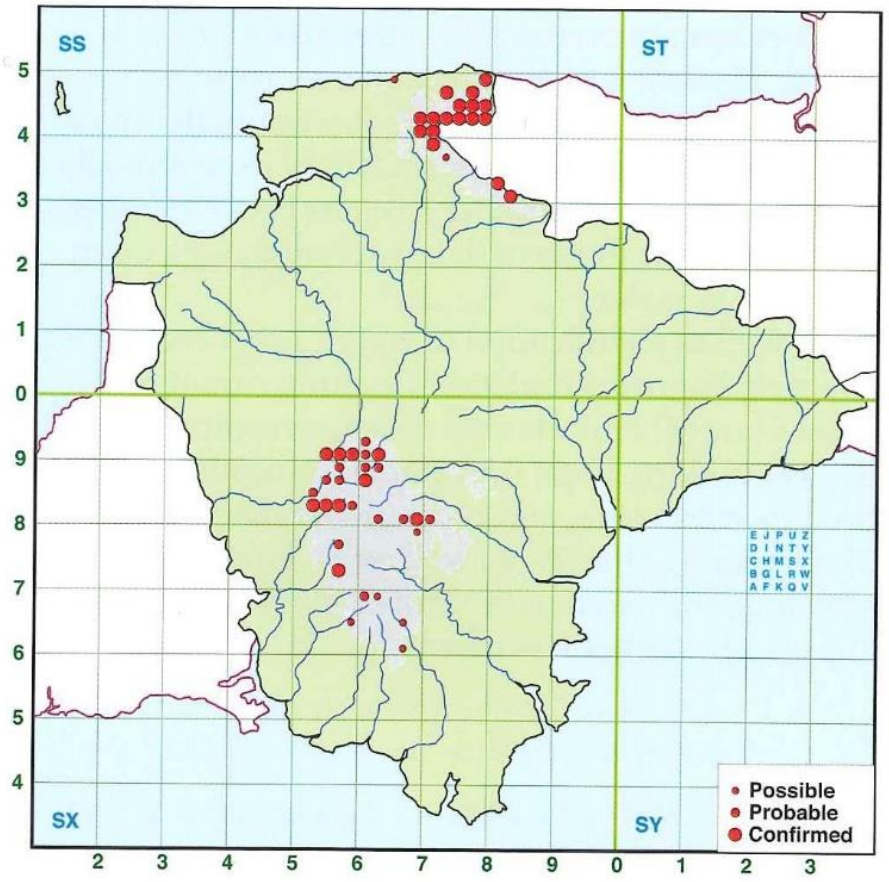
Cuckoo

Devon Bird Atlas 2007-13: Eds Sheila Beavan & Mike Locke

Breeding distribution 2007–13



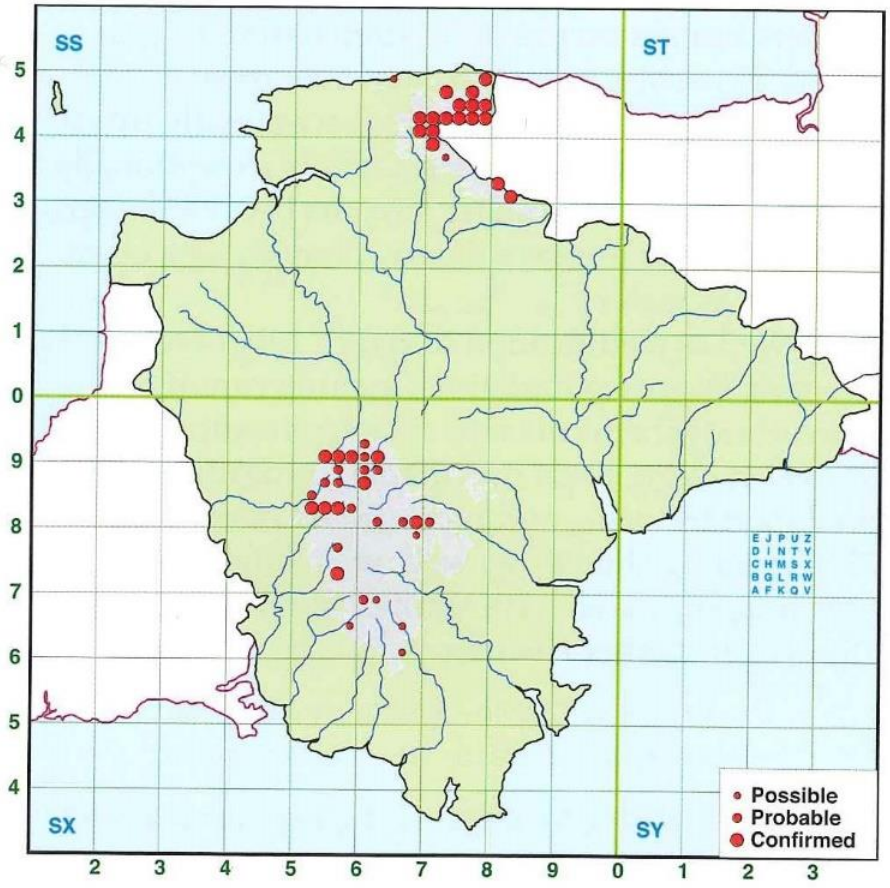
Breeding distribution 1977–85



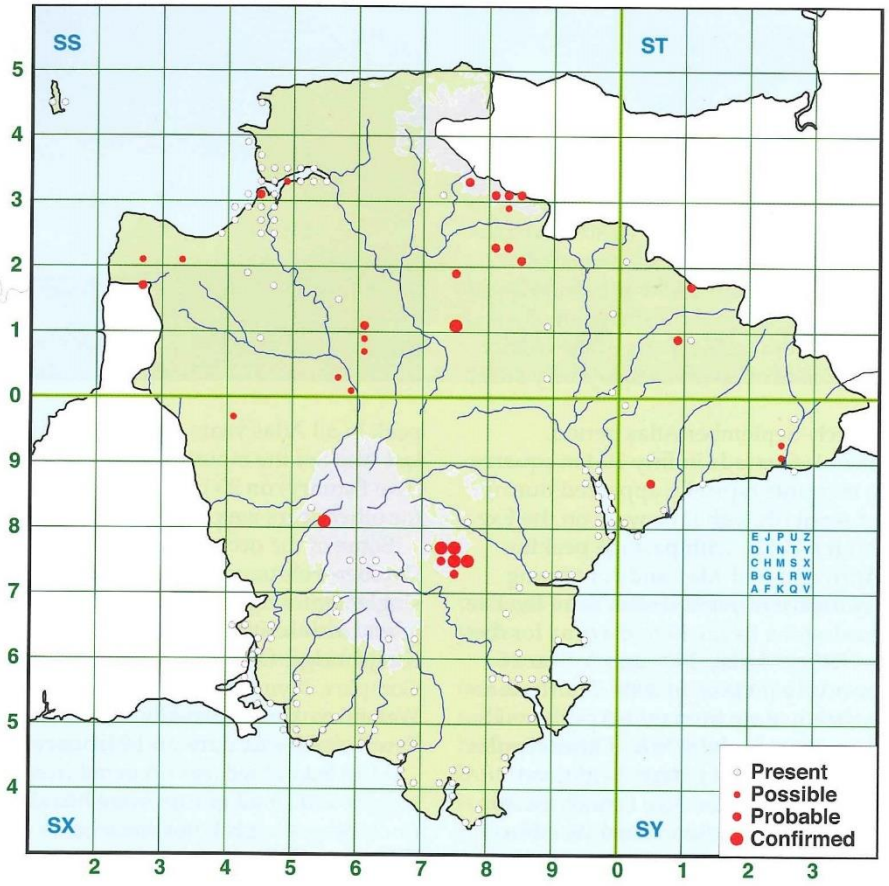
Curlew

Devon Bird Atlas 2007-13: Eds Sheila Beavan & Mike Locke

Breeding distribution 1977–85



Breeding distribution 2007–13

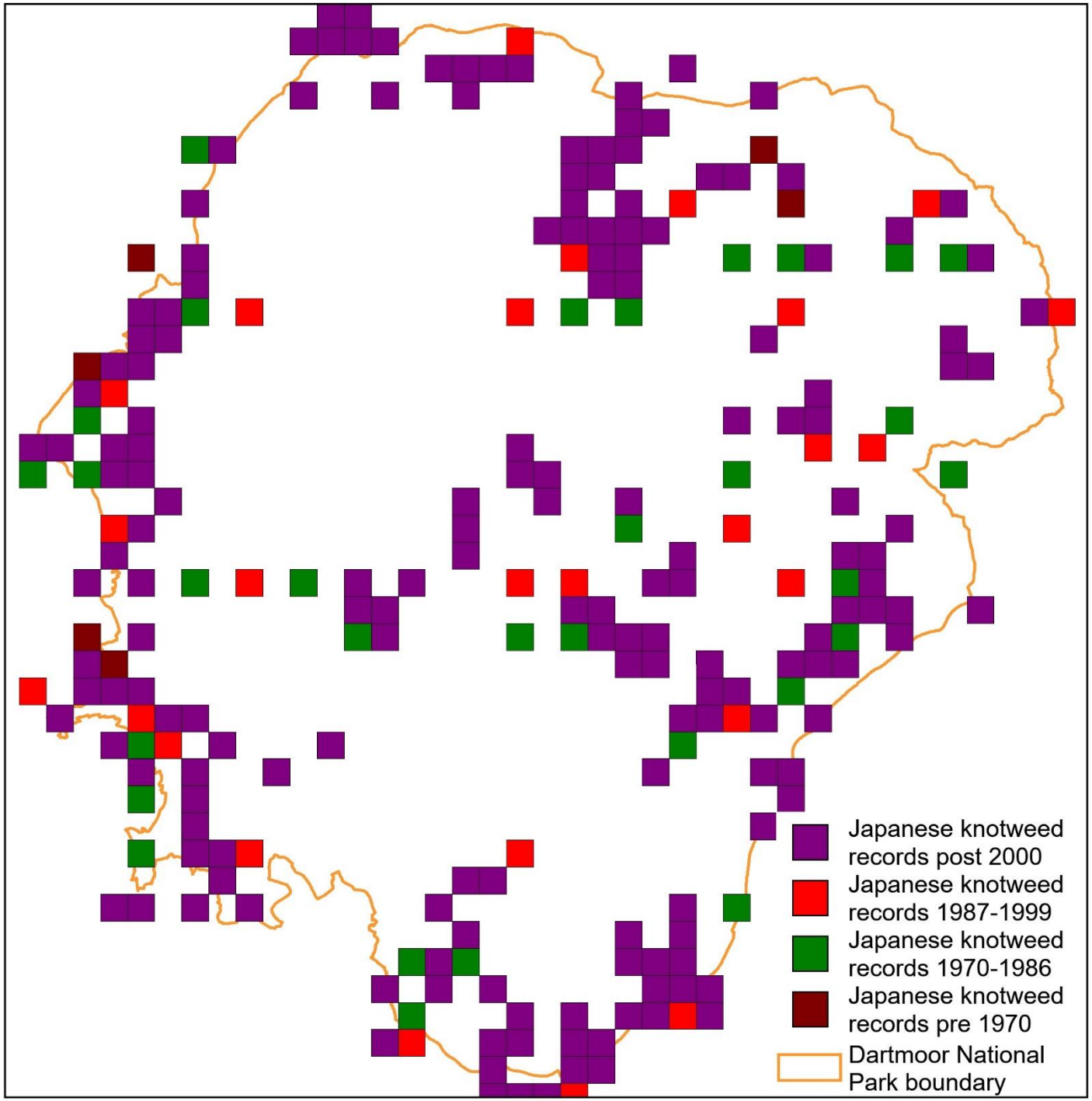


Invasive species

- To date no risk assessment for potential future invasive species has been made. The current approach of prioritising vigilance of well publicised or conspicuous species already behaving invasively does not adequately tackle the threat to the national park.

- The bulk of the recent records of invasive species within the national park are in the fringing lowland areas, in particular in the woodland valleys, this could be for a number of factors.

- Disperse records suggest widespread penetration of the park's interior and that the upland interior of the park will be the next frontier for invasion.



DBRC

Records of Japanese Knotweed

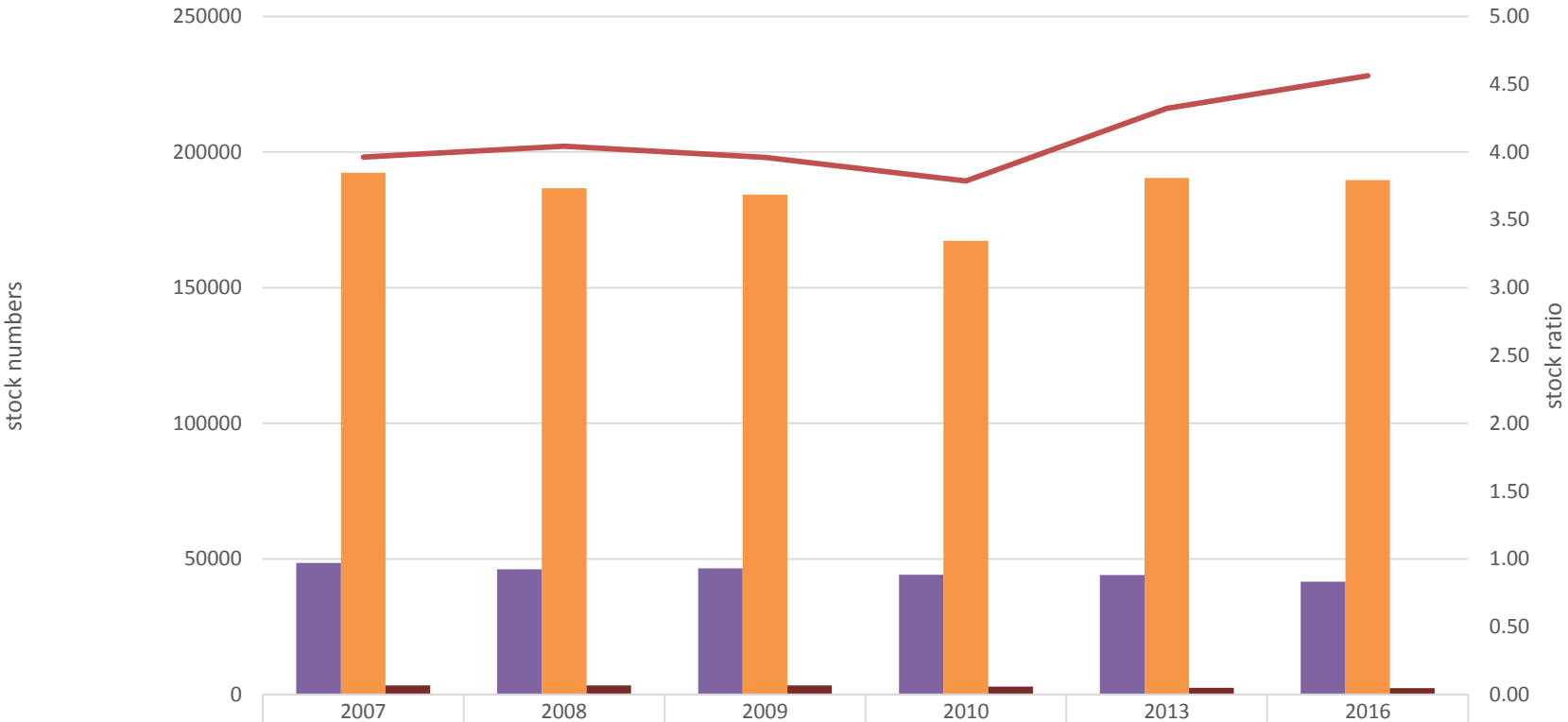
Potential species?

- Pine martin
- Beaver
- Water vole
- Hen harrier
- Goshawk
- Osprey
- Red backed shrike

Grazing levels

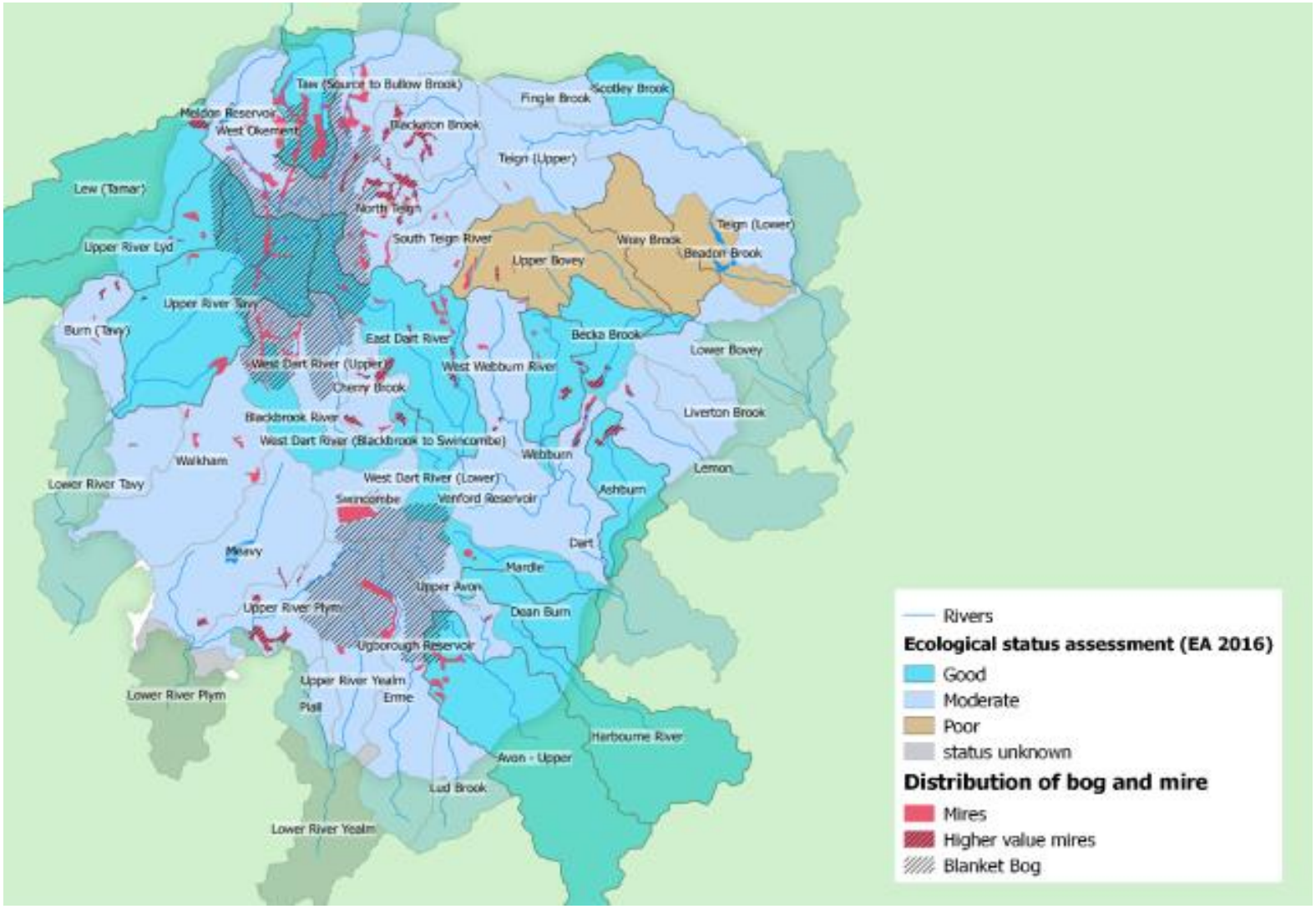
- Grazing levels during the ‘subsidy years’ (‘70s and ‘80s) in the region of 0.4-0.5 LU/ha.
- NE recommended levels for blanket bog 0.08LU/ha
- Comments made by Nature Conservancy Council in 1950 ahead of the notification of the SSSI that the surface of the bogs were dry and overgrazed

Livestock



	2007	2008	2009	2010	2013	2016
cattle	48525	46164	46530	44195	44058	41568
sheep	192271	186678	184262	167288	190391	189617
horses	3359	3350	3357	2904	2500	2372
sheep to cattle ratio	3.96	4.04	3.96	3.79	4.32	4.56

Water Environment



The ecological condition of the rivers as assessed against WFD objectives based on 2016 data

Recreational impacts – SWEEP Project

Strategic Grouping	Unitary Authority	Persons 2014	Persons 2039	Change	Change %
Plymouth & Surrounds	Plymouth South Hams West Devon	262,000 84,000 54,000	287,000 92,000 63,000	25,400 7,600 8,600	9.7 9.1 15.9
Exeter & Surrounds	Exeter Teignbridge East Devon Mid Devon	124,000 127,000 136,000 79,000	145,000 149,000 161,000 89,000	21,100 21,200 24,400 10,100	17.0 16.7 17.9 12.7
Torbay & surrounds	Torbay	133,000	148,000	15,500	11.7
Total		1,000,000	1,134,000		

Population growth in Dartmoor's hinterland, from 2014 – 2039 (source ONS2014, SNPPz1; rounded)

Impacts of population increase in the Dartmoor hinterlands

The SWEEP report suggests that:

- Increasing recreational pressure on Dartmoor may result in 10,854 m2 of bare ground being exposed along the path network and increased gullying along 42km of path

- Analysis identifies twelve species that might be vulnerable to disturbance from increased recreational activity. These include Cuckoo, Nightjar, Ring Ouzel and Wood Warbler. Walking, dog-walking and large events are key concerns

- Increased conflict between recreation and wildlife can be expected around Burrator, Dart Valley and Venford Reservoir, Haytor, Warren House, Soussons and Fernworthy.

Climate change

Increased frequency of river torrent and floods	**Water environment: Increased potential for catchments become more prone to sudden spates. Erosion of peat leading to loss of important habitat** **Access and recreation: May affect recreational use by localised flooding**
Longer growing season	A shift from heathy to grassy environments Rise of thermophilous grasses on former heathy bracken slopes leading to loss of Pearl-bordered and High Brown Fritillary)
Milder conditions affecting overwintering patterns of different species	Raised metabolism in hibernating species leading to abnormal need to feed during winter. Survival of insect and fungal parasites and pathogens increases
Drier conditions and increasing likelihood of drought	Loss of moisture in soil leading to loss of upland heath habitat, poorer grazing pasture, reduced fodder yield and reduced drinking water availability for livestock

Concluding thoughts: habitats

- It is clear that the distribution of high value habitats is not adequately known on Dartmoor
- Current monitoring is inadequate for SSSIs, CWSs and priority habitat in general. For the large moorland SSSIs the current scale of condition assessments is not enough to capture changes in habitat quality on sufficiently fine a scale.
- Considering the poor condition of large parts of these sites, can the current sites framework provide a roadmap to habitat recovery?
- Could future investment be targeted differently – greater input from volunteer recorders, landowners and community groups?
- How can we assess trends in habitat distribution better?

Species

- Little evidence that the 12 Living Dartmoor focus species act as an adequate barometer for the health of the habitats in general

- For example, whilst the priority species (all animals) of Rhos pasture or Culm grassland are reportedly stable, the plant species that comprise their habitat appear to be in general decline.

- Insufficient/poorly targeted recording effort means there are large gaps in knowledge

- Lack of resources dedicated to monitoring invasive species and their shift across the wider landscape

Questions and challenges

Are we doing enough to plan for the increase in recreational pressure and the impact from disturbance?

How can we plan for species reintroductions and new arrivals?

The current and potential ecological value of land outside the “Key Wildlife Areas should be recognised

Are we doing enough to prepare for the impacts of climate change?

How can we make the most of the proposed changes to agricultural? policy and other changes post Brexit?

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