

Addressing Climate Change through Habitat Restoration



**FOREST OF
BOWLAND**
Area of Outstanding Natural Beauty

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Forest of Bowland - key facts

- Internationally important for its blanket bog & heather moorland, upland hay meadows and rare birds
- Located in NW England and covers 802km²
- Highest point 561m, Wards Stone
- Over 20% of area is designated for conservation as SACs or SPAs and 14% Local Wildlife Sites
- Approximately 16,000 people live within the boundary of the AONB
- Over 1 million people live within 30 minutes travel time



Where are all the trees in this Forest?

- The origin of the word 'Forest' is from the Latin *forestis silva*, with *silva* meaning 'woodland' and *forestis* meaning 'outdoor'.
- Commonly, these Forests were extensive areas of rough land - a mosaic of woodland, pastures, scrub and moorland, on which the king or a nobleman (major landowner) had the right to keep deer for hunting.
- The 'Forest of Bowland' is closer to this historic meaning, than much of the woodland or plantations that might be perceived as forests today.



- In 2011, the AONB Partnership developed a Climate Change Adaptation Plan (CCAP) for the area
- Designed as a plan for **taking actions** which **reduce the vulnerability** of certain habitats, species and ecosystem services (we call all these assets) have to **climate change**
- We assessed this vulnerability using the projected changes we knew then from UK Climate Change Projections (CCP09)

What are the climate projections?

- In 2009, the UK Climate Change Projections(UKCCP09) were for:
 - Hotter, drier summers by 2080, with temp increases between 2° and 5.9°C and 22-43% less rain
 - Warmer, wetter winters, with temp increases between 1.4° and 4°C and 3-34% more rain

What are the climate projections?

In 2018 the UK Climate Change Projections(UKCCPI8) suggested similar:

- Again - hotter, drier summers and warmer, wetter winters

But also....

- An increase in frequency and intensity of extreme events e.g. flooding, droughts

What are the climate projections?

And this is what we have been noticing too:

- Extended dry, warm weather in spring
- Increases in the intensity of summer rainfall
- An extension of this into early autumn
- More frequent river and surface water flooding
- Increased frequency of storm events with high winds, sometimes in quick succession or with unusual wind direction

Adaptation Plan: Most Vulnerable

Asset	Why vulnerable	Actions required
BLANKET BOG	Summer – low water table leads to drying of peat, likely to erode Winter – heavy rain may lead to wash-outs of peat.	Restore surface vegetation Increase capacity to hold water
VALLEY MIRES (Lowland bogs)	Similar to above	
PURPLE MOOR GRASS AND RUSH PASTURE	Sensitive to drought and longer growing season may lead to species competition. Risk of wildfire increased	Stabilise ground water levels; get stocking levels right; control scrub & bracken
UPLAND HAY MEADOWS	Longer growing season may affect species composition; summer rains affect ability to cut; fewer frosts may impact on seed germination and rhizome development	Create more meadows; adapt management; monitor key species

Adaptation Plan: Most Vulnerable

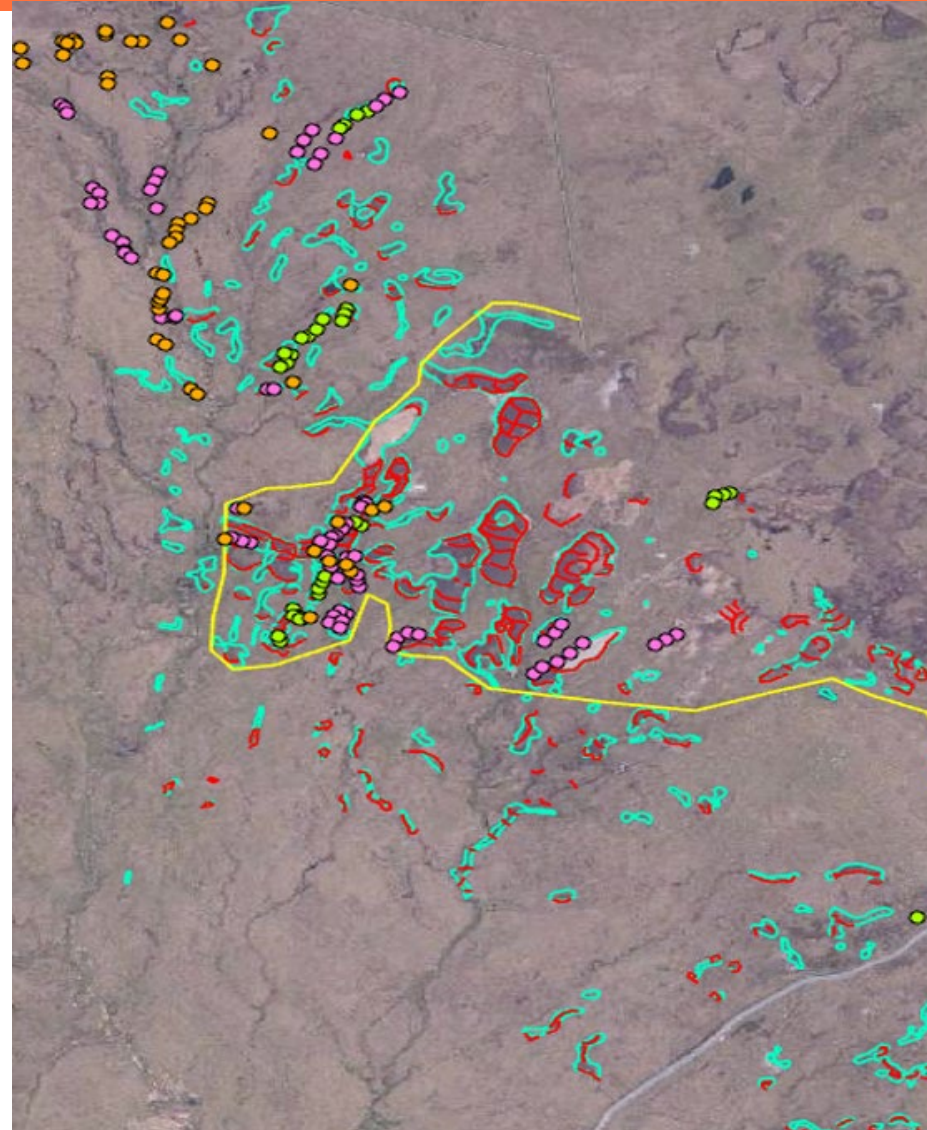
Asset	Why vulnerable	Actions required
WET WOODLANDS	Sensitive to drying out, leading to species changes and possibly soil loss due to drought/flood cycles	Extend, re-wet and connect woodlands, increase variety of genotypes
SPRINGS, FLUSHES, PONDS & RIVERS	Sensitive to drying out, connectivity, changes in sedimentation, inc in nutrient loading, algal blooms	Stabilisation of ground water levels; riverside management; reduce nutrients
FOOTPATHS AND BRIDLEWAYS	Surfaces sensitive to drying out and also to erosion during floods. May become overgrown. Possible increase in demand (indirect impact)	Increase maintenance
WOOD PASTURE & PARKLAND /DESIGNED LANDSCAPES	Veteran/Parkland trees sensitive to storms, fire, and pests & diseases Change in growing season may affect sp composition. Inc visitors?	Review management Consider succession planning Monitor pests & diseases

How have we used the Adaptation Plan?

- The actions proposed were not new to us – essentially, bringing assets into **good condition** so they can be resilient to change
- They also propose large, **landscape-scale**, actions that *‘make space for nature’* in the face of climate change
- This plan helped us to prioritise our habitat restoration work since 2011 – focusing on peatland and upland hay meadows

Peatland Restoration

- Revegetation of bare peat
- Avoided carbon loss
- Restoring hydrology (i.e. ‘slowing the flow’)
- Healthy, functioning peatland sequesters carbon from the atmosphere



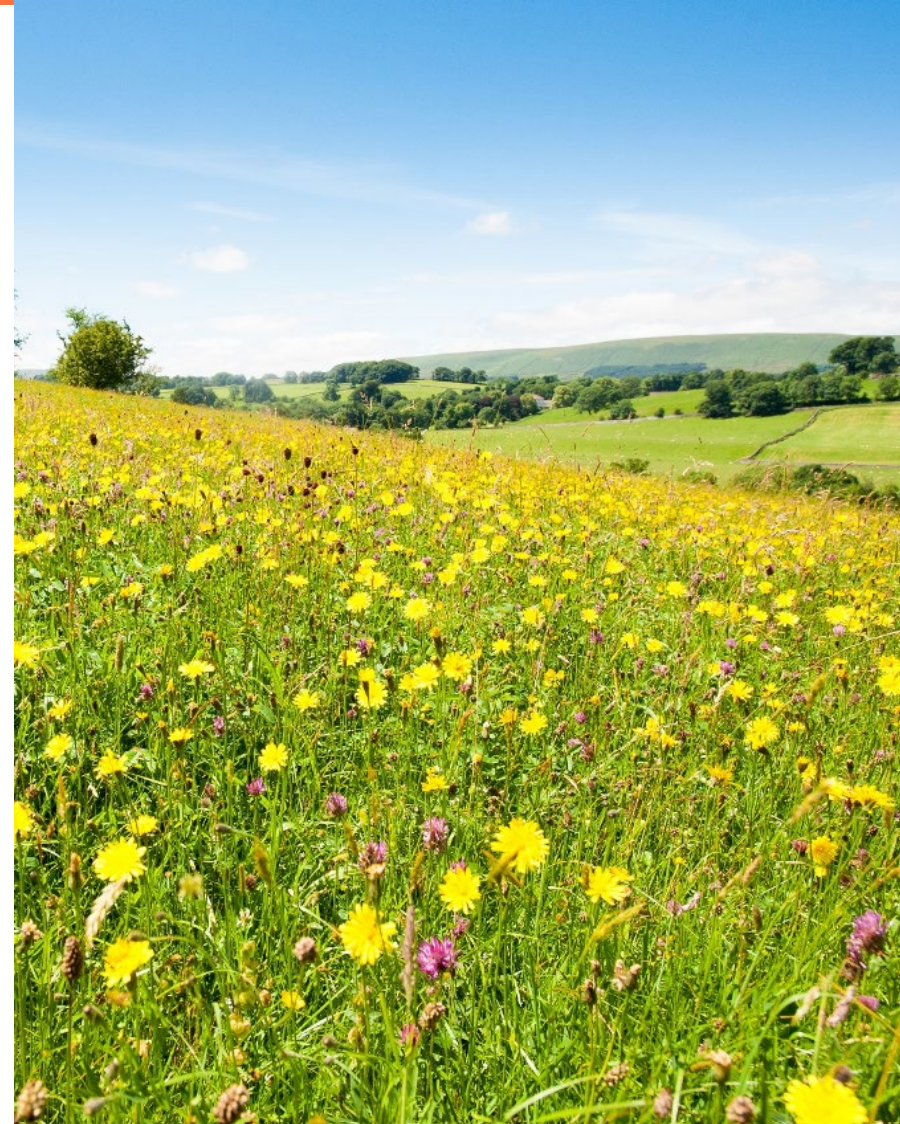
Peatland Restoration



- The AONB Partnership has managed projects over the last decade restoring almost 2000 ha. of peatland
- More UK Government funding secured from Nature for Climate Peatland Grant Scheme to restore 10 more sites, totalling 250 ha.

Upland Hay Meadow Restoration

- ‘Bowland Haytime’ initiative has restored or created almost 300 ha. of upland hay meadow or species-rich grassland since 2012
- Working at both farm and community scale
- Deeper rooting wildflower species help to store more soil carbon than rye grasses



We are currently working on a refresh of the Climate Change Adaptation Plan to inform our:

- Nature Recovery (or Restoration) Plan
- Climate Action Plan
- AONB Management Plan

Thank You!

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