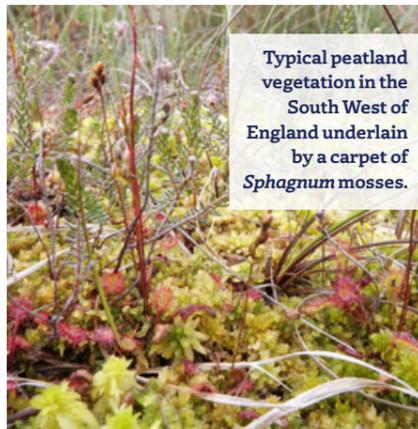


BACKGROUND AND CONTEXT



Typical peatland vegetation in the South West of England underlain by a carpet of *Sphagnum* mosses.



Adder (*Vipera berus*) sunning itself on Exmoor.



Rivers sourced on peatlands provide 70% of all UK drinking water.

Peatlands are now recognised nationally and internationally as providing many essential and valuable ecosystem services; they play an important role in water management, act as carbon stores, preserve archaeology, and are rare and important habitats with unique flora and fauna¹. In 2011, the IUCN identified these landscapes as the single most important terrestrial carbon store in the UK and that around 70% of all UK drinking water comes from upland, peatland catchments².

Peatlands form where waterlogged conditions limit decomposition to such an extent that dead vegetation accumulates as peat soil. The uplands of the South West have a specific type of peatland called blanket bog which develop in cool and wet conditions, forming predominately from *Sphagnum* mosses. Although blanket bog is extensive across the moors of the South West, it is globally rare, consequently these areas are internationally important ecosystems, with many designated as Sites of Special Scientific Interest and/or Special Areas of Conservation.

Peat accumulates slowly, mm's-cm's per year over thousands of years. These gradually accumulated deposits hold a precious record of past climate, land use and ecology as well as preserving rare organic archaeological remains such as the Whitehorse Hill cist. They also store huge amounts

of carbon which, if not safeguarded, could be released into the atmosphere worsening the climate emergency or washed into rivers which rise upon the moors reducing water quality downstream. The water leaving the uplands not only supports aquatic ecosystems downstream but is the main drinking water source for many people living in the South West. Furthermore, functioning peatlands regulate water supply, slowing the flow of water from the uplands during rainfall and gradually releasing water during dry spells.

The peatlands of the South West of England lie at the most southerly and westerly limit of the bio-climatic envelope of peat-forming ecosystems³ (i.e. areas with suitable temperature and precipitation conditions). Consequently, these bogs are vulnerable ecosystems that must be protected. They are also invaluable



Ecosystem services provided by a functioning peatland.



Erosion at Hangingstone Hill, Dartmoor.

indicators of what may happen to other more northerly peatlands, in the UK and elsewhere, as the climate warms and rainfall patterns change.

Natural and anthropogenic pressures on the peatlands of the South West are typical of those occurring

globally, they include drainage, peat extraction, over-grazing, burning, disturbance from military use, climate change and nutrient deposition. These pressures have altered the natural feedback cycles which maintain these ecosystems, leaving them increasingly vulnerable to erosion and ecological/hydrological degradation.

Peatland restoration started on

Exmoor in 2006 as it became apparent that many of the peatlands we rely on for vital ecosystem services were in a degraded and worsening state. South West Water's Upstream Thinking Programme, working with a multitude of stakeholders, has restored a total of 24.8 km² (2480 ha) of peatland across Exmoor and Dartmoor since 2010. As part of their 25-year environment plan the Department

for the Environment, Food and Rural Affairs recognises the need to restore and protect our peatlands⁴, funding the South West Peatland Partnership project to restore 16.8 km² (1680 ha) of peatland across Bodmin Moor, Exmoor and Dartmoor by 2020.

Research has been central to the restoration programme; to better understand the current state of these peatlands, design appropriate restoration plans and evaluate the success of restoration. The following document outlines our findings since 2010 working within Dartmoor and Exmoor National Parks.



Restoration at Hangingstone Hill, Dartmoor has left pools of water where there were erosional pans.



Pools of water form behind peat dams, Lanacombe, Exmoor 2014.

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The appendices are available to view at www.exeter.ac.uk/crew/research/casestudies/miresproject

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