



# Nature Based Solutions

Jo Neville

National Trust

Connecting the Culm NBS online event 11-10-2022



# Nature Based Solutions

- WWF - *Nature-Based Solutions (NBS) are initiatives that work with and enhance nature to help address societal challenges, including tackling the climate and biodiversity crises and reducing poverty.*
- NBS are key to tackling the climate and ecological crisis and providing future resilience.
- Nature-based solutions are based on the notion that when ecosystems are healthy and well-managed, they provide essential benefits and services to people, such as reducing greenhouse gas emissions, securing safe water resources, making air safer to breathe, or providing increased food security.



# NBS examples

Protecting and restoring coral reefs, mangroves, kelp forests, peatlands

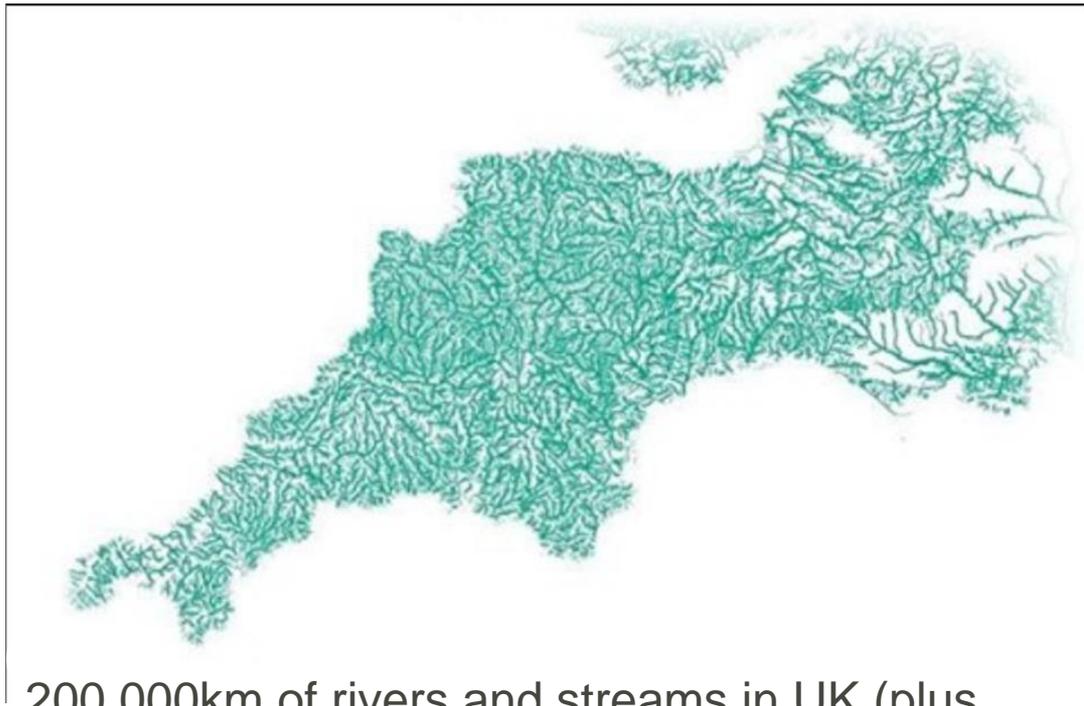
Greener cities – NBS such as green roofs, rain gardens, or constructed wetlands can minimise damaging runoff by absorbing stormwater, reducing flood risks and safeguarding freshwater ecosystems. In addition, nature-based solutions keep cities cooler during the summer, support birds and other pollinators, and promote people's mental and physical health.

Regenerative agriculture, tree planting, wetland and river restoration, leaky dams

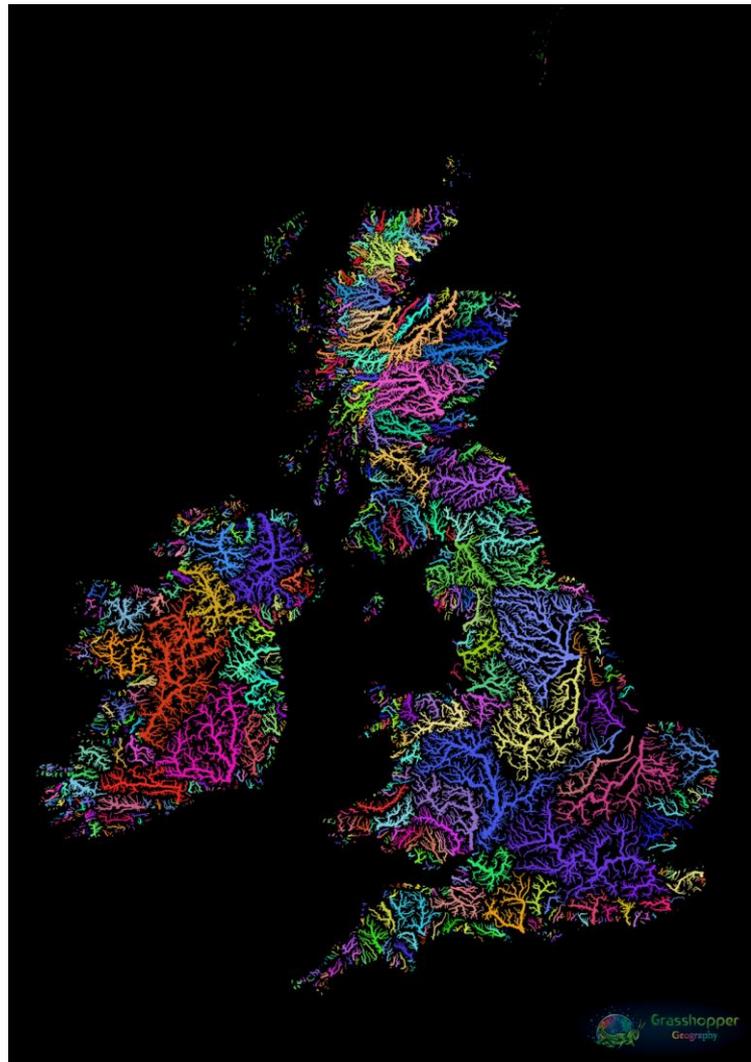
Becoming recognised and adopted by EA, water companies, insurers etc. Need to be part of a wider toolkit for adaptation and risk management, but can provide a significant part of the solution.



# Why do we need NBS?

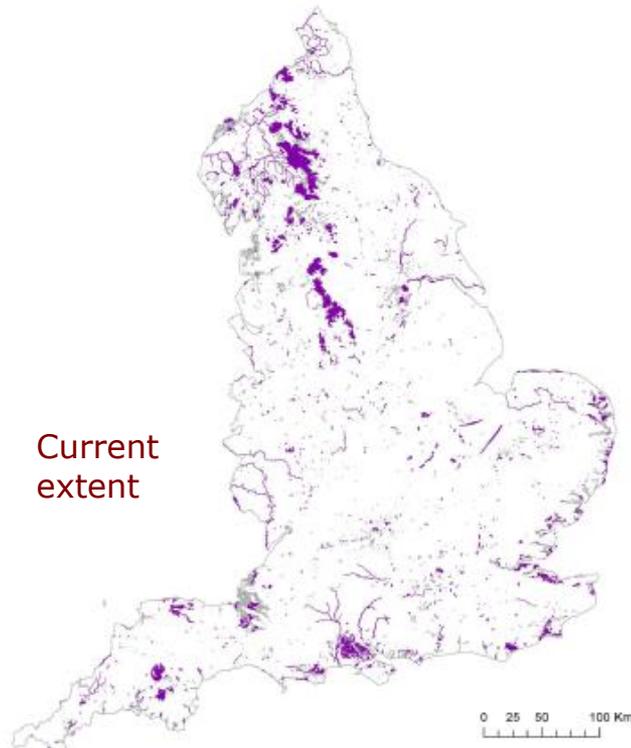
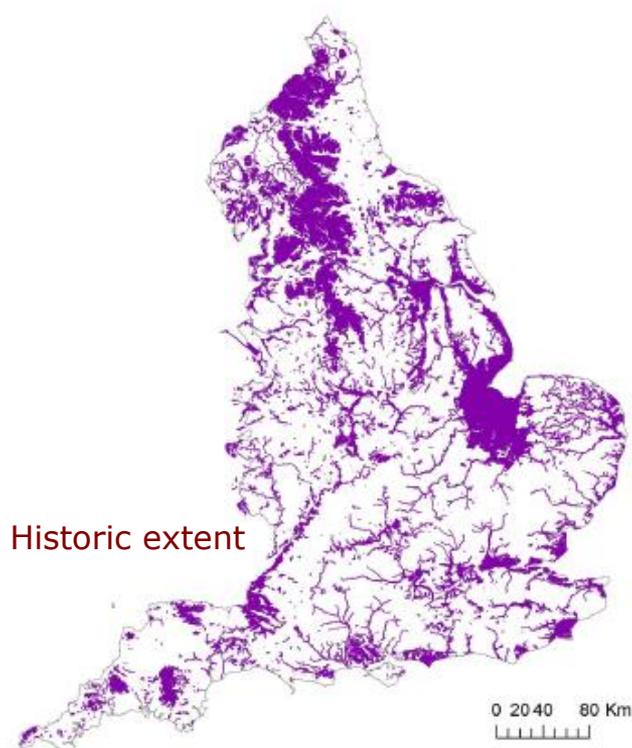


200,000km of rivers and streams in UK (plus ditches, drains etc)





# Loss of England's wetlands

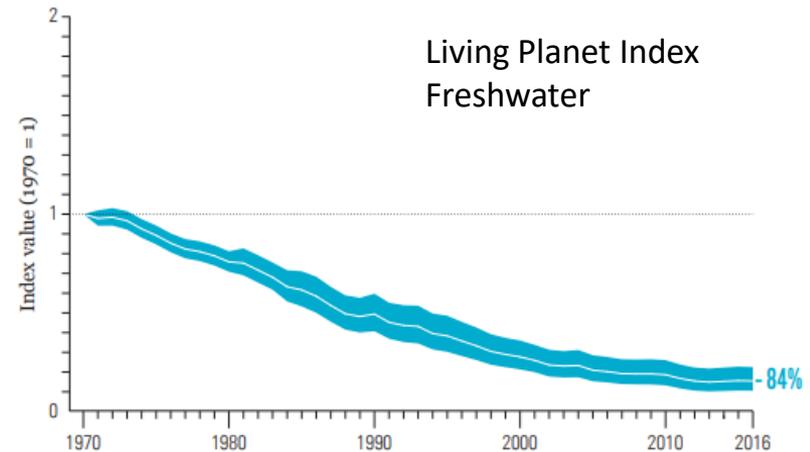
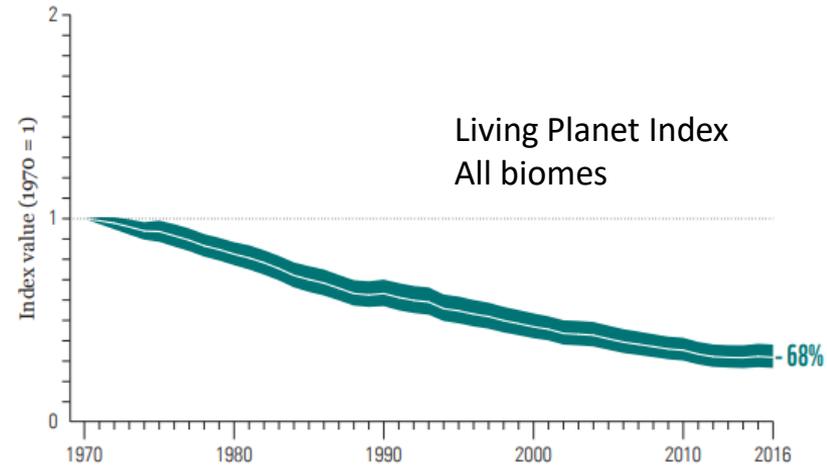


Wetland Vision, 2008

# Global state of freshwaters

Population reduction among freshwater species faster than in any other ecosystem; wetland losses more rapid than for tropical forest. The Freshwater Living Planet Index found that global populations of freshwater species decreased by 84% since 1970.

14% of English Rivers at Good Ecological Status; 40% in the EU



Overall projections for UK are for wetter winters and drier summers, with increases in extreme weather events such as flooding and drought.

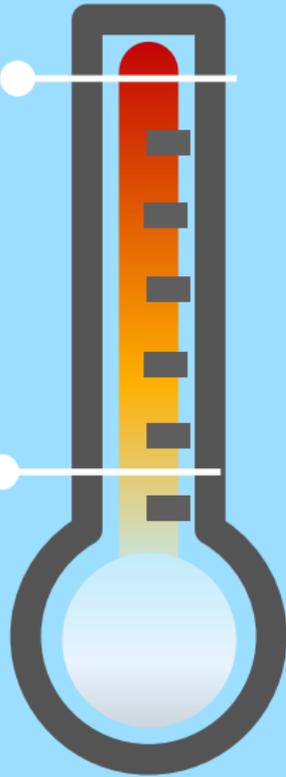
The UK currently has more water than required for supply for drinking, industry etc. But this is expected to change, with significant deficits predicted to occur across more than 25% of the country from the 2030s.

Looking beyond 2030s, deficits are projected to be widespread by the 2050s under a high population growth and a high climate change scenario.

4°C



1°C



© Environment Agency.

25% of water supply zones can't meet demand

Up to 82% reduction in monthly flows in English rivers

5% of catchments will have a greater demand than supply

15% of agricultural land classified as 'poor'



1 m+ average sea level rise expected in England

11.7°C rise in average daily maximum summer temperature

20% rise in daily extreme rainfall intensity in England

38.7°C new record temperature set for the UK in July 2019



Salmonid populations in southern England will suffer significant declines

Up to 85% of blanket bog habitat at risk of loss

25% of species in protected areas are at risk

1,200ha of protected inter-tidal habitat lost due to coastal squeeze



# PUBLIC VALUE

**73%** 

agree that having access to waterways for recreation is important to them

**87%** 

agree that it's important that more is done to help freshwater ecosystems

**88%** 

agree they are a national treasure

Public Perception – Troubled Waters Report

- Cost comparison between emergency costs and resilience costs (Atkins, 2018).
- The results show that at a national level, the cost of responding to a drought emergency are consistently higher than those of building long-term resilience to the same event.

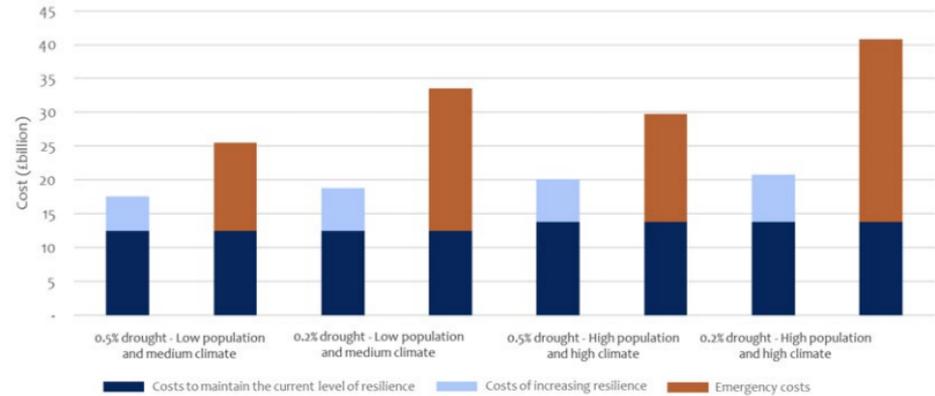


Figure 10 Comparison between emergency costs and resilience costs



# Rethinking natural river systems

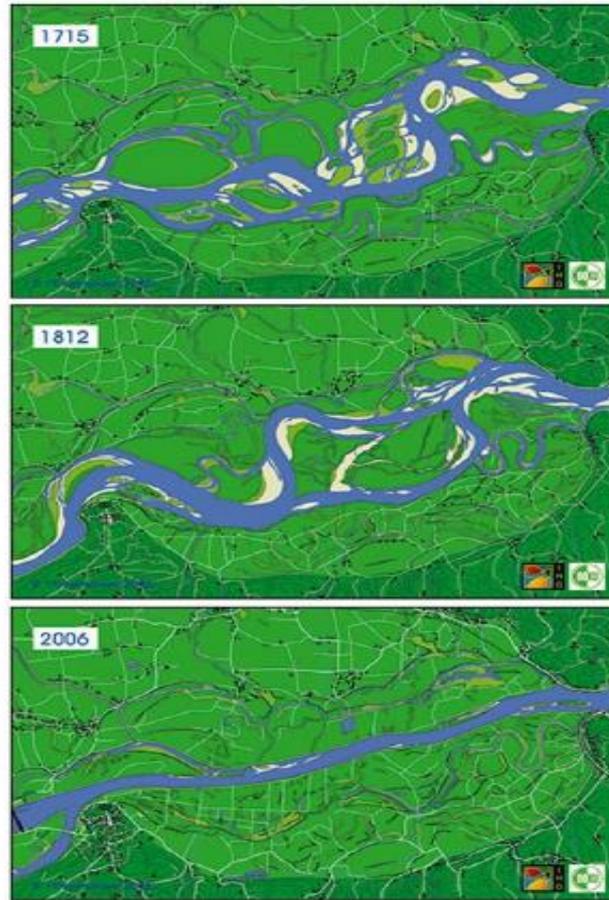


Fig. 6. Channel changes of the Danube River in the Austrian Machland floodplain from 1715 to 2006. Credit: FWF project Machland 1715-1991. Nr. P14959-B06.



## What we think of as natural rivers & streams are usually nothing of the kind.....

- Single channel
- Incised and straightened
- No connectivity with floodplain – even at higher flows
- Very narrow riparian habitat
- Water and sediment flow rapidly through site



## The opportunity – functioning rivers & floodplains

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- Flood and drought resilience
- Habitat creation and renewal (complex dynamic systems)
- Landscape connectivity
- Blue carbon
- Access opportunities
- Downstream beneficiaries
- ‘Blended finance’

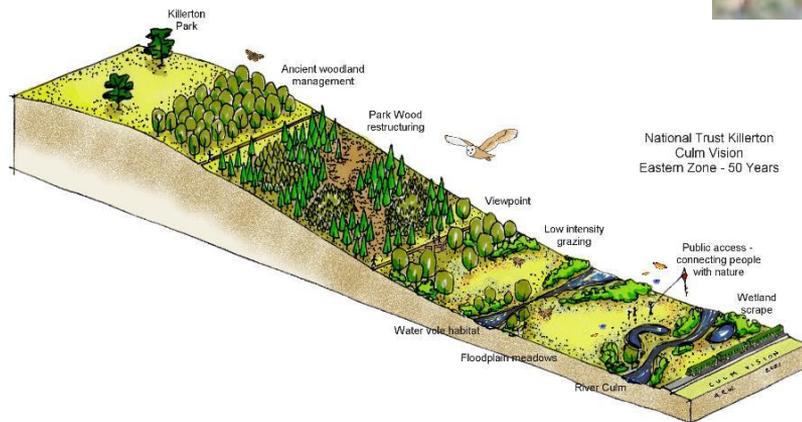
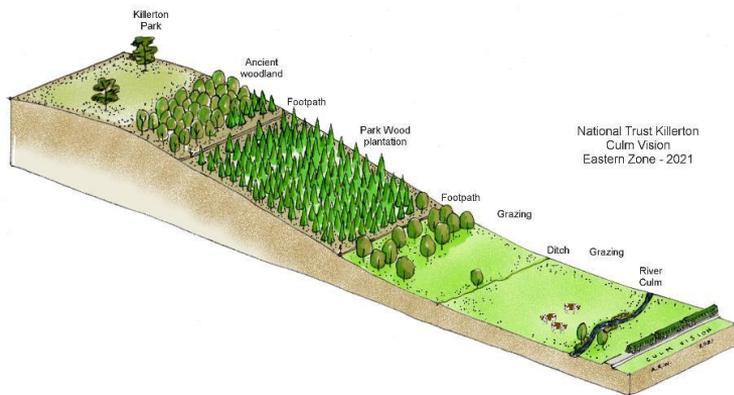




## Killerton River Culm Floodplain GRCF Project









# Scrapes



wrt.org.uk





# Joined-up Thinking

Wider works include: hedgerow planting and restoration, woodland and wood pasture creation, agroforestry and veteran tree works. In partnership with WRT, FWAG and Woodland Trust.

Future works include: CtC scrapes and ponds, species, continued monitoring, and hopeful LRS scheme.

Needs to be holistic throughout catchment with partnership working to achieve real change – Blueprint and wider CtC