



Upland hay meadow restoration in the North Pennines AONB

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Introduction



Upland hay meadows

**Traditional
management
practices**

**Upland hay meadow
restoration:**

- **Hay-Time**
- **Nectarworks**
- **Plugging the Gaps**
- **Tees-Swale:
naturally connected**



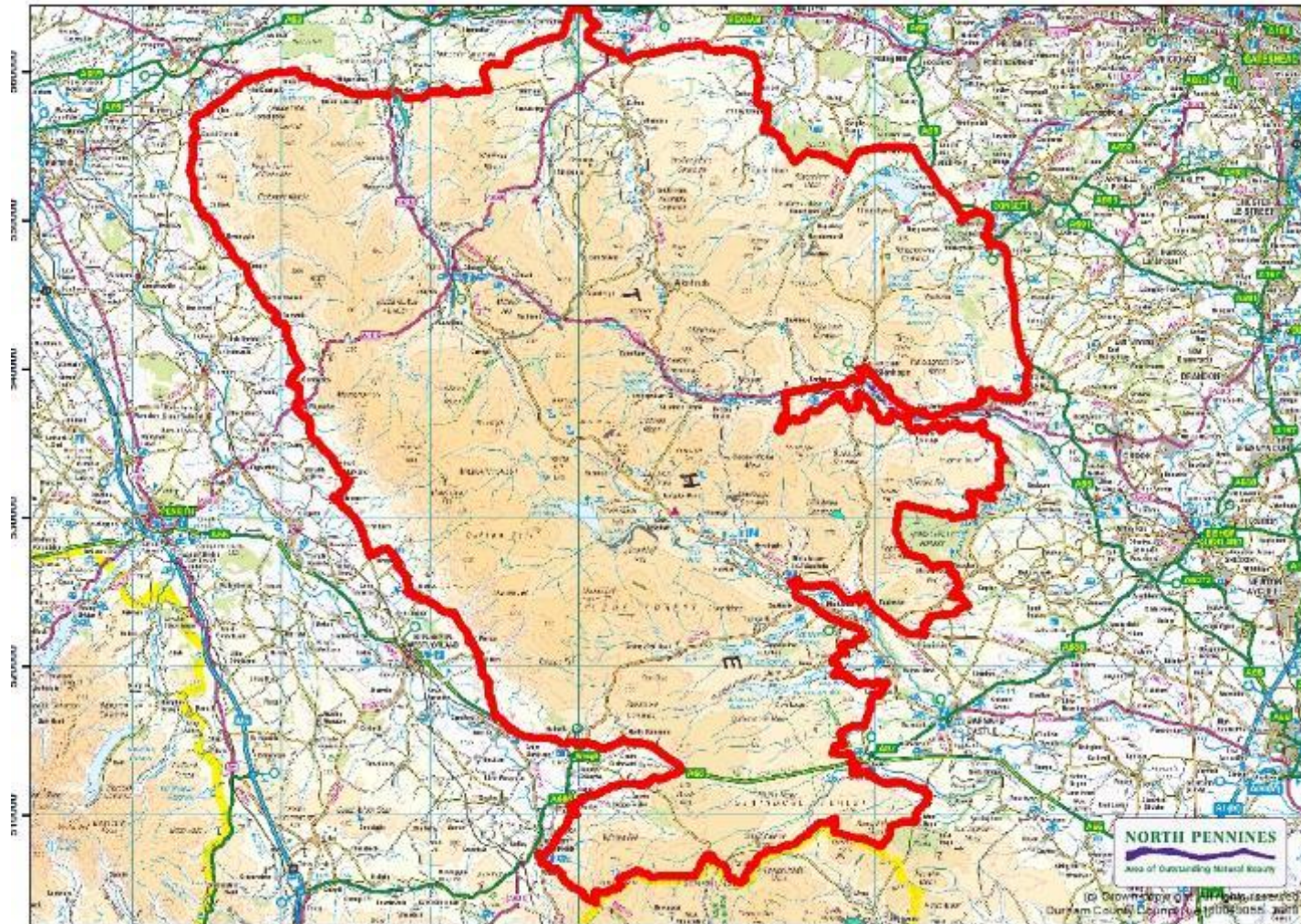
Where is the North Pennines AONB?



United Nations
Educational, Scientific and
Cultural Organization



North Pennines
UNESCO
Global Geopark



What is an upland hay meadow?



Traditional management practices



Spring grazing

'Shut-up' period

**15th July
Haytiming cut
date**

**Aftermath
grazing with
cattle**



**Some autumn
grazing with
sheep**

**Farmyard
manure
applications**



Intensive farming practices



Silage making rather than hay – quicker, earlier cutting times

Adding chemical fertilisers rather than farmyard manure

Faster machines, faster cutting times, greater compaction

Uniform cutting times

Species-rich upland hay meadows



The Big Five!

Wood crane's-bill

Melancholy thistle

Lady's-mantles

Great burnet

Globeflower



Flower-rich meadows, good for bumblebees



**Meadow
buttercup**
**Sweet vernal
grass**
Yellow rattle
Red clover
Eyebright



Hay-Time project 2006 – 2012

Botanical surveys of upland hay meadows



97% of flower-rich grasslands have disappeared across the UK

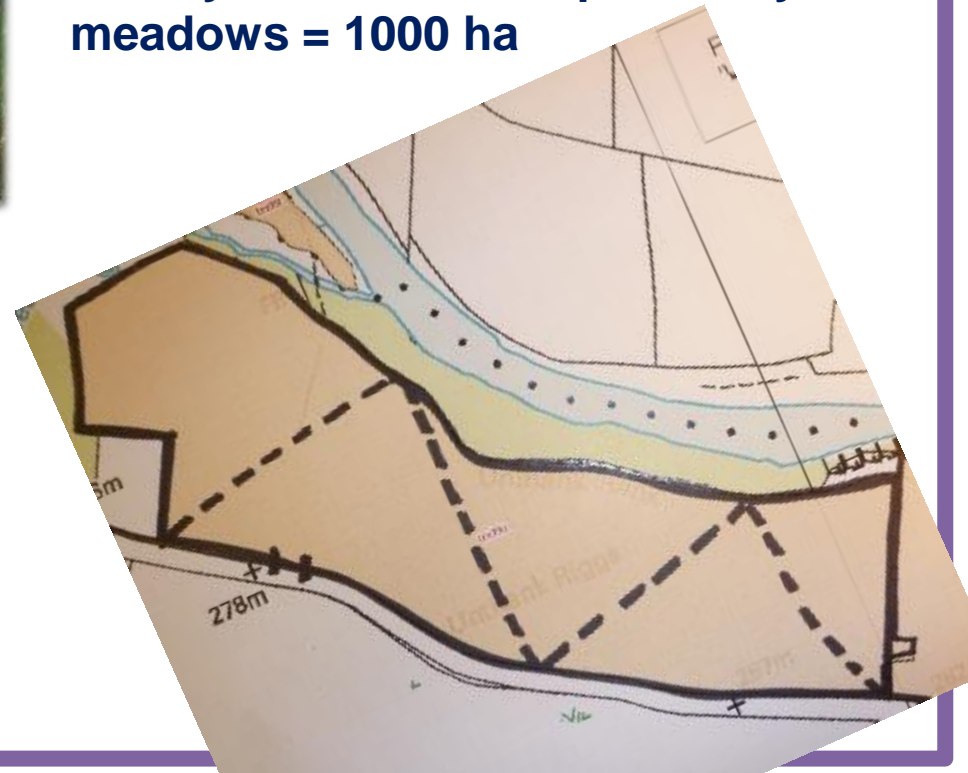
900ha species-rich meadows left in the North Pennines (40% of what's left)

Surveyed over 1,200 upland hay meadows = 1000 ha

Found that species-rich meadows are rare (<100 across North Pennines) = 110ha

200+ are good for bumblebees = 250ha

Floristic diversity is declining with intensive farming





Seed harvesting and spreading
Seed was spread on 93 meadows = 236 hectares



Adding seed has been successful!

- All meadows have had baseline surveys and monitored after seed addition
- Number of species increased by an average of three
- Positive indicator species increased in 87% of meadows



Wildflowers:

Annuals:

- Yellow-rattle
- Lesser trefoil
- Eyebright
- Changing forget-me-not

Perennials:

- Red clover
- Ribwort plantain
- Meadow buttercup
- Pignut

INCREASED!

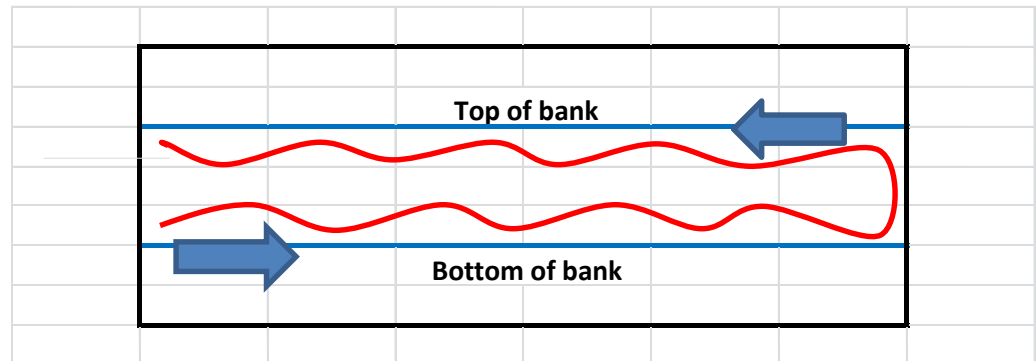
Where's "The Big Five"?

Nectarworks project; March 2013 – August 2017



How important are flower-rich banks?

- 117 flower-rich banks surveyed and monitored
- Walk along bottom then top of bank
- Record all plant species
- Habitat maps



Diversity of flower-rich banks



**Flower-rich
Wet mires**

**Wet and dry
grasslands**

Acid grassland

**Limestone
grassland**

**Calcareous
flushes**

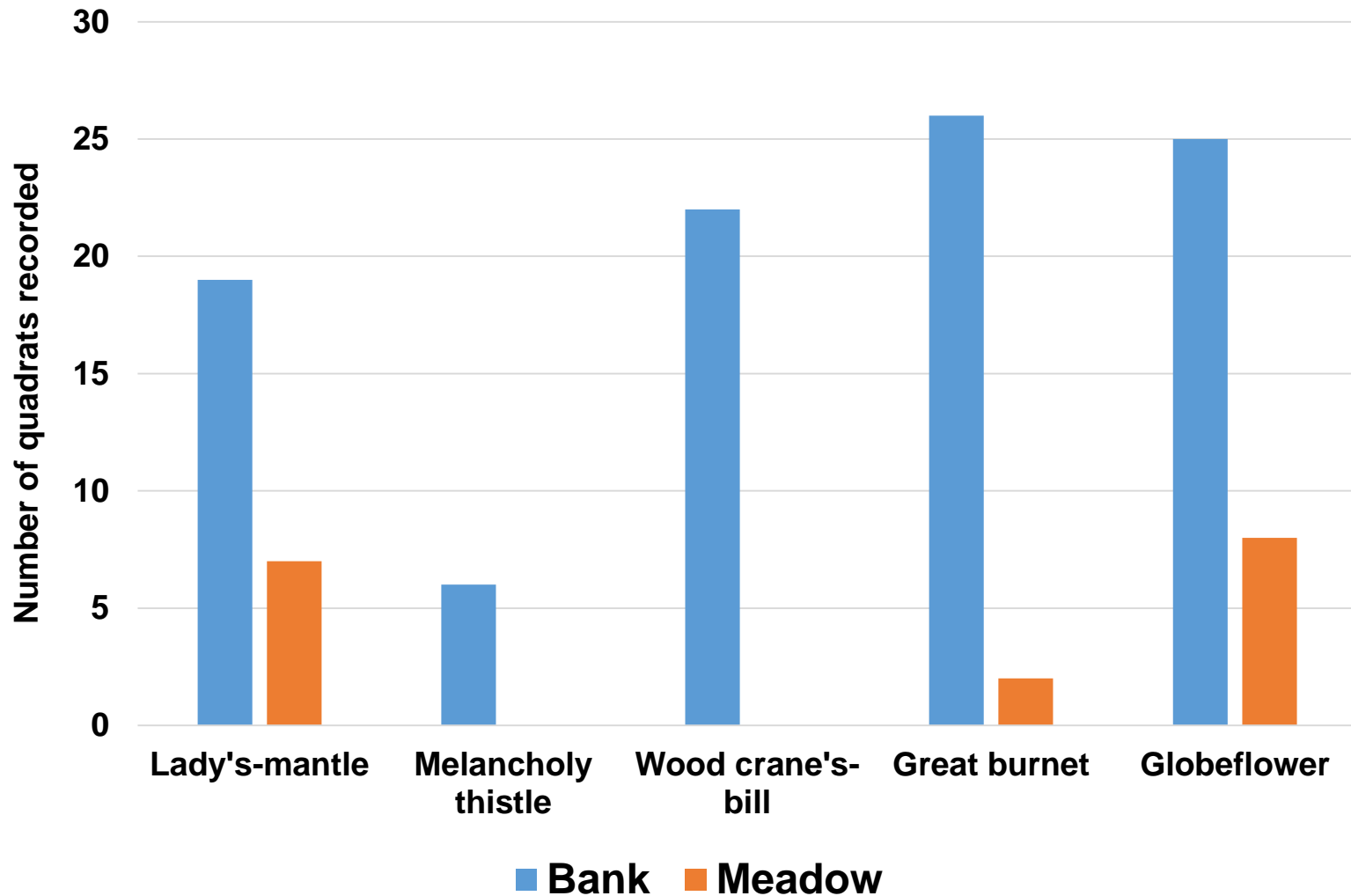
**Teesdale
assemblage**

Riverbanks

Road verges



Where are the Big Five?



Unique machine called 'Banksy'



- New machine designed by contractors
- Spread seed onto 39 meadows = 132 hectares
- Focus on THE BIG FIVE
- Monitoring summer 2016 and 2017; 5 – 6 plants recorded in each meadow.

Plugging the Gaps!



NORTHUMBRIAN
WATER *living water*

Kew
ROYAL BOTANIC GARDENS

April 2017 – April 2019

**A hands-on community
project to restore flower-rich
areas**

Over 140 people participated

**12 Seed collecting
workshops**

14 Seed sowing workshops



Seed sorting and sowing workshops



Seeds sown into a mixture of peat-free compost, grit and sand.

Bigger pots for deep-rooted perennial plants

30 volunteers looked after 400 trays during the winter 2017/18



Volunteers built a Wildflower nursery in Allendale, April 2018



Shed

Polytunnel

**Watering
system**

**Growing
beds**



**Rabbit-
proof
fencing**

**Seating
area**



Looking after seedlings and plug plants



Betony

**Wildflower
nursery
warden
team**

**Watering
every day**



Lady's-mantle



Great burnet

Weeding

**Pricking
out**

Potting on



Wood crane's-bill

Plug planting in meadows and community areas



**Plug planting
days
throughout
Sept – Nov
2018**



Plug plants establish well at the edges of meadows



**12,300 plug
plants**

**28 meadows
and community
sites**



Future plans

NORTH PENNINES
Area of Outstanding Natural Beauty



YORKSHIRE DALES
National Park Authority



HERITAGE FUND

Tees-Swale: naturally connected

Development, until Feb 2020

Delivery, Sept 2020 – Sept 2025

Deep engagement with the farmers and landowners

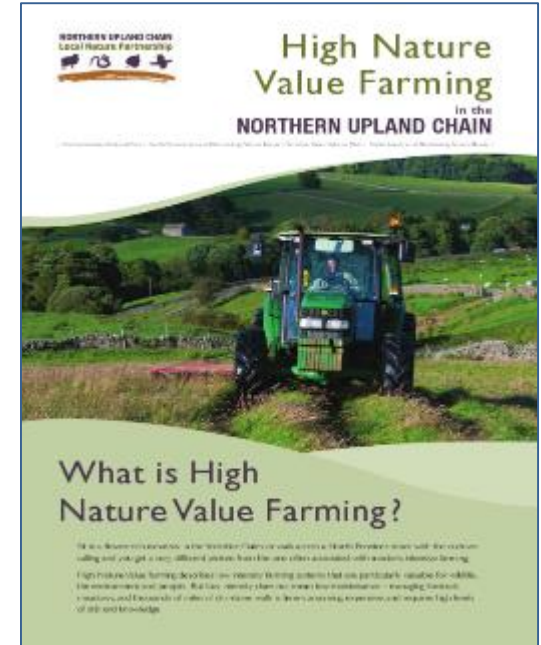
Peer-to-peer learning

Training for farmers and contractors

Farmer/conservationist knowledge-exchange

Ecosystem services and natural capital

Working with volunteers



More, bigger, better, joined: Landscape-scale habitat restoration

Meadows



Banks



Mires



**Blanket
bogs**



Mosaics of habitats

Peatlands



Sikes



**Heather
moorlands**



**Rush
pastures**



Woodlands



Rivers



Making space for nature, Prof. Sir John Lawton



**Many thanks to
National Lottery
Heritage Fund
and National
Lottery players**

**Thanks to the
huge numbers of
helpful volunteers**

**Any
Questions?**

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