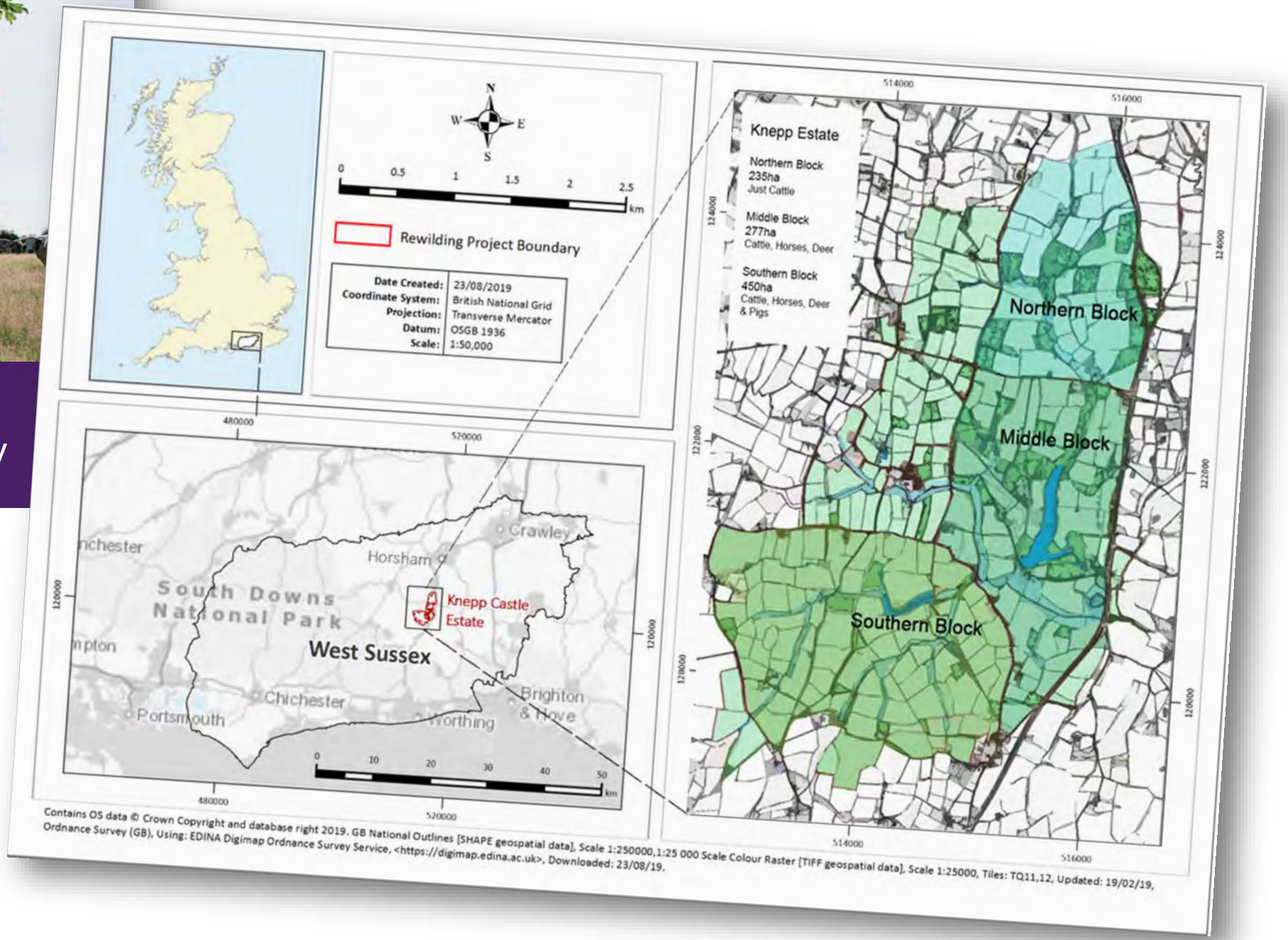
Effective Conservation in Action

Landscape of Hope

Knepp: English Rewilding Movement


Image Landsat / Copernicus
Image IBCAO
Image U.S. Geological Survey
Data SIO, NOAA, U.S. Navy, NGA, GEBCO
Google Earth
Imagery Date: 1/1/2021 52°49'27.09" N 23°02'18.27" E elev 147 m eye alt 9436.09 km

KNEPP
1,400 ha of low Weald clay



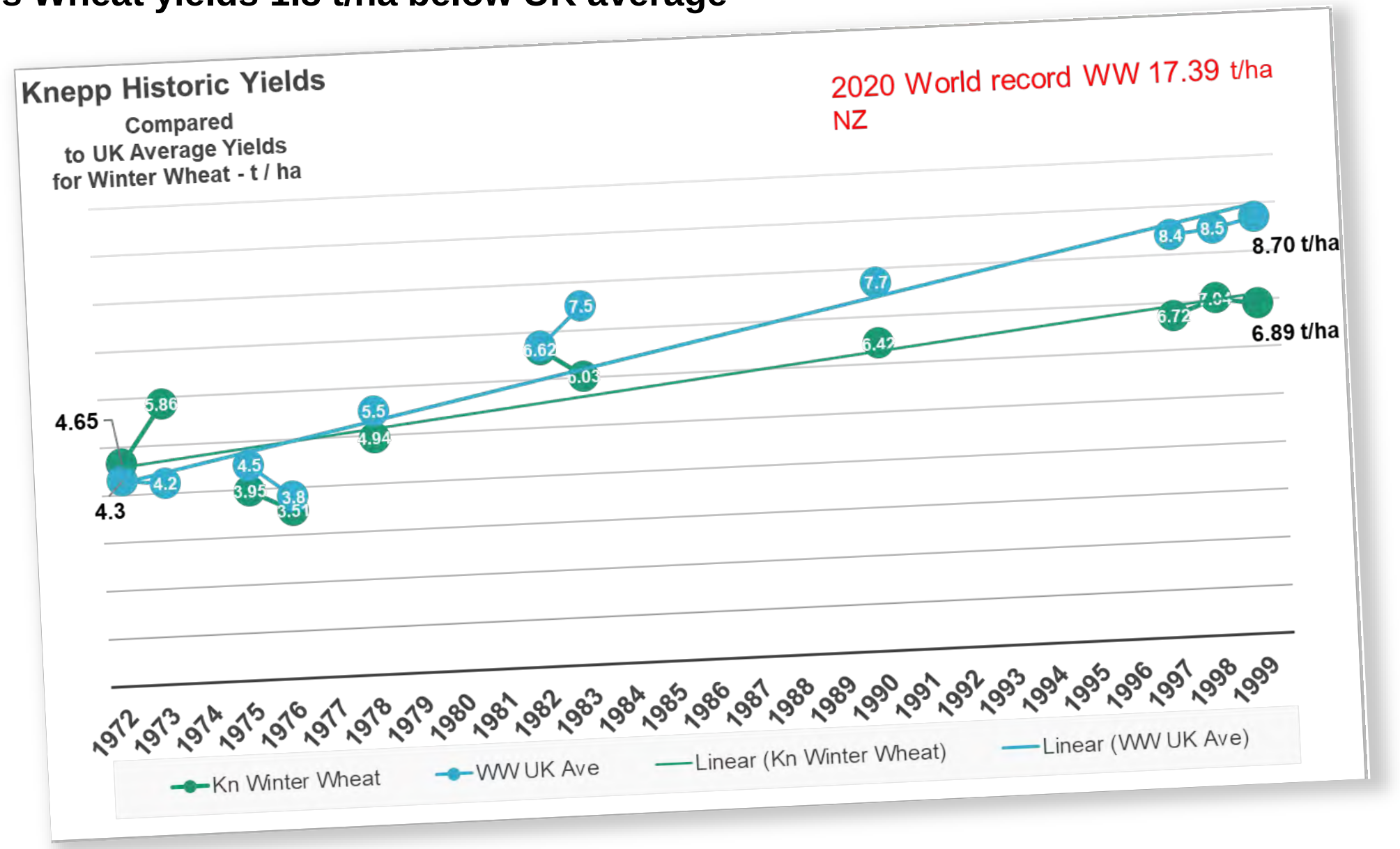
DIG FOR VICTORY: 1941, when these pictures were taken, Knepp's land had mostly reverted to scrub

op. Duke of Gloucester reviews Canadian 3rd Div. 1

Mrs Middleton. Self

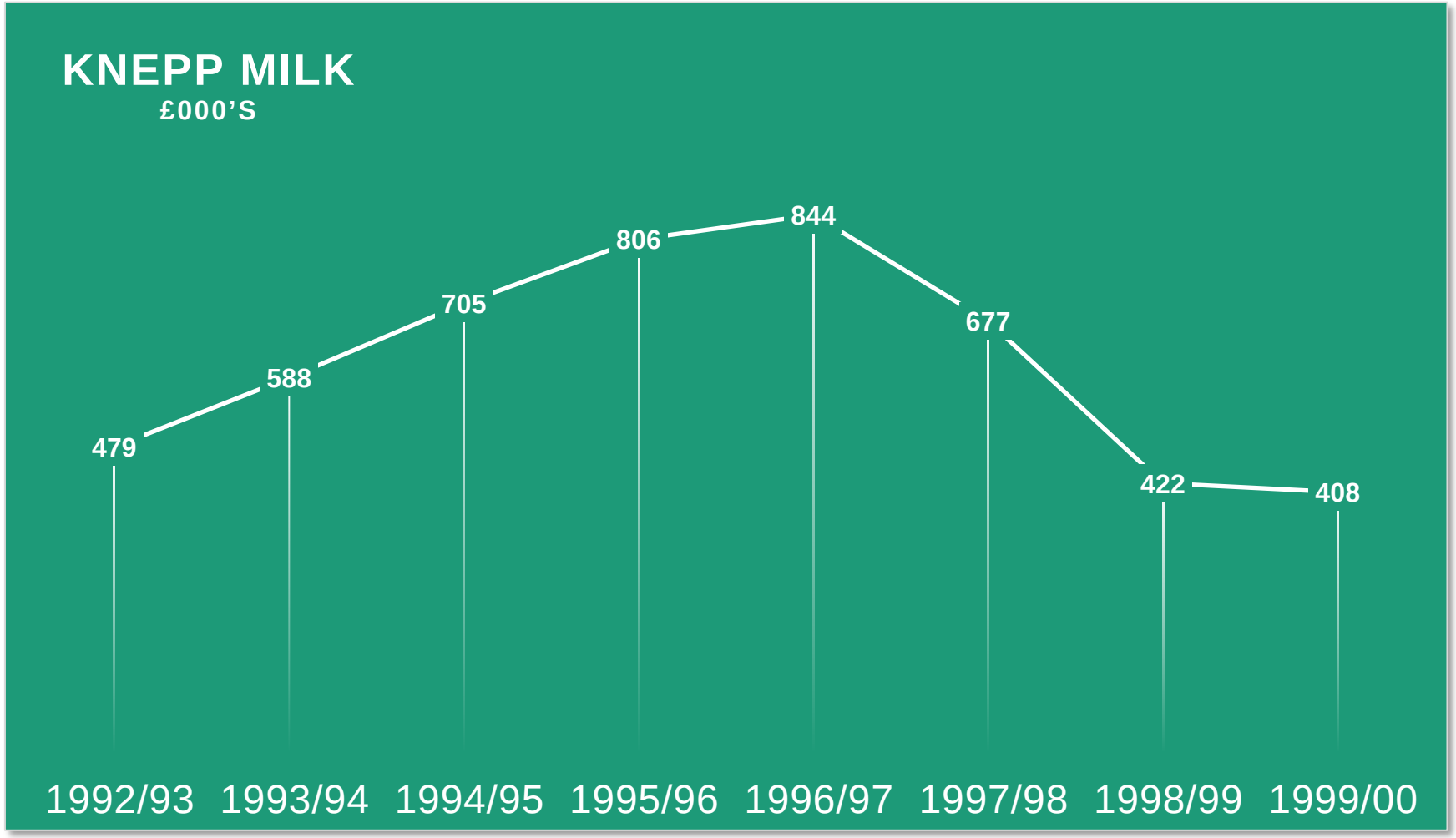
Knapp Prudence 20th Bob Head.

Knepp's Wheat yields 1.8 t/ha below UK average



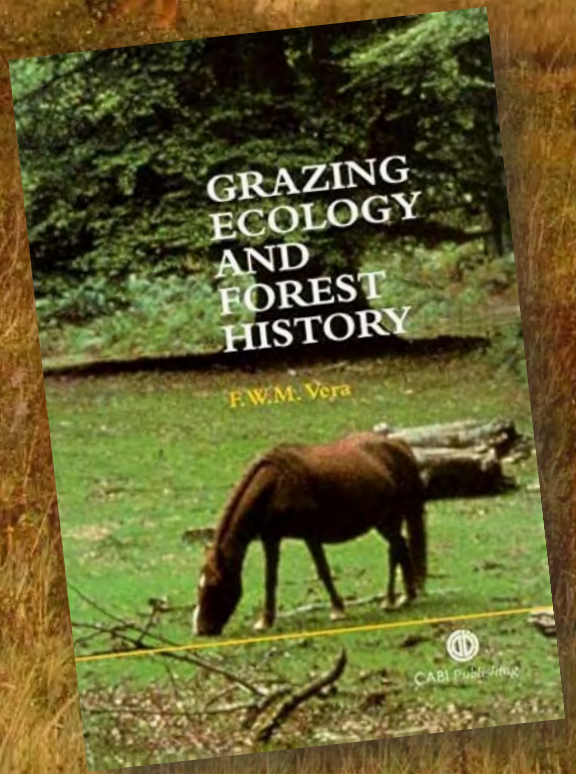
Knepp Milk projection - end of the 1990s

- Milk quotas ending
- Dairy industry facing major change
- Knepp required heavy reinvestment
- Efficient system - uncertain future



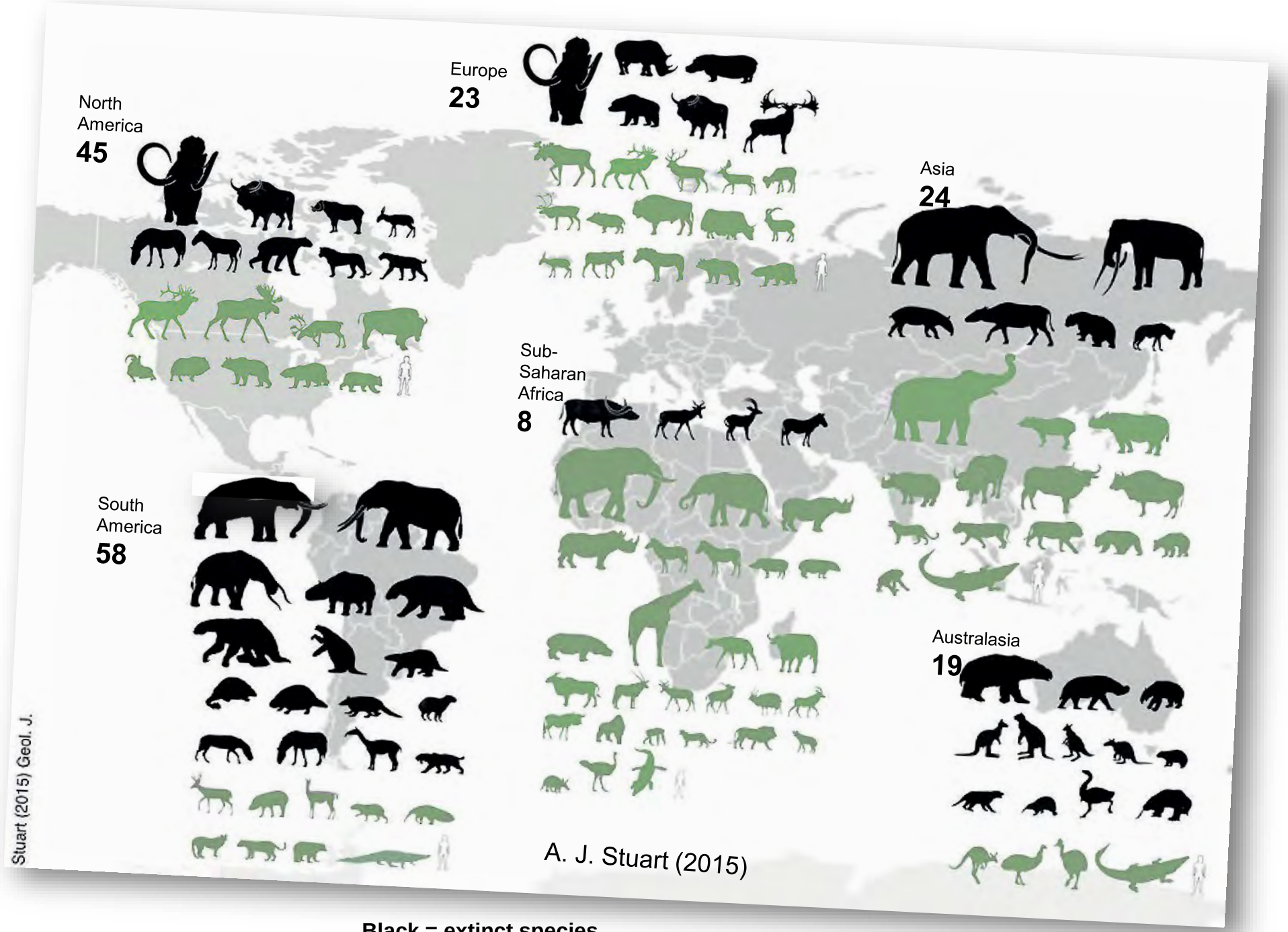
Grazing Ecology and Forest History

By Frans Vera



Late Quaternary megafauna extinctions (>45 kg)

Genera lost by continent

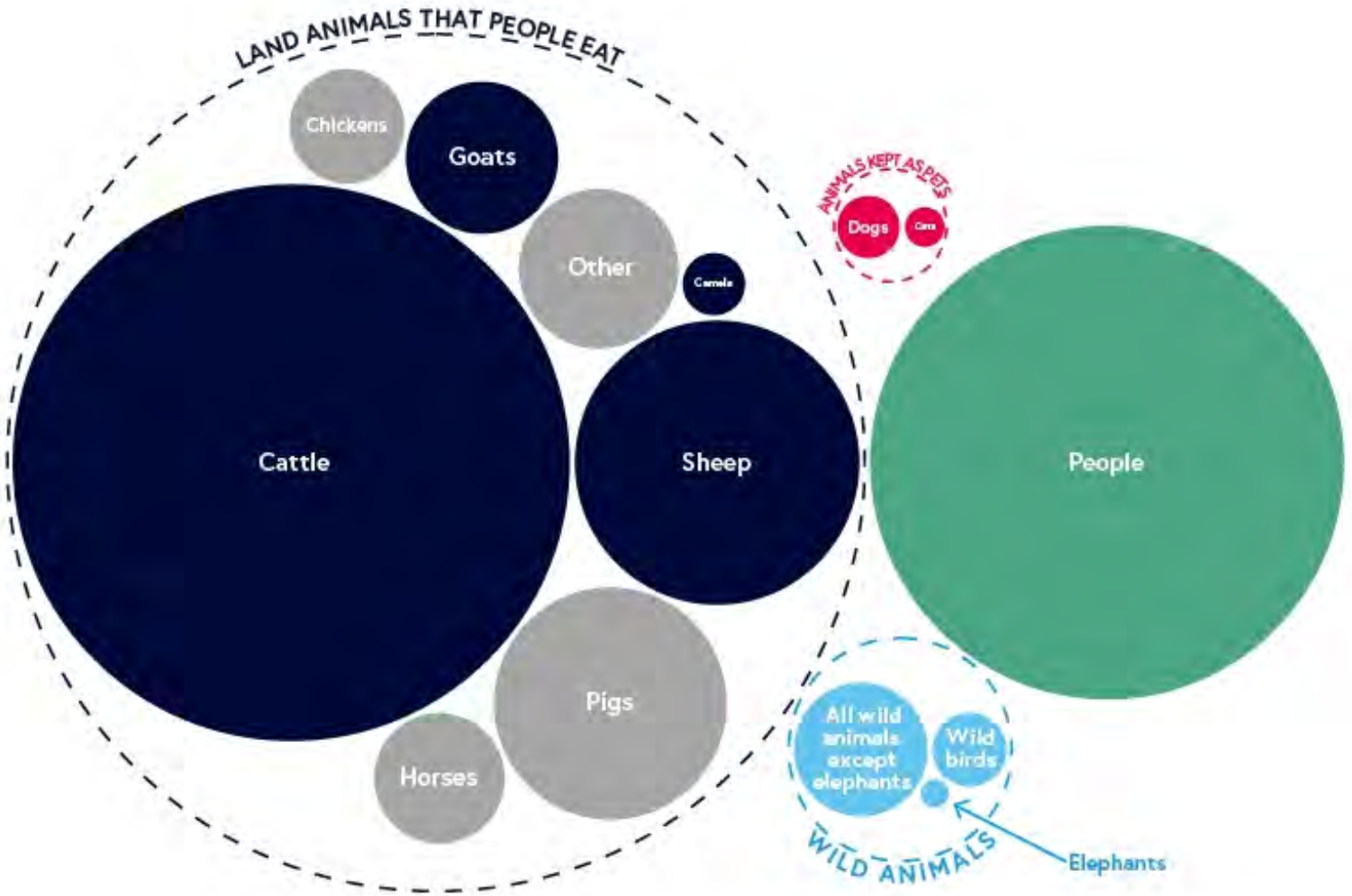


Black = extinct species

LAND ANIMALS BY MASS: 11,000 YEARS AGO

Note: for this visualisation 'animals' refers to terrestrial vertebrates. Terrestrial invertebrates and all life in the oceans are excluded.

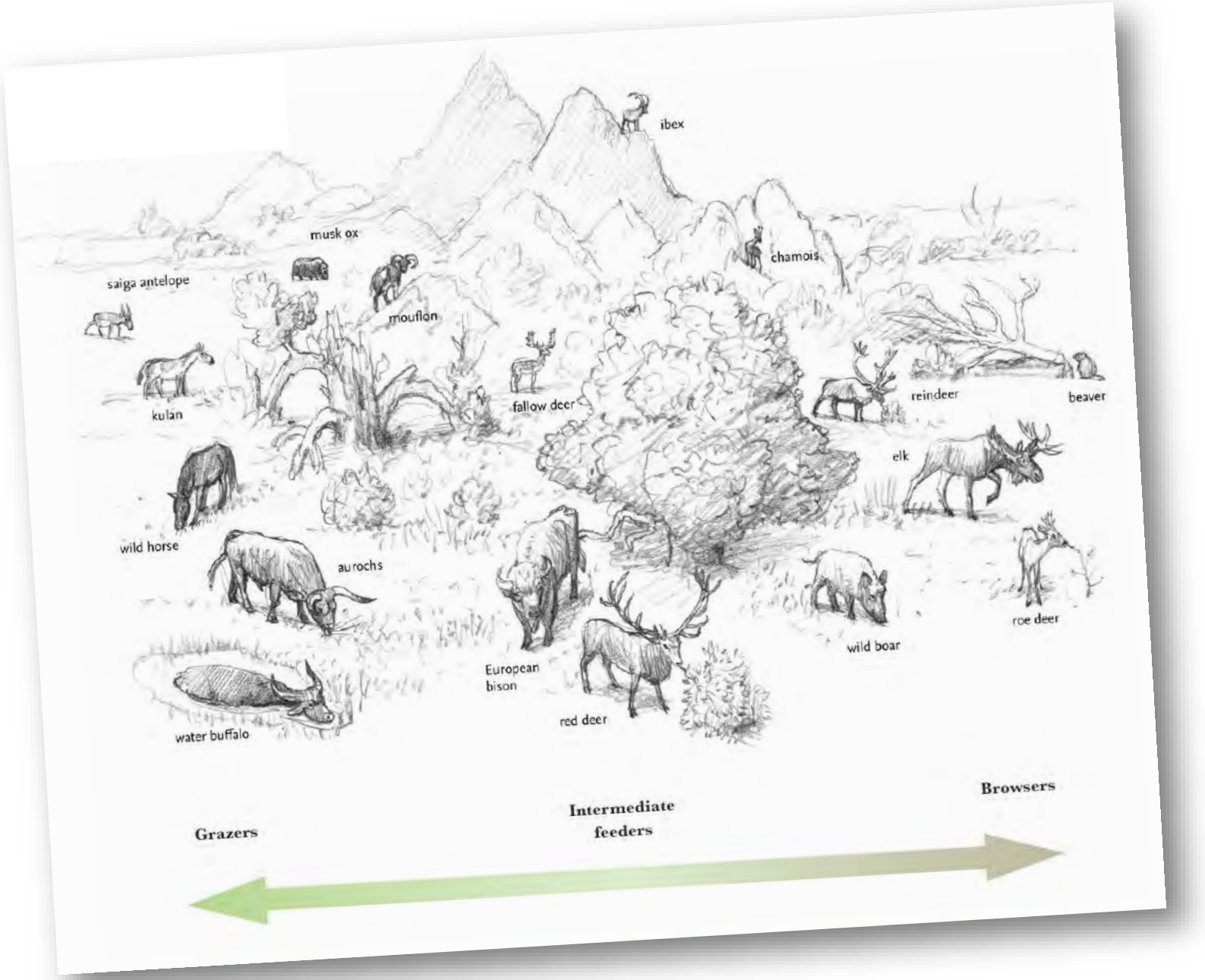
LAND ANIMALS BY MASS: PRESENT



Choosing your herbivore

Temperate Zone Europe

1. saiga antelope
2. kulan
3. musk ox
4. mouflon
5. wild horse
6. aurochs
7. water buffalo
8. wisent
9. red deer
10. fallow deer
11. ibex
12. chamois
13. reindeer
14. beaver
15. elk
16. wild boar
17. roe deer

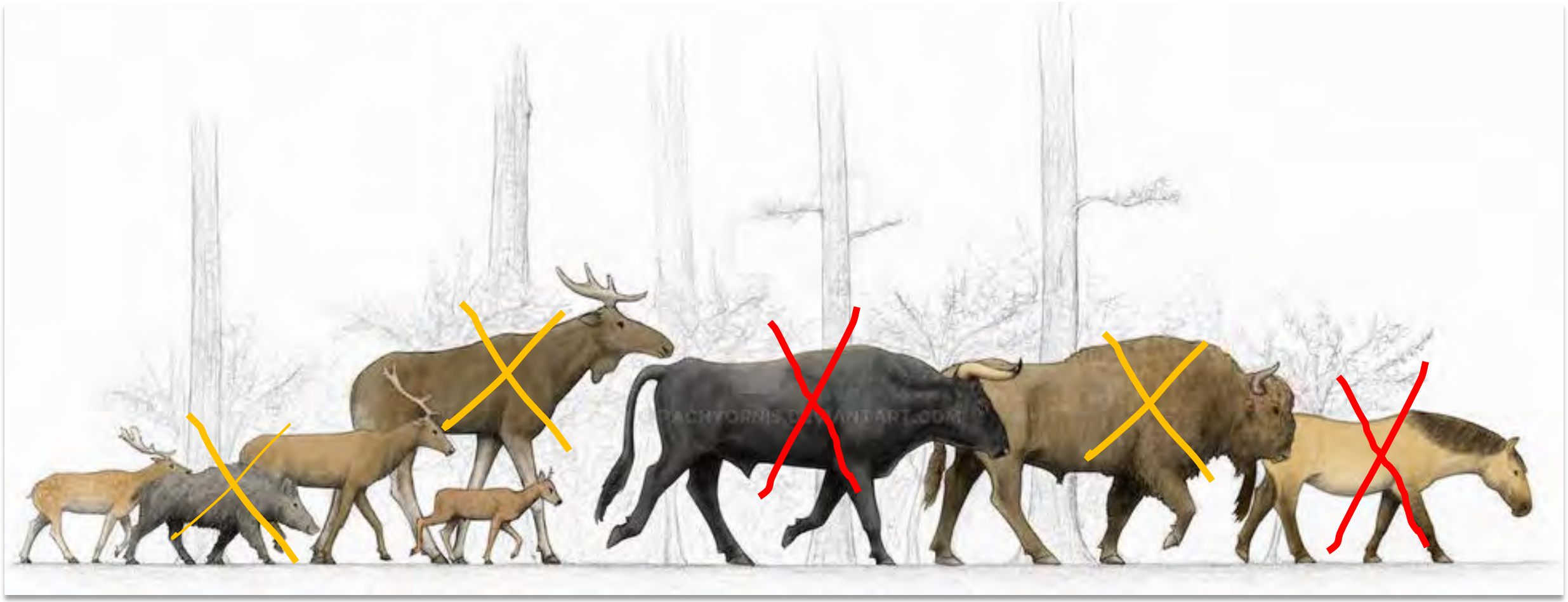


Recent extinction in Europe

1627	Aurochs
1774	Sardinian pika
1790	Carpathian wisent
1844	Great auk
1892	Portuguese ibex
1909	Tarpan
1900	Sardinian lynx
1925	Caucasian wisent
1950	Caucasian Moose
1927	Last European Bison in the wild killed
1969	Last Przewalski's Horse seen in the wild
1980	Majorcan hare
1970	Caspian tiger
2000	Pyrenean ibex

we now must use

PROXIES



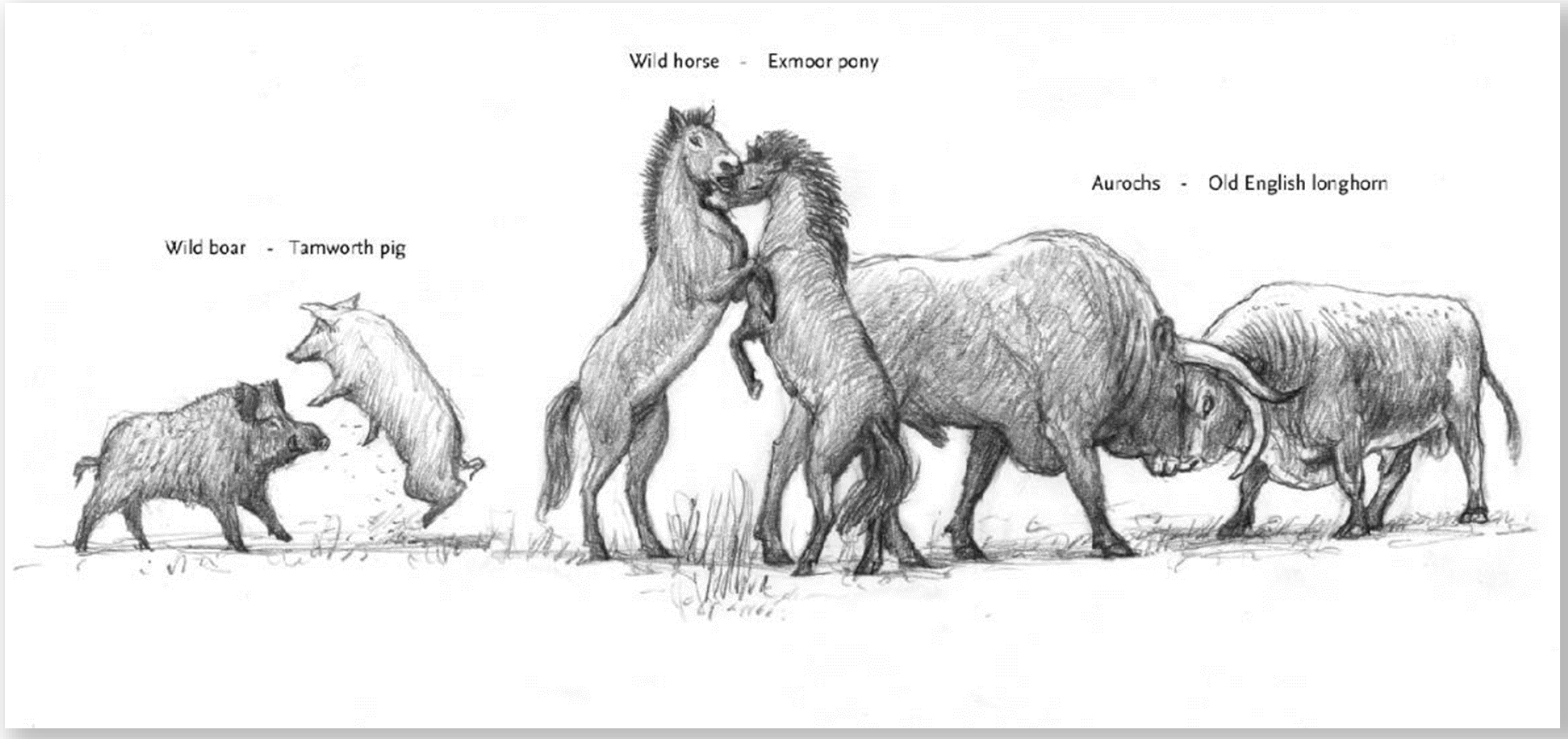
extinct species

not allowed in UK - as part of The Dangerous Wild Animals Act 1976

Illustration by Roman Uchytel.

By D Foidl - http://breedingback.blogspot.com/2017/10/drawing-central-europes-holocene.html

PROXIES


Wild horse - Exmoor pony
Aurochs - Old English longhorn
Wild boar - Tamworth pig



Knepp's DRIVERS



Knepp Bird Ringing — Sept 2018

- Two fields
- A few weeks
- More lesser whitethroats and blackcaps than in 30 years of ringing

We are working with

Universities of Oxford, Exeter, Cranfield, Nottingham, Durham, Sussex and Queen Mary of London

- Destructive sampling
- Flux towers
- Drone multispectral cameras
- LiDAR point cloud
- Spatial distribution
- Multispectral satellite image
- Capturing vegetation regeneration in 3D

Knepp Wildland — Nancy Burrell

Rewilding boosts carbon storage

- Scrub carbon largely ignored in current models
- New model predicts above - and below-ground carbon
- Root carbon at least 4× higher

Received: 26 April 2023 | Accepted: 19 November 2023
DOI: 10.1002/2688-8319.12301

RESEARCH ARTICLE

The inadequacy of current carbon storage assessment methods for rewilding: A Knepp Estate case study

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[2]School of Geography and the Environment, University of Oxford, Oxford, UK

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Funding information
Wildlife Research Programme

Handling Editor: Kira Borden

Abstract

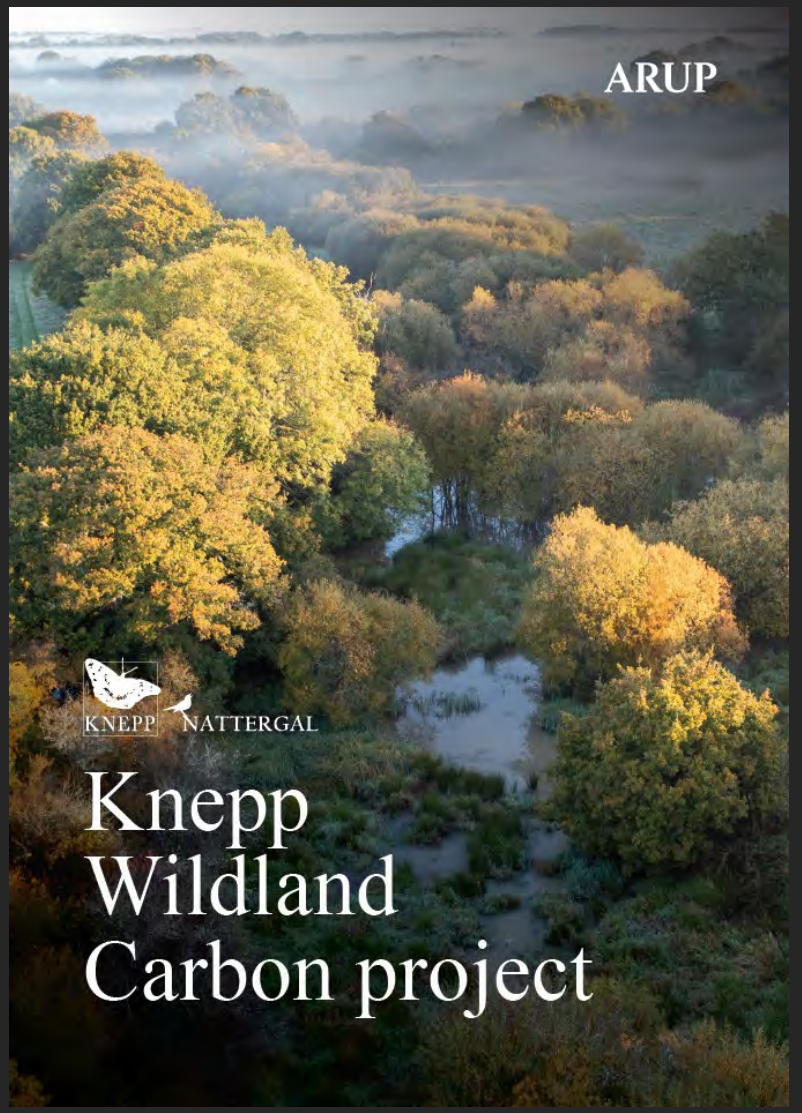
1. In the context of global climate change mitigation, carbon storage in woody vegetation plays a crucial role. Recognising the value of the i-Tree Eco model for carbon storage in urban and forestry settings, this study aimed to explore its applicability to rewilded landscapes. Using direct measurements from destructively sampled scrub from the Knepp Estate, our goal was to determine the model's suitability to this landscape.
2. Our findings reveal that these methods are not appropriate for multi-stemmed trees below browsing height, as we observed no significant relationship between stem basal diameter and height. The i-Tree tool's assumption of below-ground biomass being 26% of above-ground biomass may not be applicable to herbivore-influenced landscapes. Additionally, we found that, on average, scrub at Knepp had more biomass below the ground than above, with a root:shoot ratio of 1.07, which is more than four times the amount predicted by current models using the 0.26 estimate ratio.
3. This study underscores the need for novel allometric approaches that consider species-specific biomass and the impact of external factors, such as herbivory, on carbon storage. Accurate carbon accounting in future rewilding projects is essential for their contribution to both biodiversity enhancement and climate change mitigation.
4. While the i-Tree Eco model provides valuable insights for many ecosystems, our findings suggest that its applicability may be limited in scrubland ecosystems, especially in rewilded landscapes where natural processes create semi-stable scrub and open wood pastures. Nonetheless, with suitable adjustments or when complemented with other methods, the i-Tree Eco model could be a valuable tool for specific scrub or rewilding scenarios.

KEYWORDS
allometry, carbon sequestration, carbon stocks, climate change mitigation, rewilding, scrubland

Knepp Wildland Carbon Report
Published 20 March 2024

- Carbon sequestration: > 5.2 tCO_2e / ha / year (19-year average)

- Biodiversity recovery: ~ 400% increase in abundance and rarity



ARUP KNEPP NATTERGAL Treeconomy Agricarbon Queen Mary University of London

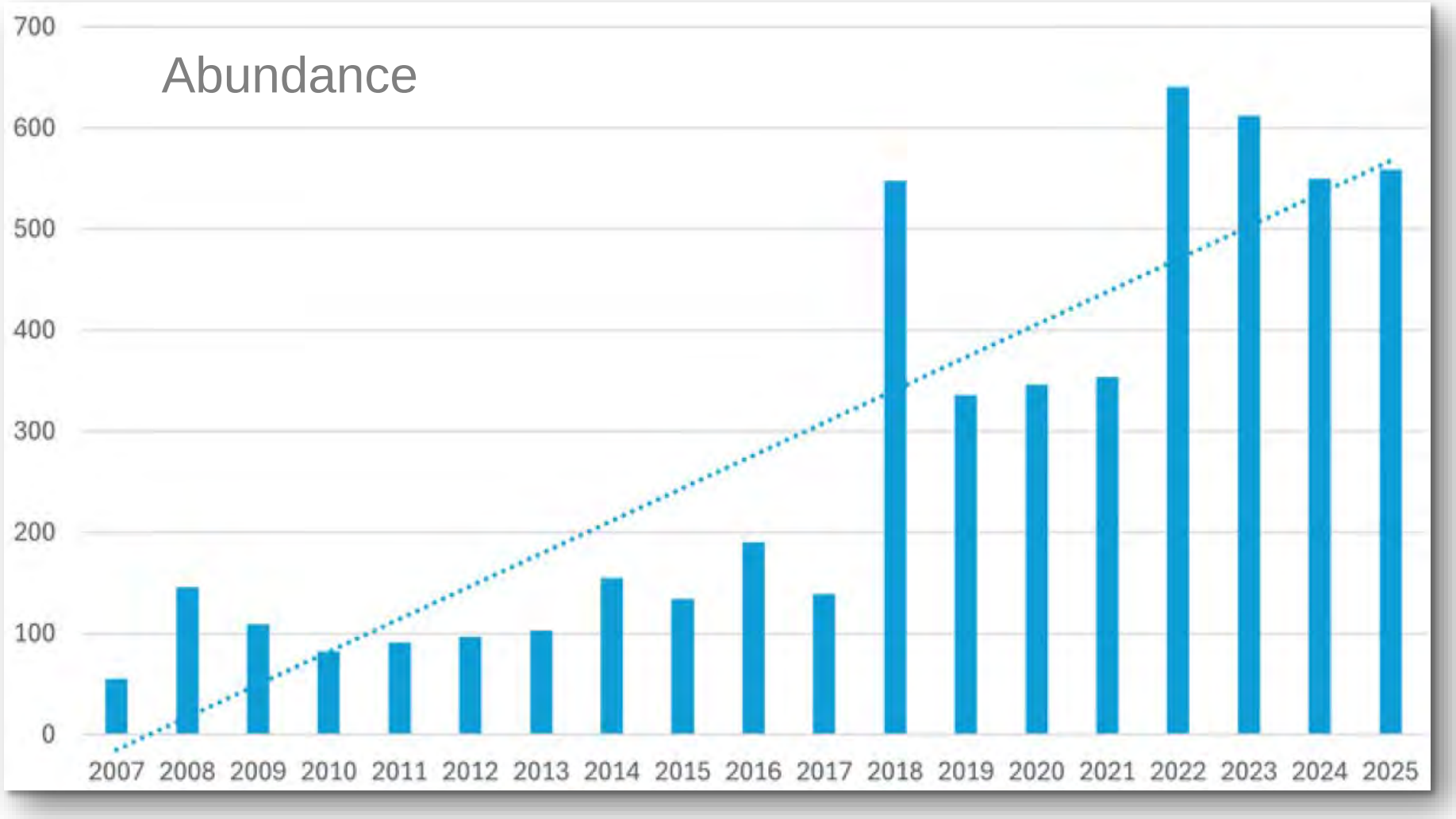
KNEPP WILDLAND FOUNDATION

20 years of research at Knepp

Species richness has increased by ~400%

916%

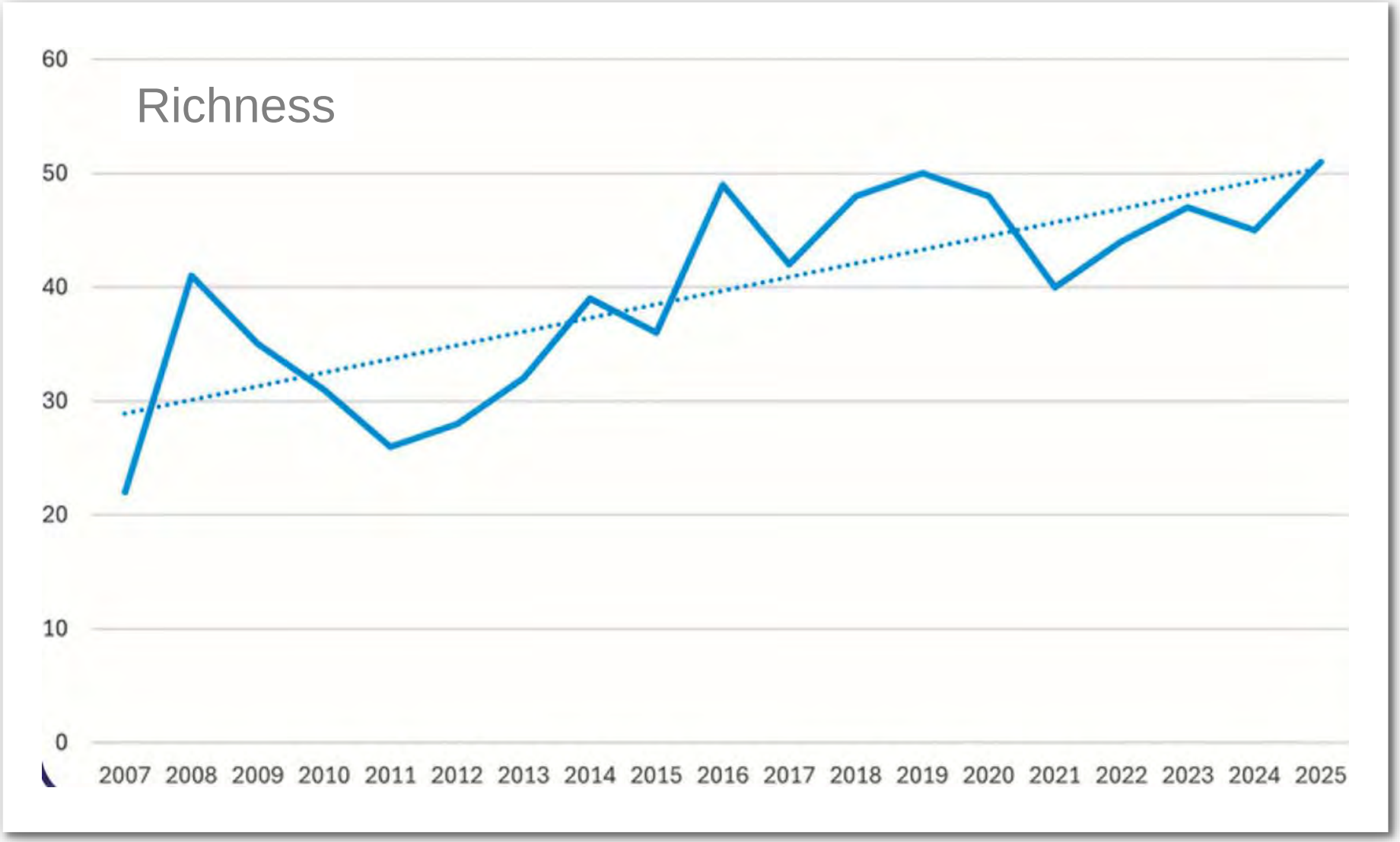
breeding bird assemblages and populations



Abundance = Maximum individuals recorded on a transect.

132%

breeding bird assemblages and populations



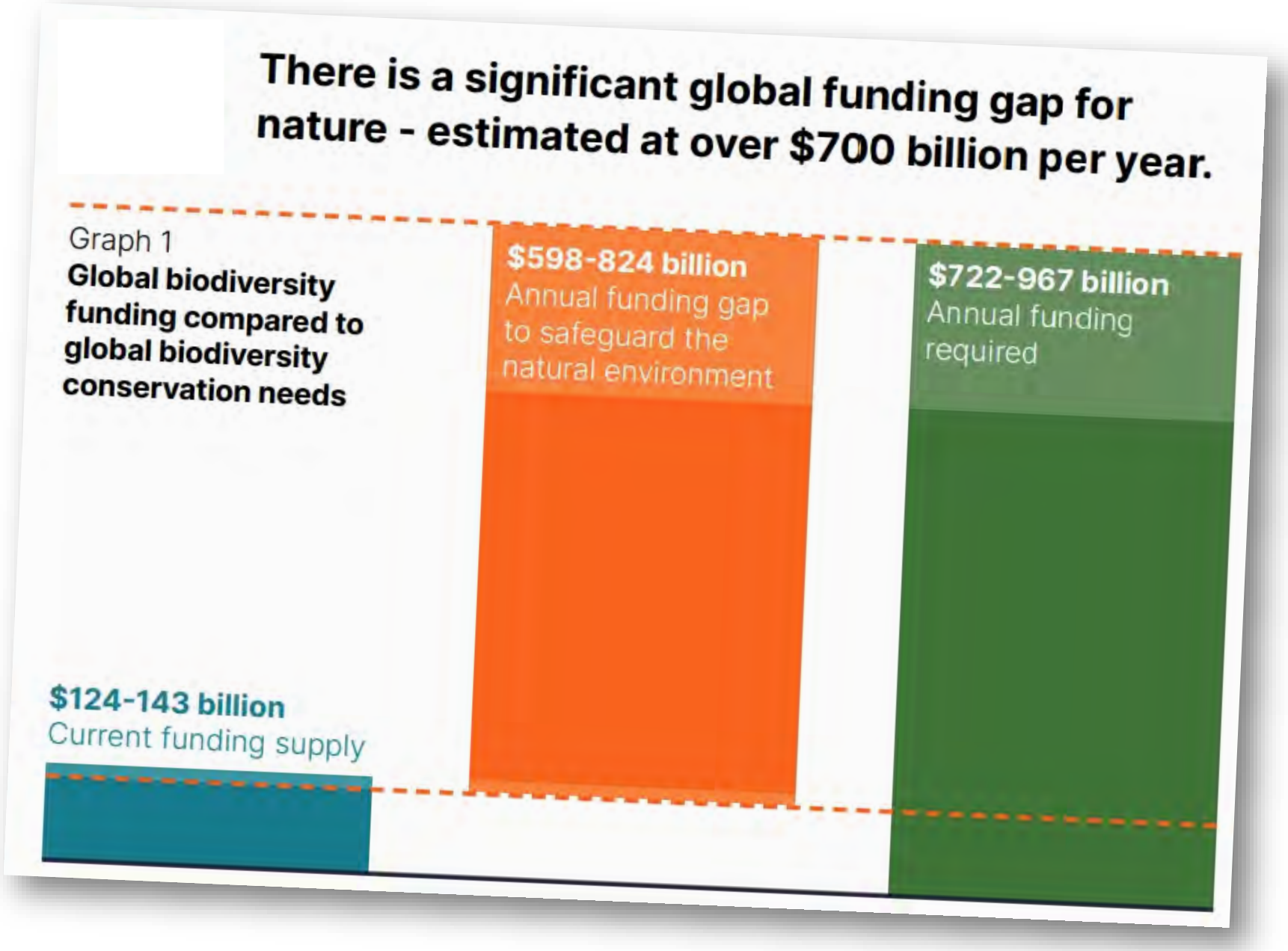
Richness = number of species recorded every year (across two surveys)

The Wider Picture

Saving Nature

Requires ***$ 722-967 bn*** *per year…*

Funding gap today ***$ 700 bn***



PAULSON INSTITUTE

The Nature Conservancy
Protecting nature. Preserving life.

CORNELL UNIVERSITY FOUNDED A.D. 1865

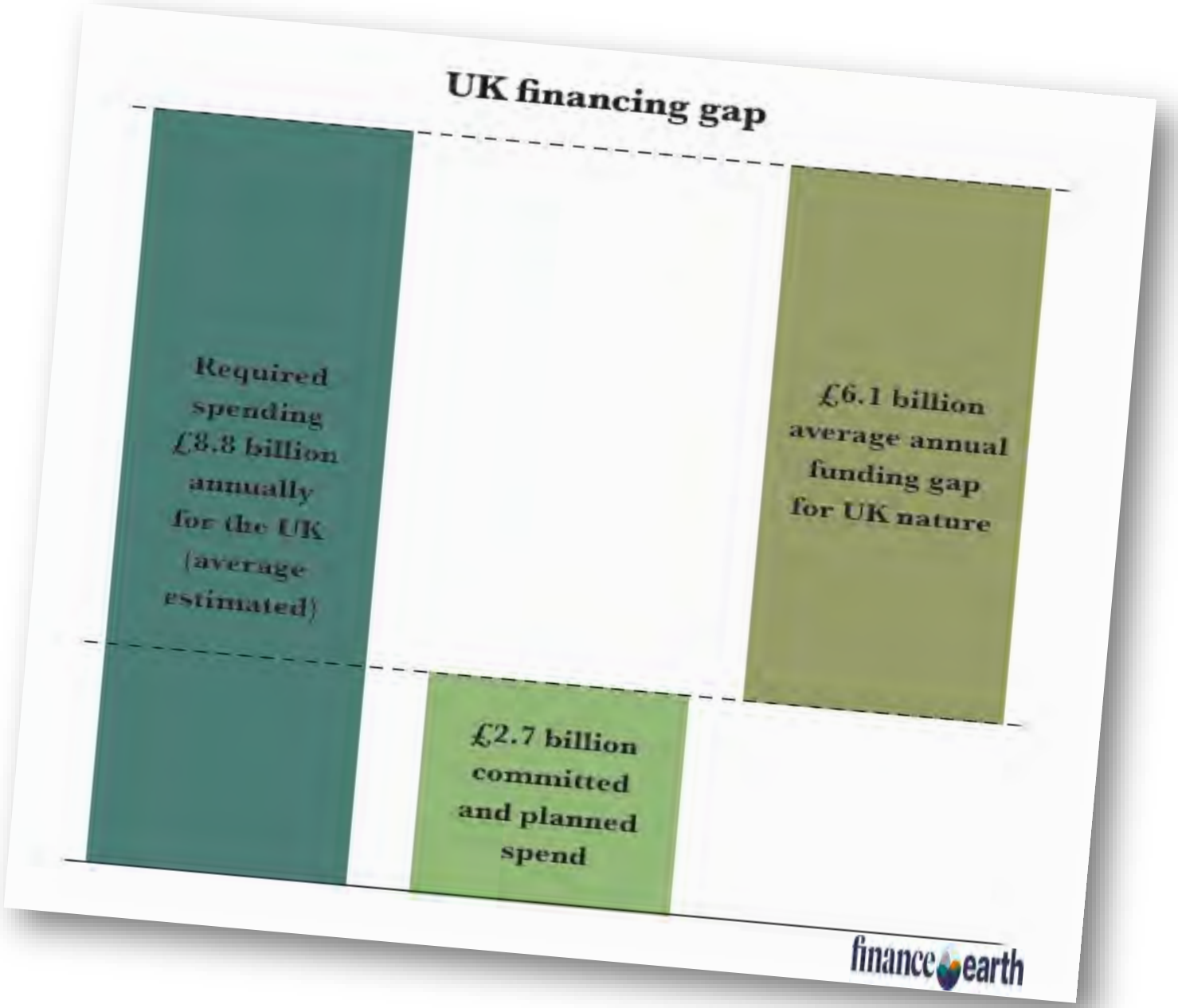
finance earth

UK Nature Funding Gap

£8.8bn needed each year

£2.7bn public funding

£6.1bn must come from private finance

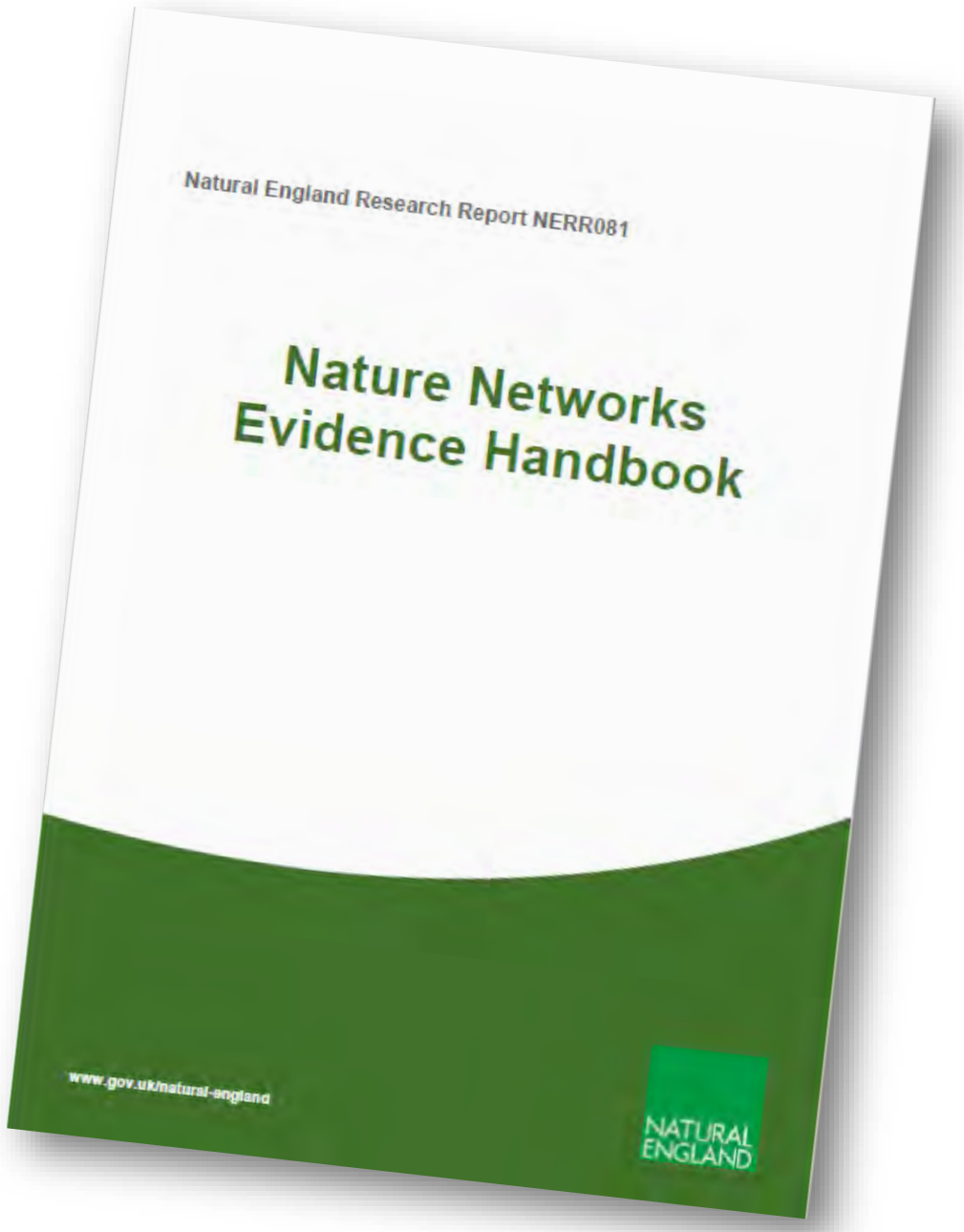


Addressing the Need for Core Areas of Self-Willed Landscapes

THE EVIDENCE IS CLEAR

Nature recovery needs large core areas

in lowland England - 2,000 to 5,000 ha

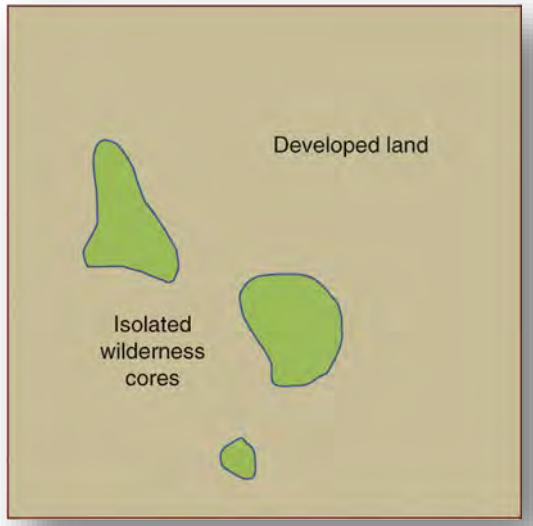


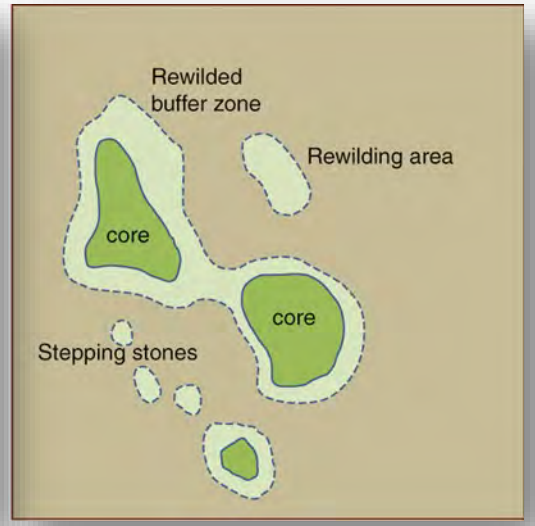
Peter Brotherton - Natural England Director of Science

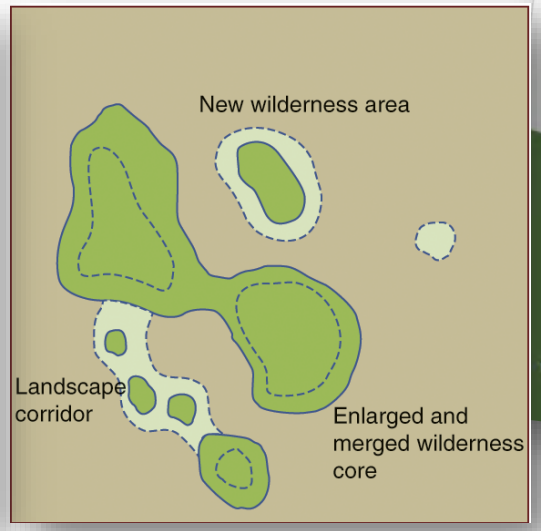
If we want real nature recovery, we must think in thousands of hectares - not tens.

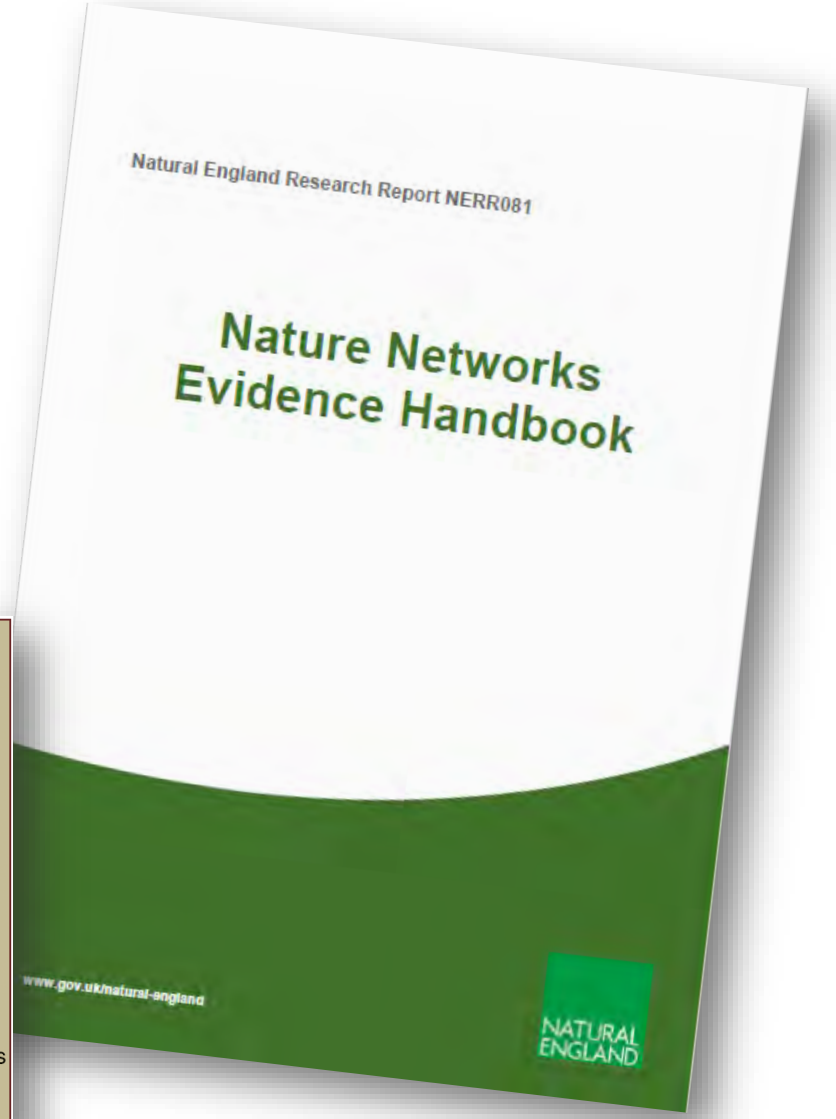
Ecological evidence from Europe

- **20-40 ha** - immobile species
- **>100 ha** - mobile species
- **>5000 ha** - functioning ecosystems







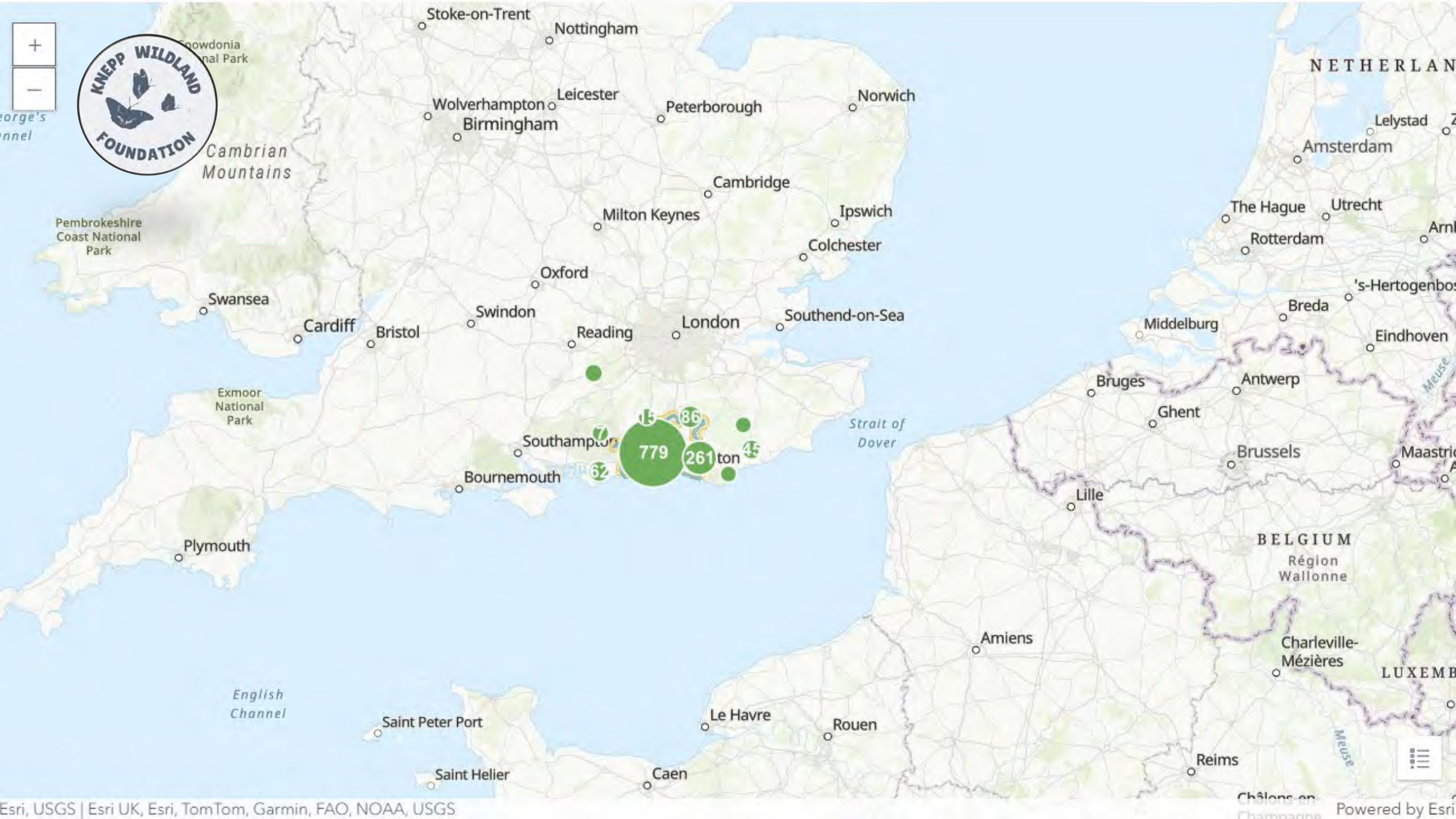


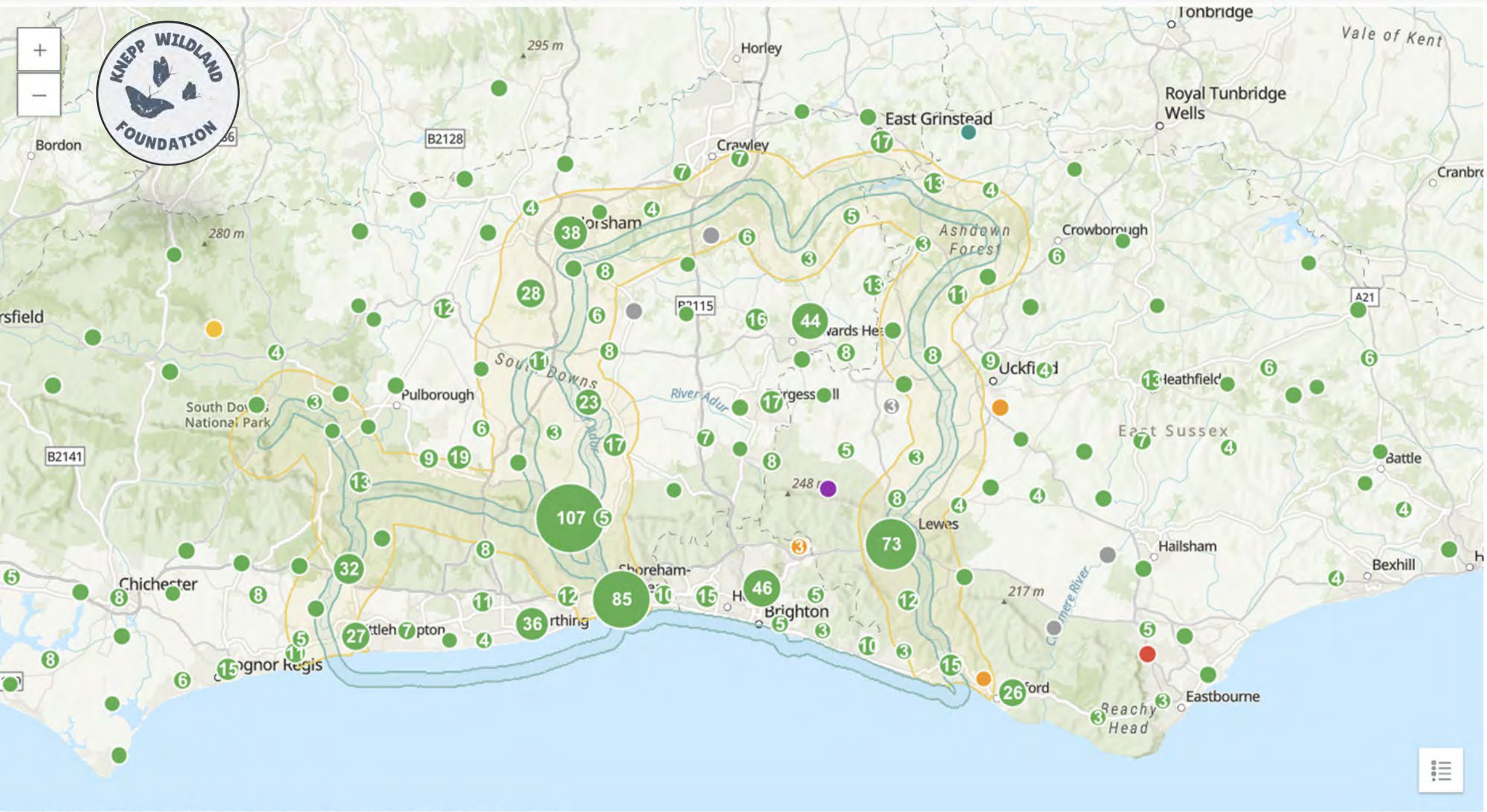
Most Agri-Environment Scheme are not delivering core sites – they are delivering stepping stones (and often just for a short time)

Dr Peter Brotherton D.Phil. - Natural England Director of Science

Sussex


KNEPP
WILDLAND
FOUNDATION
WEALD to WAVES
Connecting nature across Sussex
Crawley
St. Leonards Forest
Horsham
Billingshurst
Ashdown Forest
Haywards Heath
Petworth
Knepp
Pulborough
Pulborough Brooks RSPB
Burgess Hill
Uckfield
Lewes
Brighton
Worthing
Shoreham
Worthing
Littlehampton
Sussex Kelp Restoration
Newhaven
Bognor Regis
Climping Gap


KNEPP WILDLAND FOUNDATION
Stoke-on-Trent
Nottingham
Wolverhampton
Leicester
Peterborough
Norwich
Birmingham
Cambrian Mountains
Cambridge
Milton Keynes
Ipswich
Colchester
Pembrokeshire Coast National Park
Oxford
Swansea
Swindon
Cardiff
Bristol
Reading
London
Southend-on-Sea
Exmoor National Park
Southampton
Bournemouth
779
261
Strait of Dover
Plymouth
English Channel
Saint Peter Port
Saint Helier
Le Havre
Rouen
Caen
Amiens
Lille
Bruges
Ghent
Antwerp
Brussels
Middelburg
Breda
Eindhoven
Amsterdam
The Hague
Utrecht
Rotterdam
Lelystad
BELGIUM
Région Wallonne
Charleville-Mézières
Reims
Meuse
Esri, USGS | Esri UK, Esri, TomTom, Garmin, FAO, NOAA, USGS
Powered by Esri

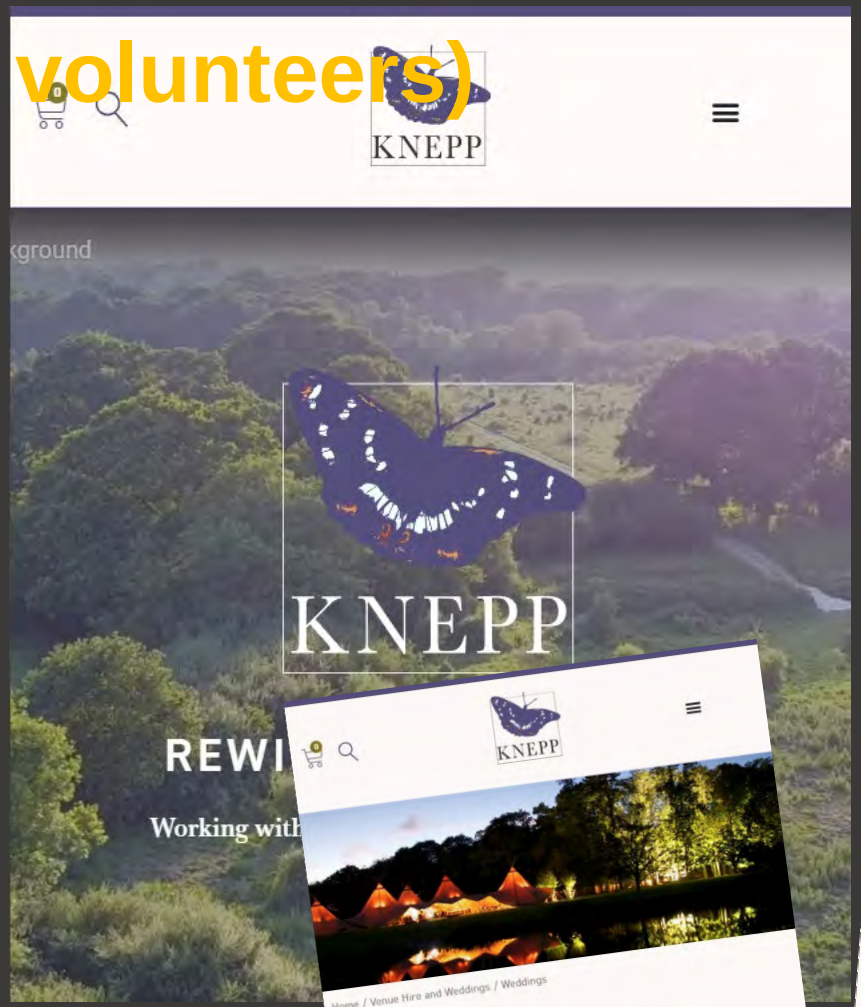


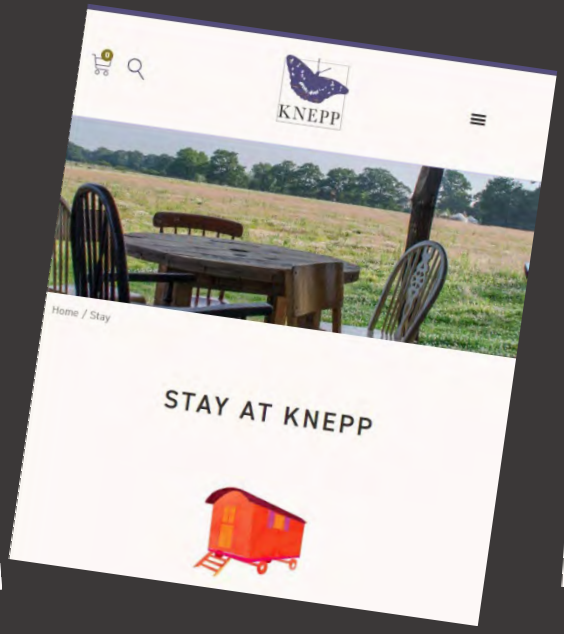
WILDING – extract from a Passion Pictures film

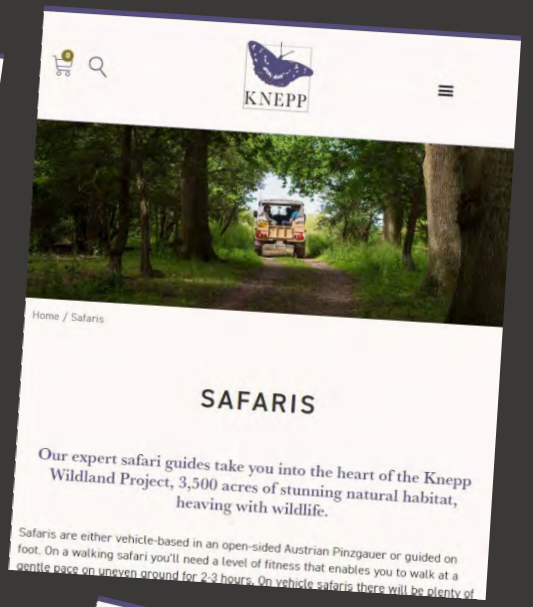
PASSION®

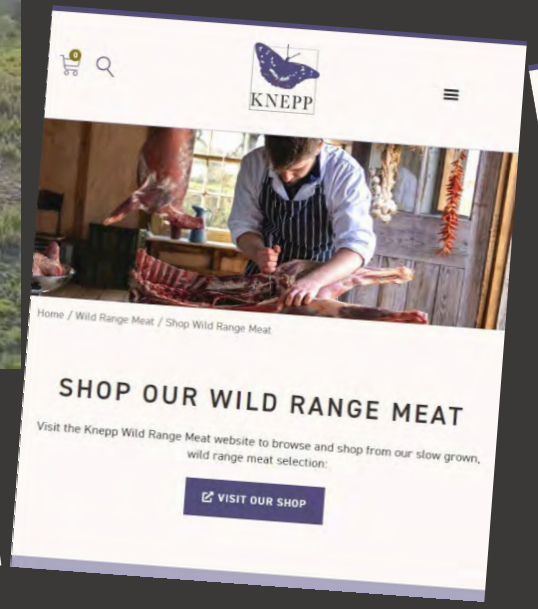
MONEY

Knepp has gone from employing 23 FTE to 90 FTE (+ 130 volunteers)









Knepp

Rewilding Knepp - turnover 2025/26
a **partial budget** on the Land

£240 / ha
Environmental
Stewardship

£250k (4%)

Basic
Payment

£50k (1%)

130,000 sq.ft
Let building

200 FTE

£800k (14%)

Wilding Café &
Shop

50 FTE

£2.6m (46%)

Tourism
Camping, glamping
& safari

£1.2m (21%)

7 houses
released
from Ag
From 23 to **40 FTE**

£150k (3%)

75 tonnes LW
organic
free range
Pasture fed

£600k (11%)

Biodiversity
Credits

£? (0%)

Biodiversity Net
Gain (BNG)

£?k (0%)

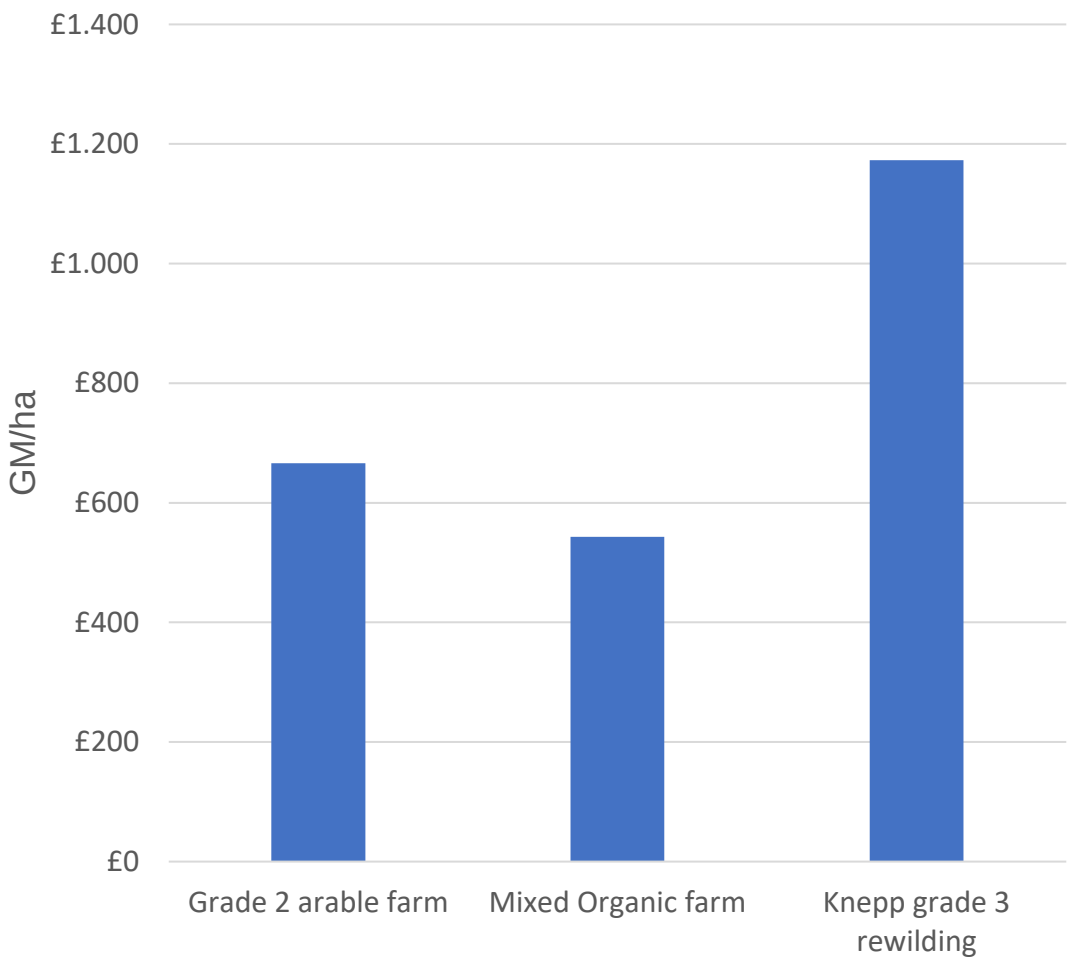
Carbon Credits

£?k (0%)

Knepp

Savills 2020 Gross Margin figures

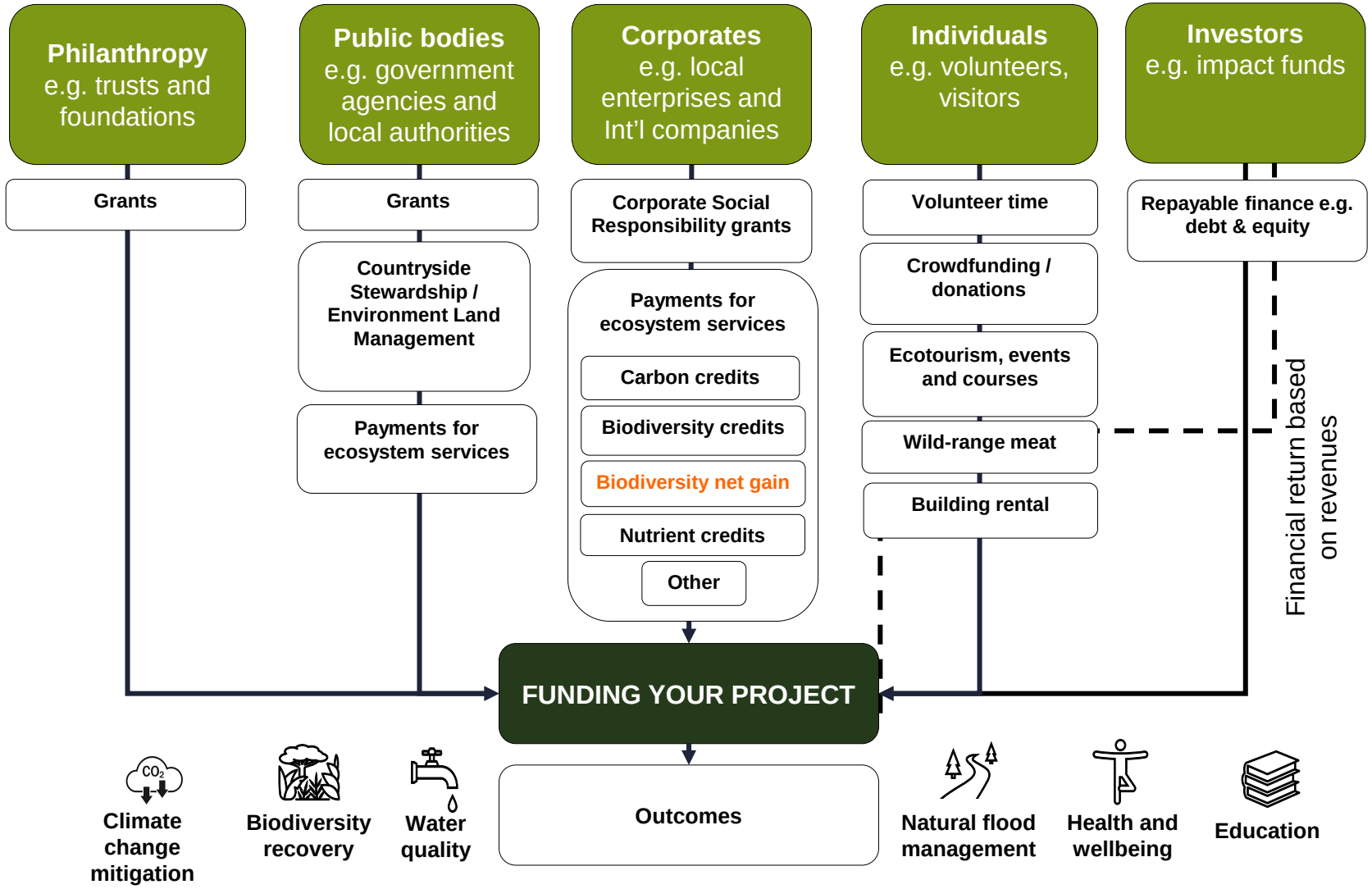
Grade 2 arable farm	**£666** GM/ ha
Mixed Organic farm	**£543** GM/ha
Knepp grade 3 rewilding	**£1,173** GM/ha



PRACTICAL SOLUTIONS

From Knepp → landscape scale

Funding your rewilding project



Commissioned from Alicia Gibson and Sarah Darrah finance earth

How do we raise $800 billion to holt the loss of nature?

Forming a company to rewild

- Created in Dec 2021
- £40 m raised for phase one
- 3 properties purchased in England
- Other properties under management
- Looking to expand into Europe in phase 2


Boothby

Nattergal – Lincolnshire - Boothby

- 2022
- 617 ha (93% ploughed)
- Contract farmed (1.2 FTE)
- Landscape Recovery – awarded £280k

BOOTHBY WILDLAND

HABITAT CREATION AND RESTORATION, EXISTING INFRASTRUCTURE AND INTERVENTIONS

- Boothby Wildland site boundary
- nearby woodlands
- existing buildings
- woodland
- woodland glades
- scrubland
- rough and loose
- open grassland
- savannah wood pasture
- ponds and scrapes
- wet woodland and beaver dams
- woody debris dam
- leaky dam
- floodplain
- hedge holes
- arable control field
- monitoring stations
- BNG - Biodiversity Net Gain

DIGG & CO

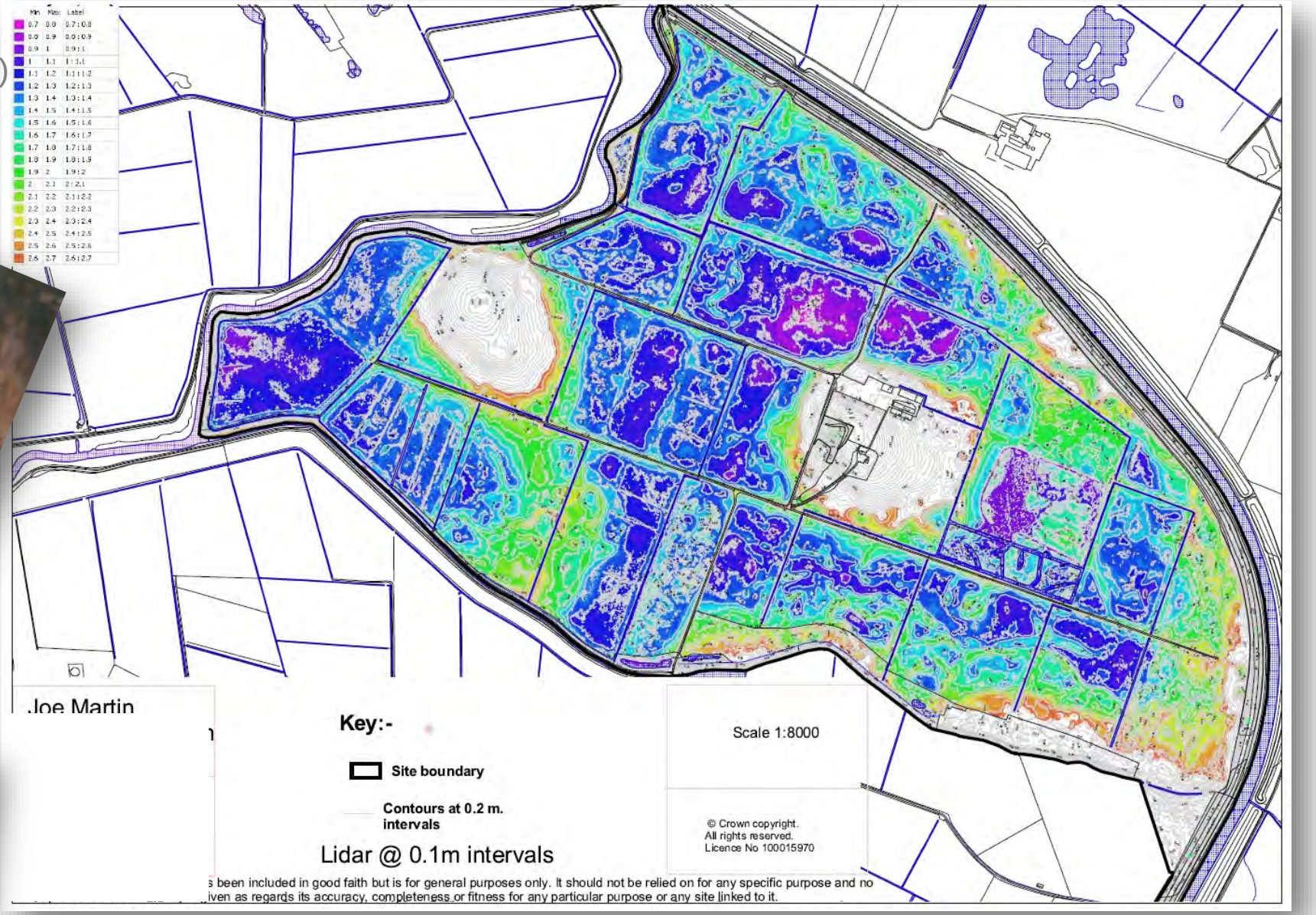
BOOTHBY WILDLAND

This map has been created for illustrative purposes and does not constitute final designs or fixed ideas. If you have any questions or amendments, please contact Digg & Co Studio.


High Fen

Nattergal – Norfolk – High Fen

- Dec 2022
- 315 ha (taken out of arable 15 yrs ago)
- Soil Peat/Chalk/Clay
- In total control of its water




HIGH FEN
EXPLORE THE WILD FEN
0
0.25
0.5km
RIVER WISSEY
HERRINGAY HILL
WETLAND & REEDBEDS
CUT-OFF CHANNEL
CALCAREOUS GRASSLAND
LOWLAND FEN
WETLAND SCRUB
SEASONALLY FLOODED RUSH PASTURE
PERIPHERAL SCRUB & WILLOW CARR
METHWOLD LODE
Crane
Turtle Doves
Nightingale
Cuckoo
Lapwing
Marsh Harrier
European Elk
Water Buffalo
Reed Beds
Rush Pasture
Carr Scrub
Roe Deer
Red Deer
Common Reed
Bearded Tits
Willow Carr
Lowland Fen
Konik Ponies
Hobby


Harold’s Park

Nattergal – Essex – Harold’s Park

- 2024
- 206 hectares (508.78 acres)
- Within 30 miles of central London

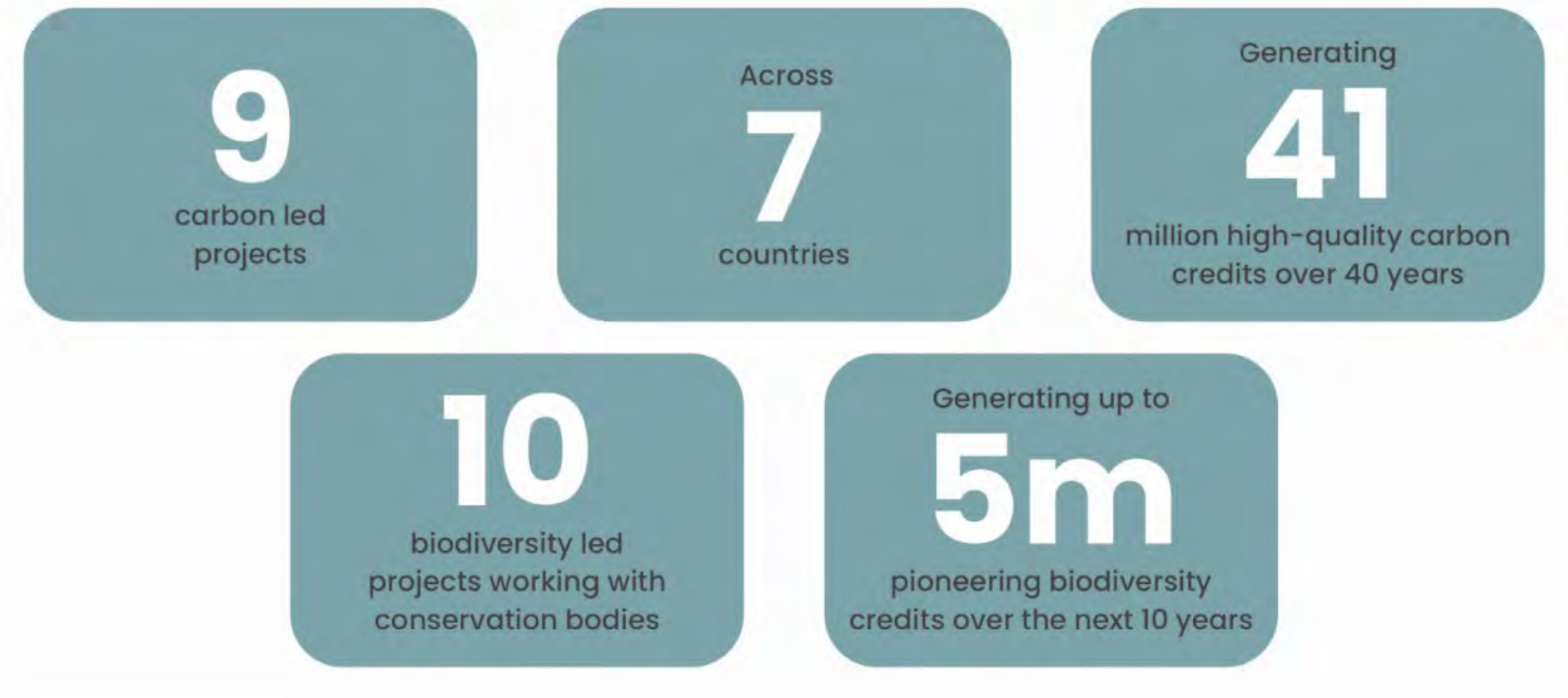

HAROLD'S PARK
WILDLAND
Red Kite
Cranes
Epping Forest
The Shard
BT Tower
London Skyline
Lee Valley
White Park Cattle
Stag Beetle
Grass Snake

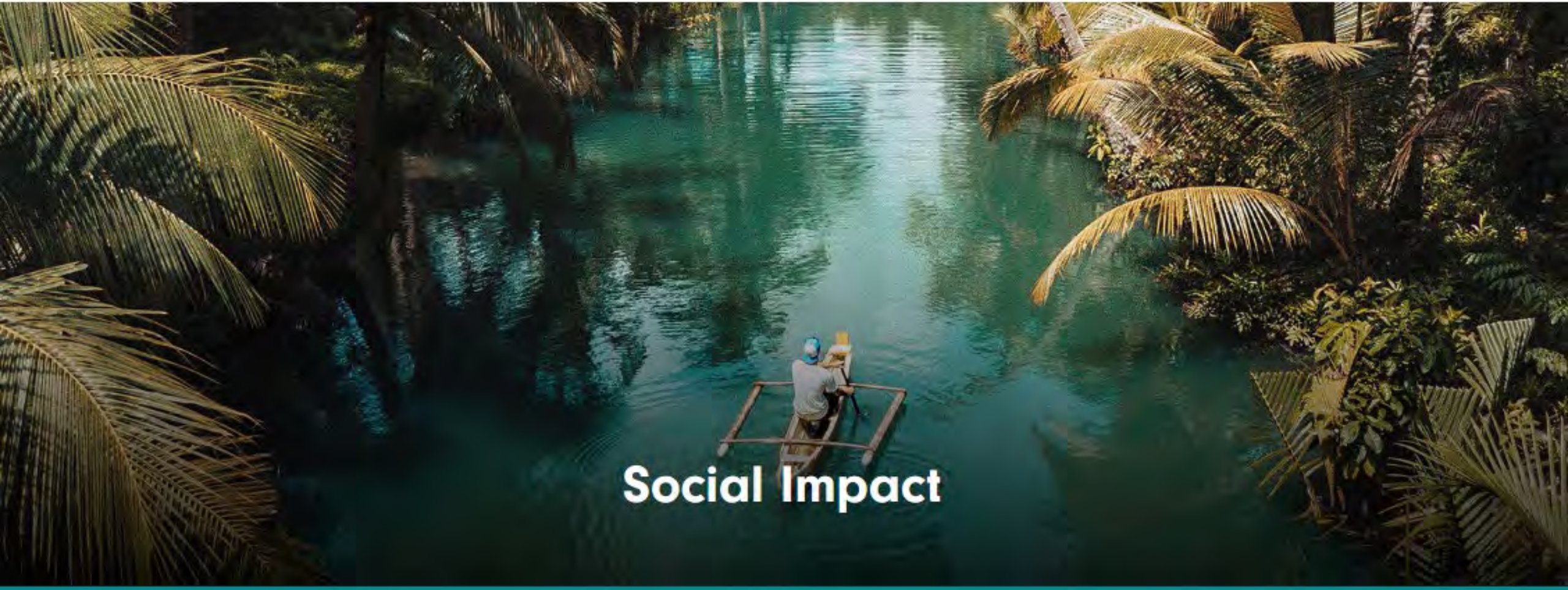
Unlocking Private Sector Investment into Nature

Nature and Climate Project Development and Advisory Services


Mangrove restoration
Reforestation & restoration of cattle land
Biodiversity development
Possible additional biodiversity
United Kingdom (2)
Latvia
Honduras (1)
Romania (1)
Mexico (2)
Malaysia, Borneo (1)
Panama (1)
Costa Rica (2)
Anguilla
Costa Rica
Indonesia (2)
Peru
Panama
New Zealand
Kenya/Tanzania (1)
Chile
Panama (1)
Zimbabwe (1)
Colombia (2)
Argentina (1)

Our Current Project Portfolio





Social Impact

Prioritizing Local Stakeholders: rePLANET's 60% Commitment to Equitable Benefit Sharing


That’s all folks