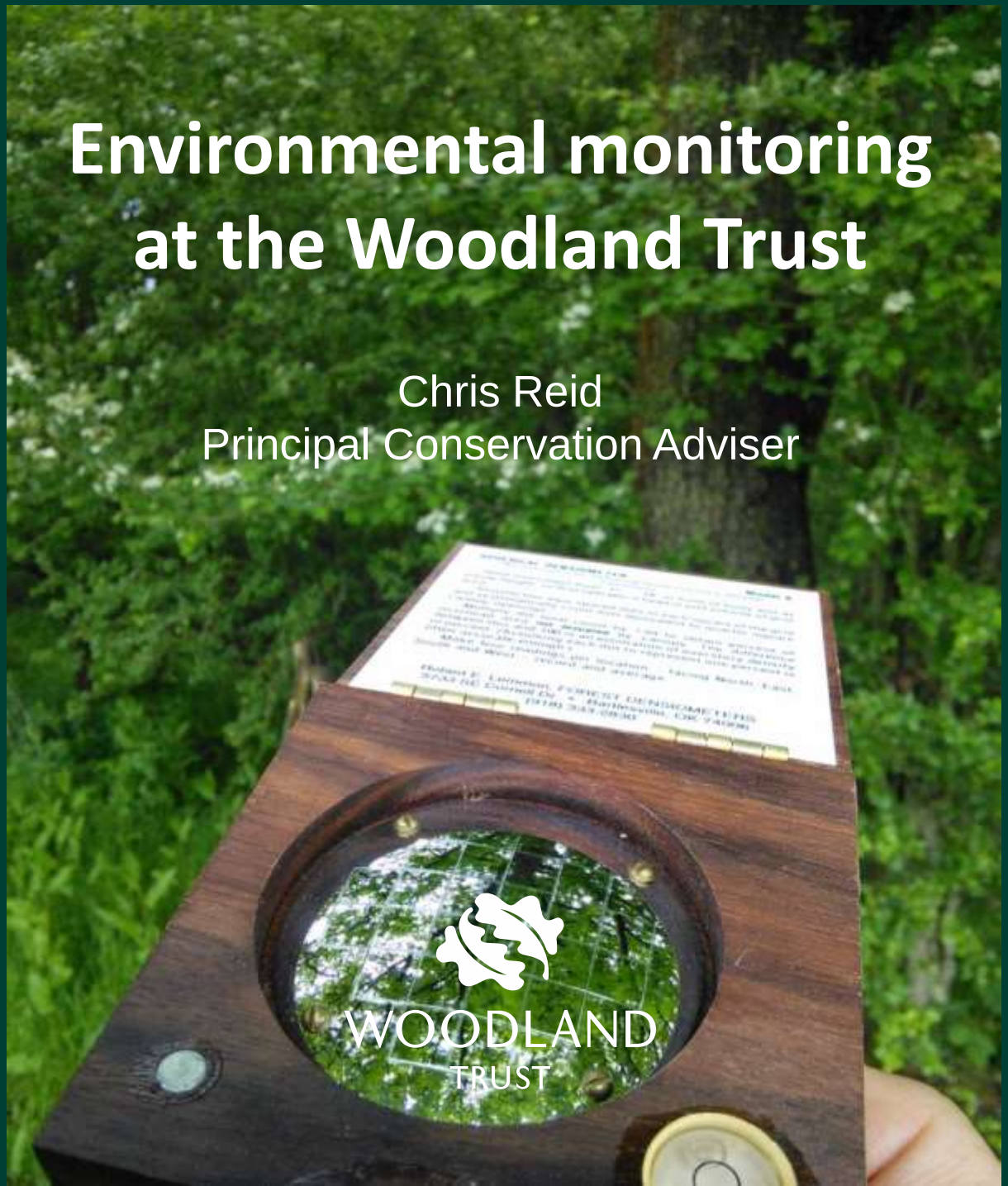
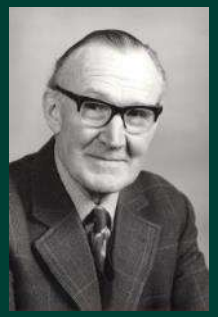
Environmental monitoring at the Woodland Trust

Chris Reid
Principal Conservation Adviser





Founder: Kenneth Watkins

Who we are and what we do?

- The largest UK-wide native woodland conservation charity since 1972

- Our vision is for a UK rich in native woods and trees for people and wildlife

- Over 250,000 individual members
- Thousands of volunteer hours annually
- Work in partnerships with others
- Annual income of around £50M, 70% from donations and legacies

- We look after c.30,000 hectares of wooded habitats (open access)

- We campaign to protect ancient and native woodland and trees
- We restore thousands of hectares of damaged ancient woodland
- We create new woodland and plant trees and encourage others to do so – over 3 million *UK-sourced-and-grown* native trees and shrubs annually

- We are focussing activity across 10 landscape-scale priority "Treescapes"

State of the UK's woods and trees: What's it for?

- Produce a definitive and trusted regular stocktake to address specific policy questions

Use results to

- Assess progress towards our mission
- Influence policy and hold Government to account on ambitions for woods and trees
- Inform public about values, threats, pressures, progress, opportunities
- Inspire positive action! (not just collect more data)

- Aim to provide a clear picture of the biodiversity and conservation state of woods, social aspects of access and wellbeing and the natural capital value of UK native woodland.
- Data is required for a mix of environmental, social and economic issues.

Scoping study identified existing data sources and key themes

100 datasets reviewed

- Assessed against criteria including
  - Data sampling frequency,
  - Cost of data
  - Accessibility
  - Geographic coverage, disaggregation potential
  - Alignment against themes

Broad themes identified for the State of Woods and Trees (from stakeholder survey):

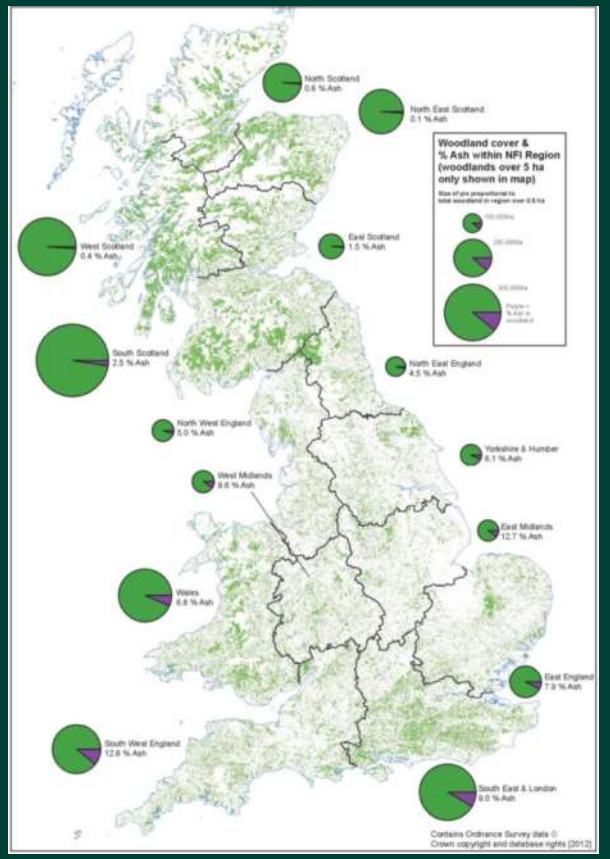
1. Extent and wildlife value
2. Condition and threats
3. Benefits for people
4. Creation, management and restoration

UN environment WCMC

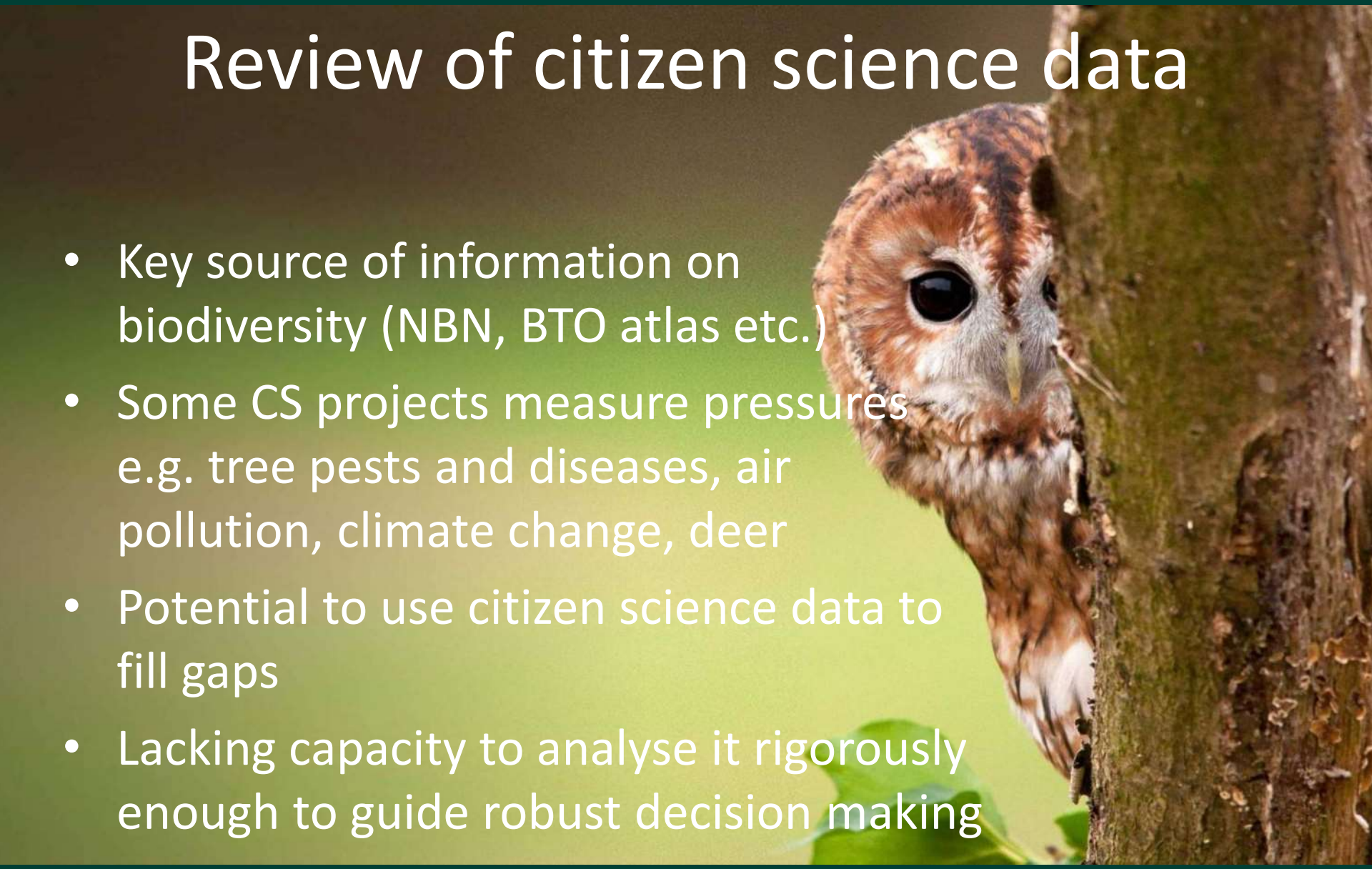
JNCC Joint Nature Conservation Committee

Review of Earth observation data

- National Forest Inventory woodland map – open data, all woodlands ≥0.5ha
- Potential to analyse Copernicus data (10-20m res) for extent of woodland cover (at risk due to Brexit?)
- Countryside Survey LCM 1990-2020 – making comparable
- Commercial satellite data e.g. WorldView 2 and Pleiades offer higher res. (2-6m) data but expensive eg for 2.5M ha cost between £2-300,000



Review of citizen science data



- Key source of information on biodiversity (NBN, BTO atlas etc.)
- Some CS projects measure pressures e.g. tree pests and diseases, air pollution, climate change, deer
- Potential to use citizen science data to fill gaps
- Lacking capacity to analyse it rigorously enough to guide robust decision making

Priority questions for a ‘state of’ report

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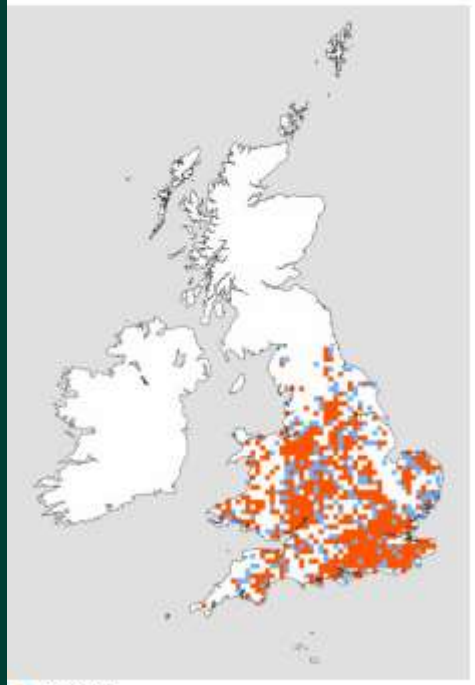


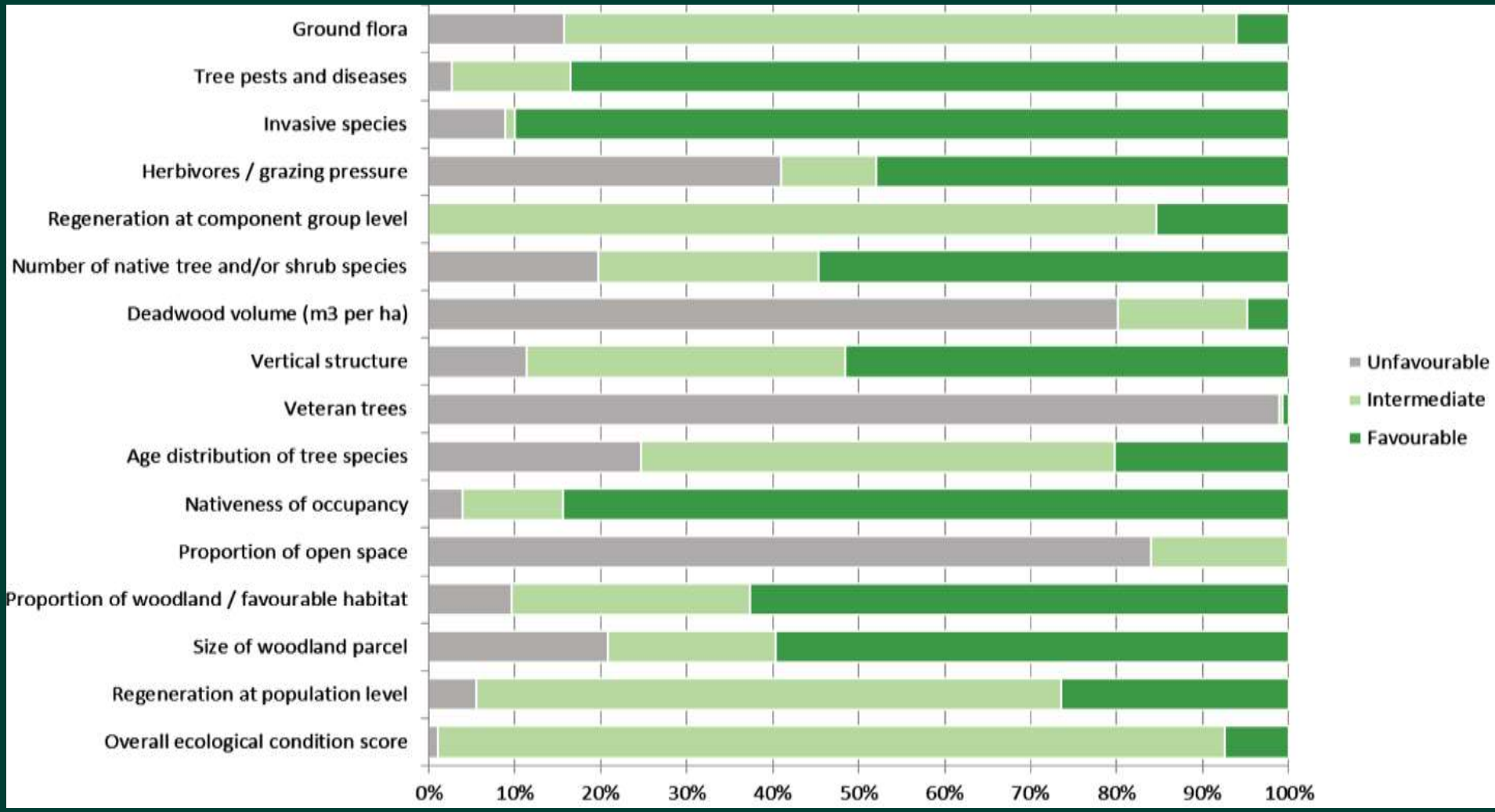
Breeding
Wintering
Map reproduced from *Bird Atlas 2007–11*, which is a joint project between BTO, BirdWatch Ireland and the Scottish Ornithologists’ Club, with permission from the British Trust for Ornithology.
www.birdatlas.net

Theme 1: Extent and Wildlife Value

- How is canopy cover changing? (woods, trees, hedgerows)
  - National Forest Inventory mapping (woods over 0.5ha)
  - BlueSky data for “trees outside woods”
- How important are different types of woodland for biodiversity?
  - Need to integrate maps of woodland species distribution/ trends against land-use types (eg conifer plantation versus native woodland)

Theme 2: Condition and Threats

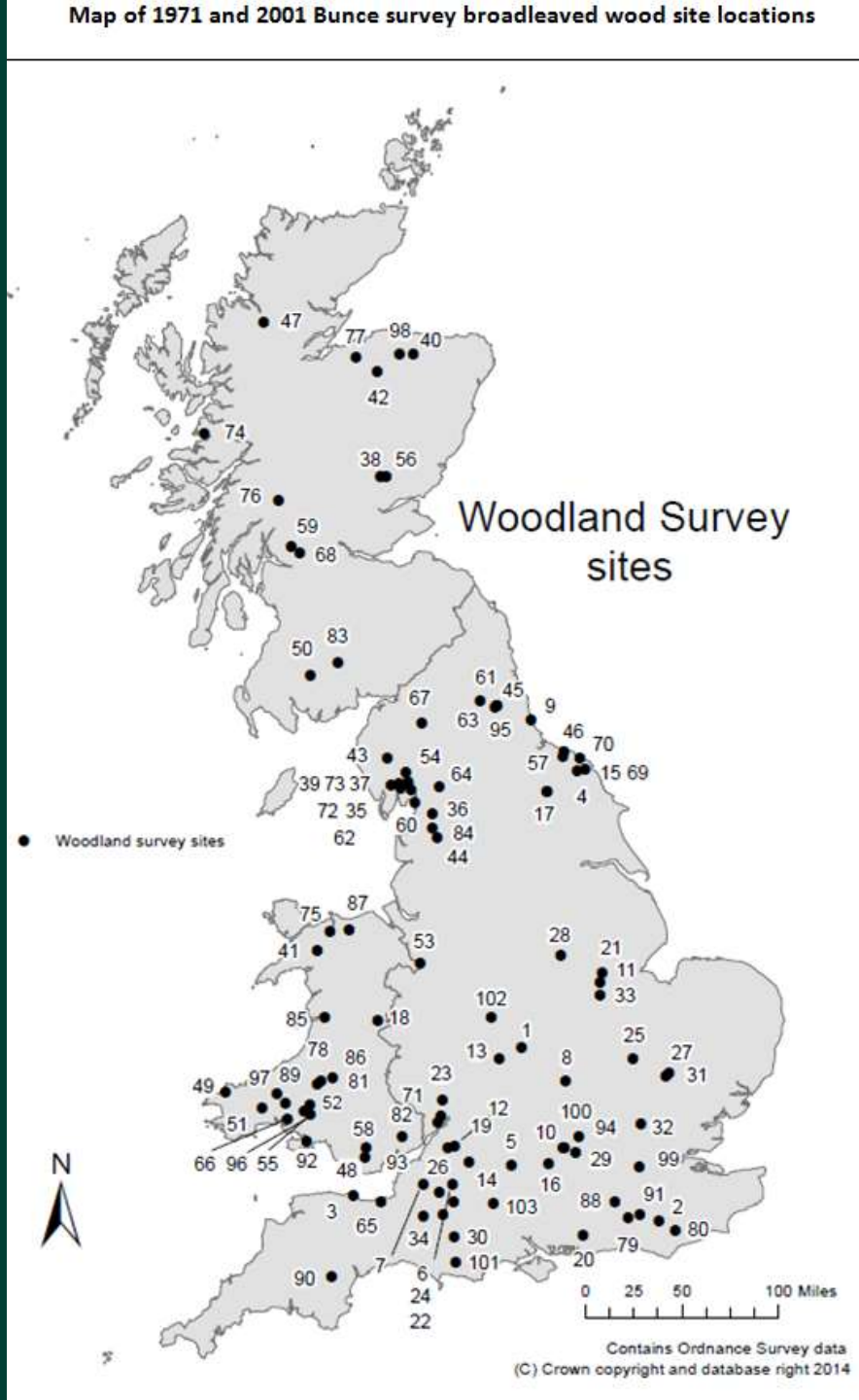
- What condition are native woodlands in?



https://www.forestresearch.gov.uk/tools-and-resources/national-forest-inventory/what-our-woodlands-and-tree-cover-outside-woodlands-are-like-today-8211-nfi-inventory-reports-and-woodland-map-reports/nfi-woodland-ecological-condition/

Theme 2: Condition and Threats

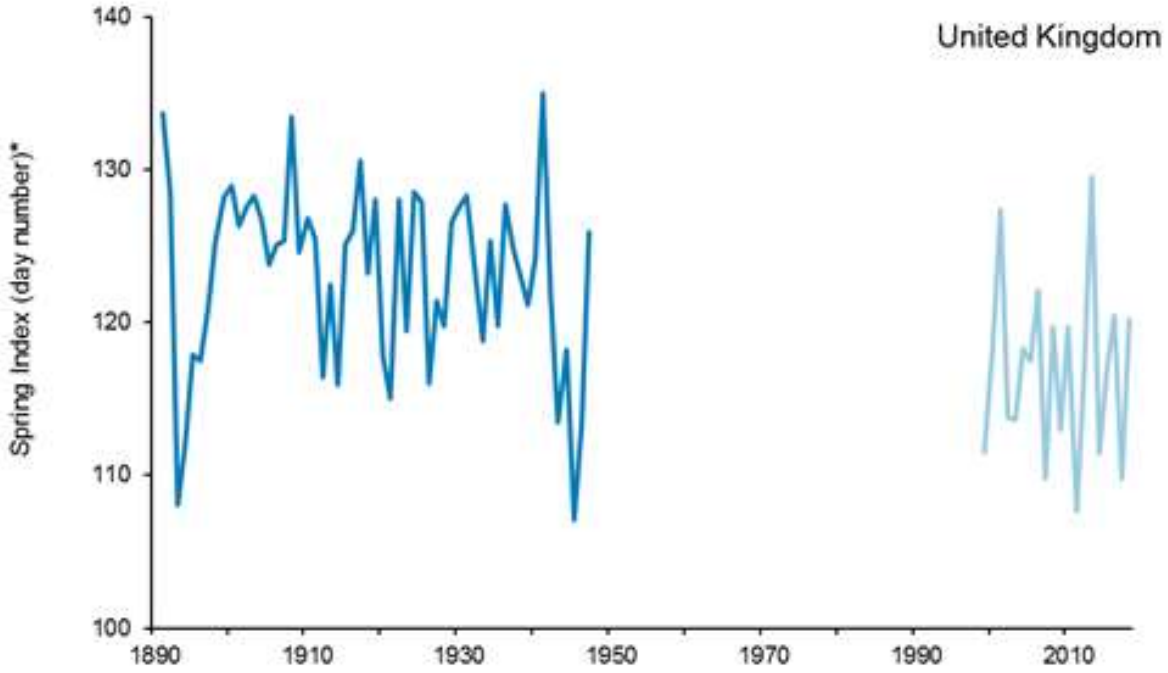
- How is woodland biodiversity changing?
  - We are partnering with CEH and others to undertake a comprehensive re-survey of 130 ancient woodlands first surveyed 50 years ago, and again 20 years ago to track responses to climate change, pollution, disease and browsing.



Theme 2: Condition and Threats

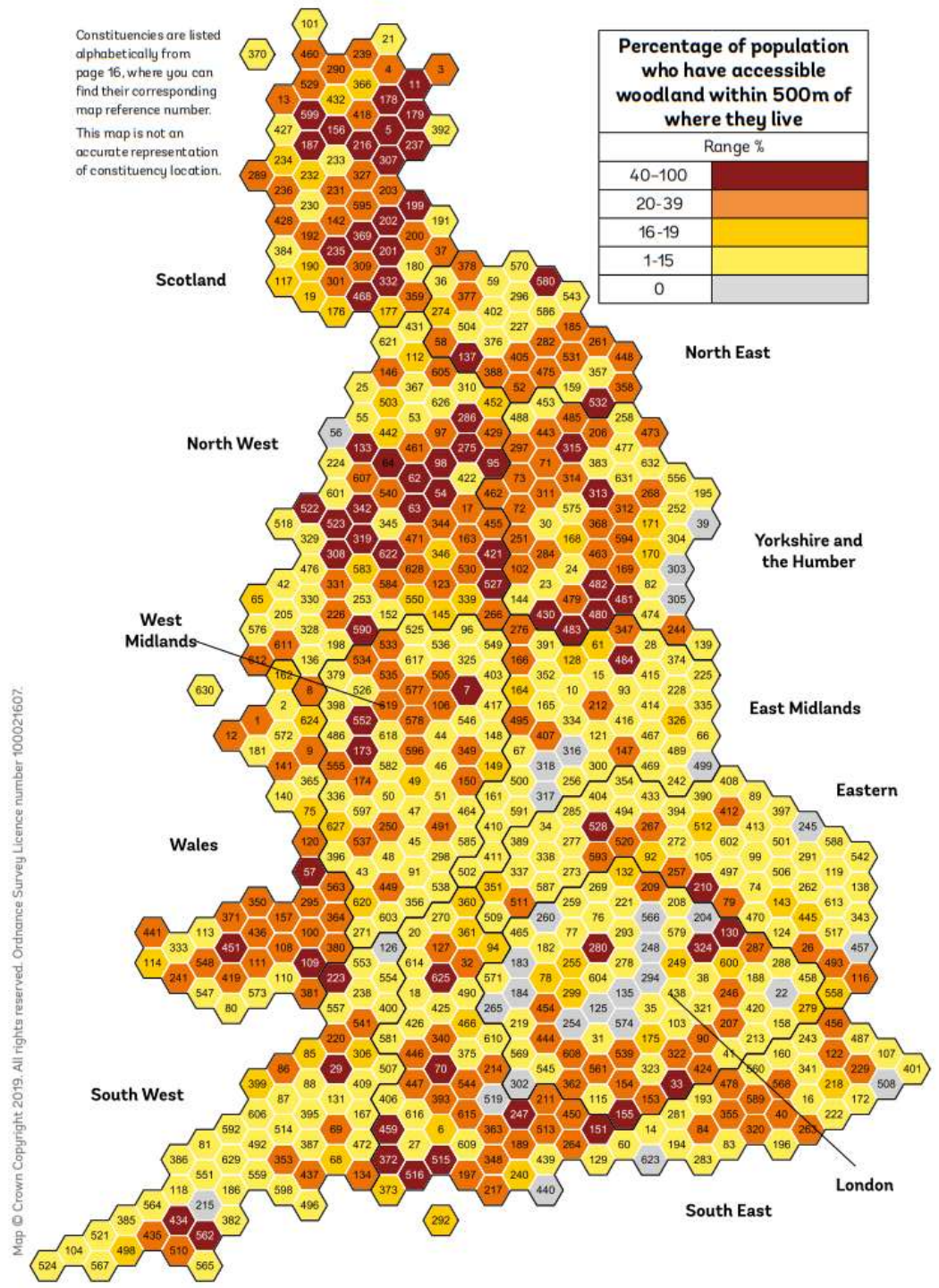
- How are woods responding to climate change?
  - Using Nature's Calendar (UK's oldest Citizen Science project) we can identify phenolgy changes e.g. "Spring Index"

Figure B4i. Index of the timing of biological spring events (number of days after 31 December) in the UK, 1891 to 1947, and 1999 to 2018



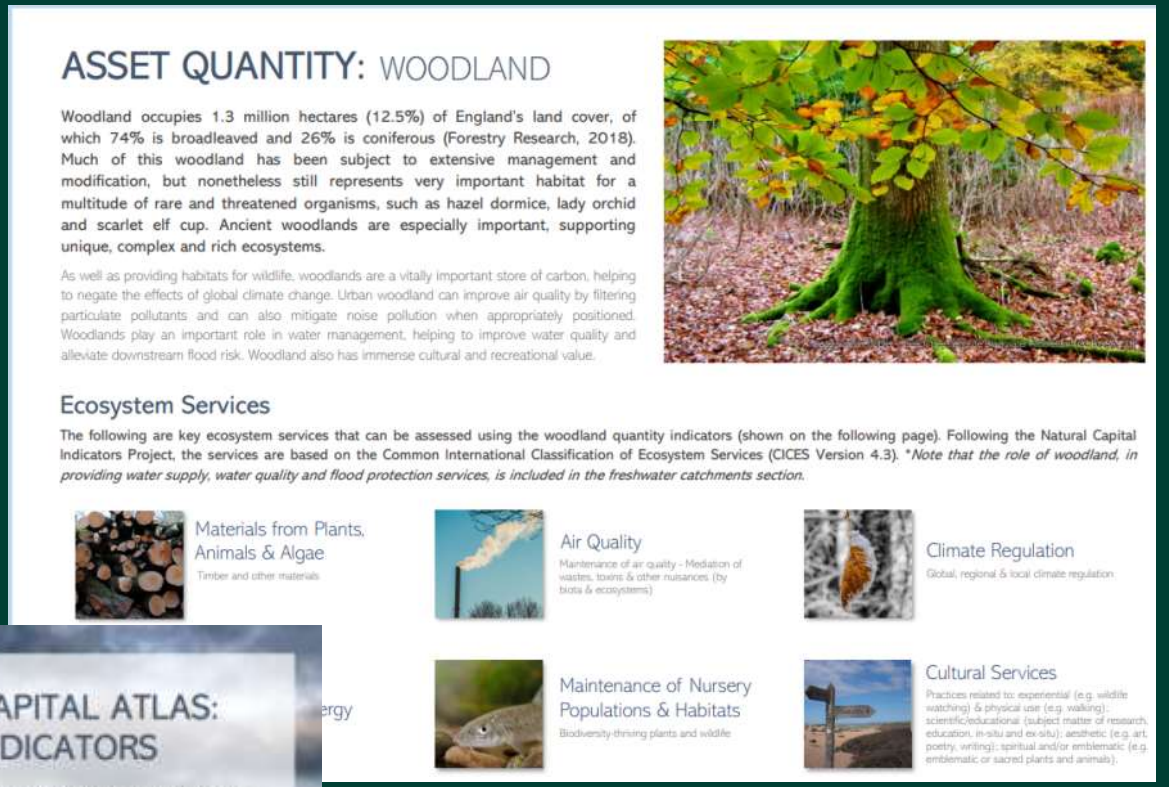
Theme 3: Benefits for people

- How accessible is woodland for health and well-being?
  - Access to woods data
- How much carbon is stored in woodland?
  - FC data – from 1990 to 2015 total carbon stock increased by 20%, with 75% of all forest carbon in soils



Theme 3: Benefits for people

- What other ecosystem services do woods provide?



ASSET QUANTITY: WOODLAND

Woodland occupies 1.3 million hectares (12.5%) of England's land cover, of which 74% is broadleaved and 26% is coniferous (Forestry Research, 2018). Much of this woodland has been subject to extensive management and modification, but nonetheless still represents very important habitat for a multitude of rare and threatened organisms, such as hazel dormice, lady orchid and scarlet elf cup. Ancient woodlands are especially important, supporting unique, complex and rich ecosystems.

As well as providing habitats for wildlife, woodlands are a vitally important store of carbon, helping to negate the effects of global climate change. Urban woodland can improve air quality by filtering particulate pollutants and can also mitigate noise pollution when appropriately positioned. Woodlands play an important role in water management, helping to improve water quality and alleviate downstream flood risk. Woodland also has immense cultural and recreational value.

Ecosystem Services

The following are key ecosystem services that can be assessed using the woodland quantity indicators (shown on the following page). Following the Natural Capital Indicators Project, the services are based on the Common International Classification of Ecosystem Services (CICES Version 4.3). **Note that the role of woodland, in providing water supply, water quality and flood protection services, is included in the freshwater catchments section.*

Materials from Plants, Animals & Algae

Timber and other materials

Air Quality

Maintenance of air quality - Mediation of wastes, toxins & other nuisances (by biota & ecosystems)

Climate Regulation

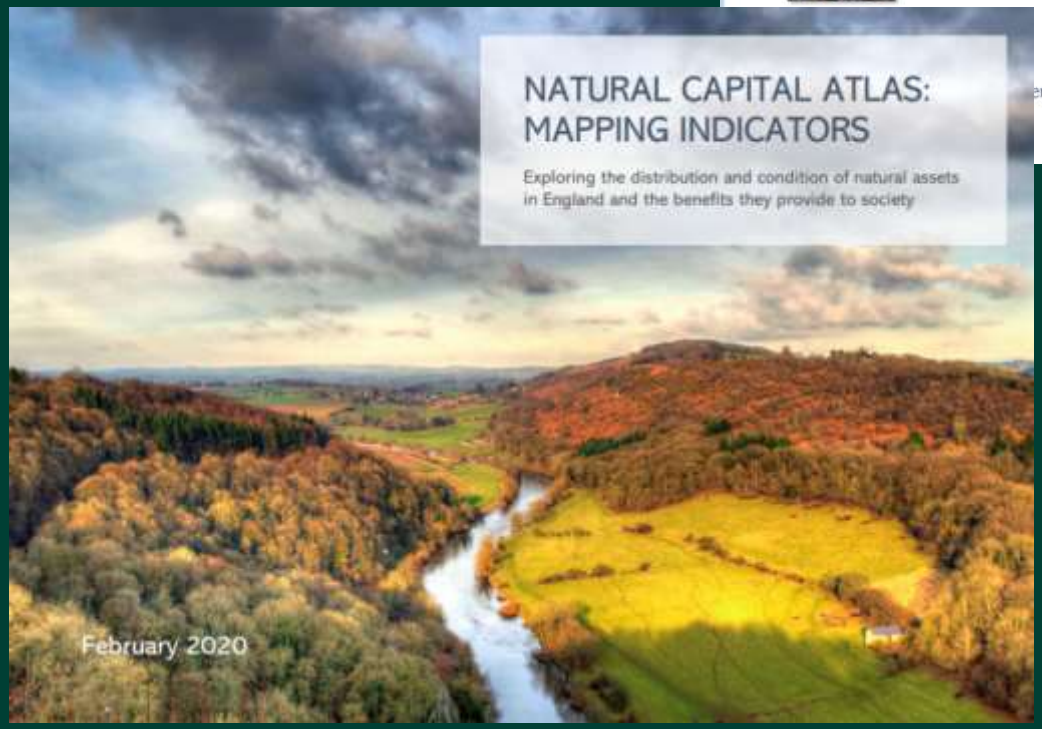
Global, regional & local climate regulation

Maintenance of Nursery Populations & Habitats

Biodiversity-thriving plants and wildlife

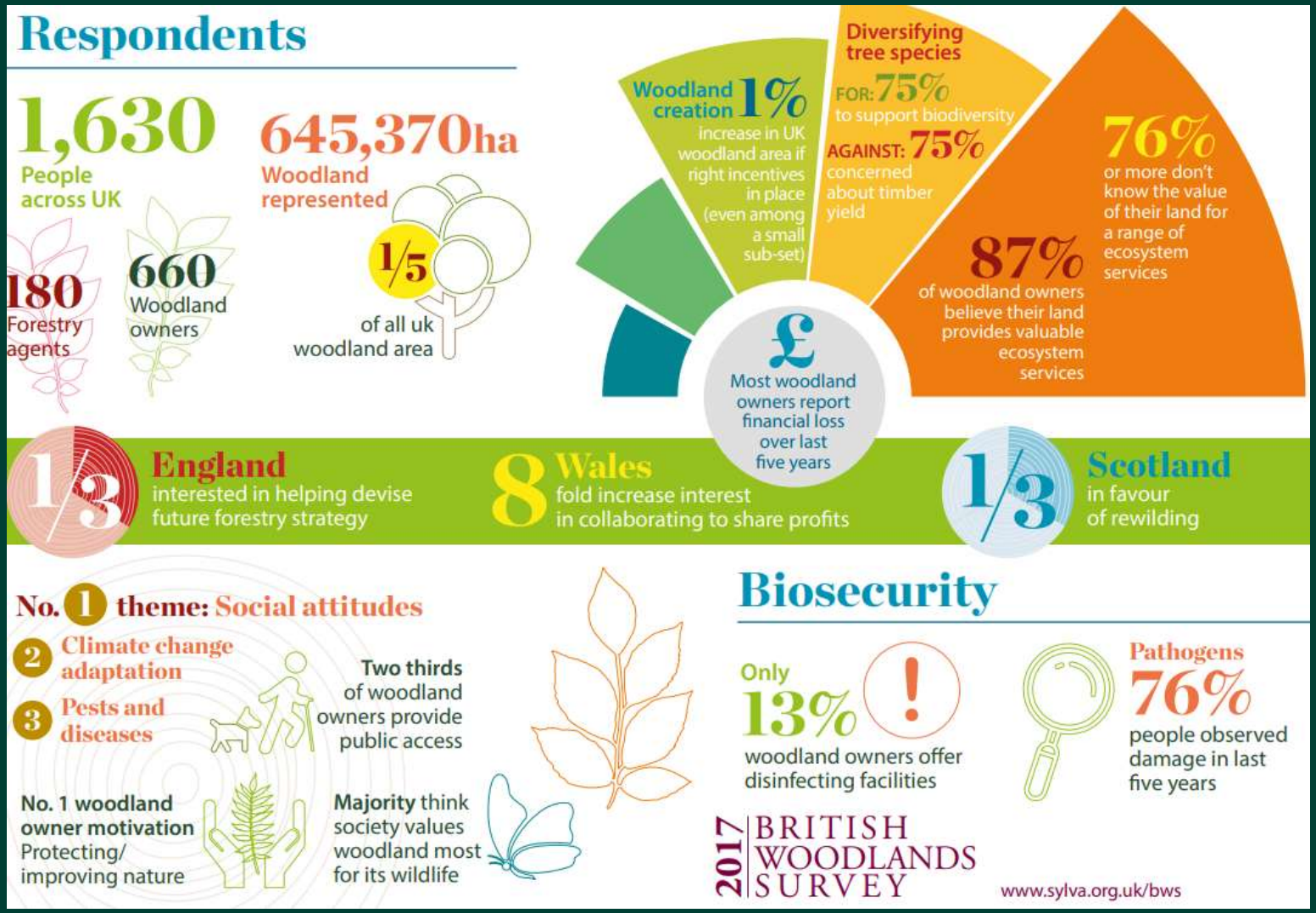
Cultural Services

Practices related to: experiential (e.g. wildlife watching) & physical use (e.g. walking); scientific/educational (subject matter of research, education, in-situ and ex-situ); aesthetic (e.g. art, poetry, writing); spiritual and/or emblematic (e.g. emblematic or sacred plants and animals).



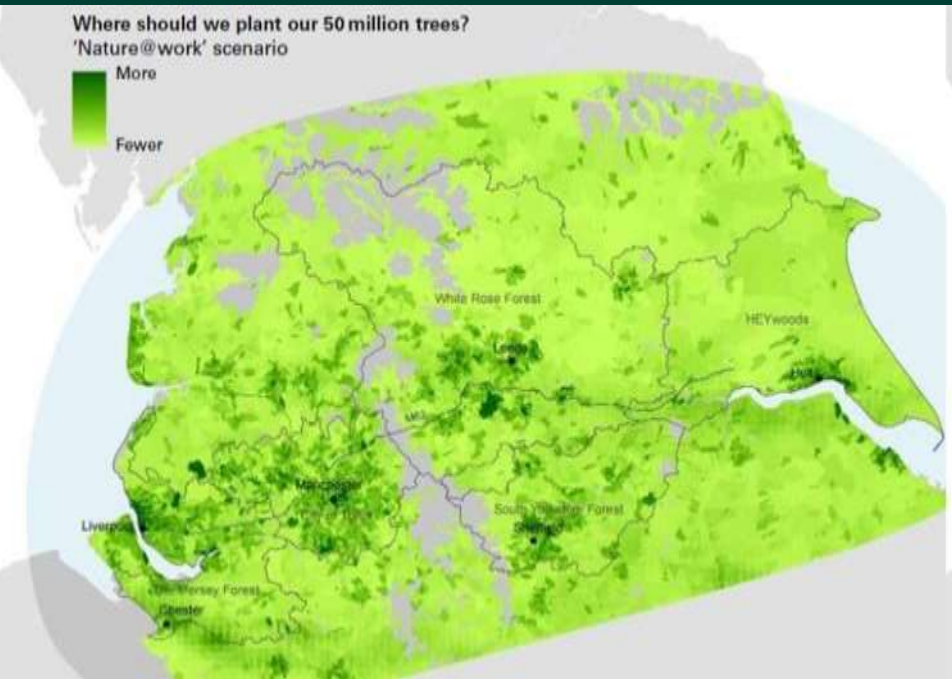
Theme 4: Creation, management and restoration

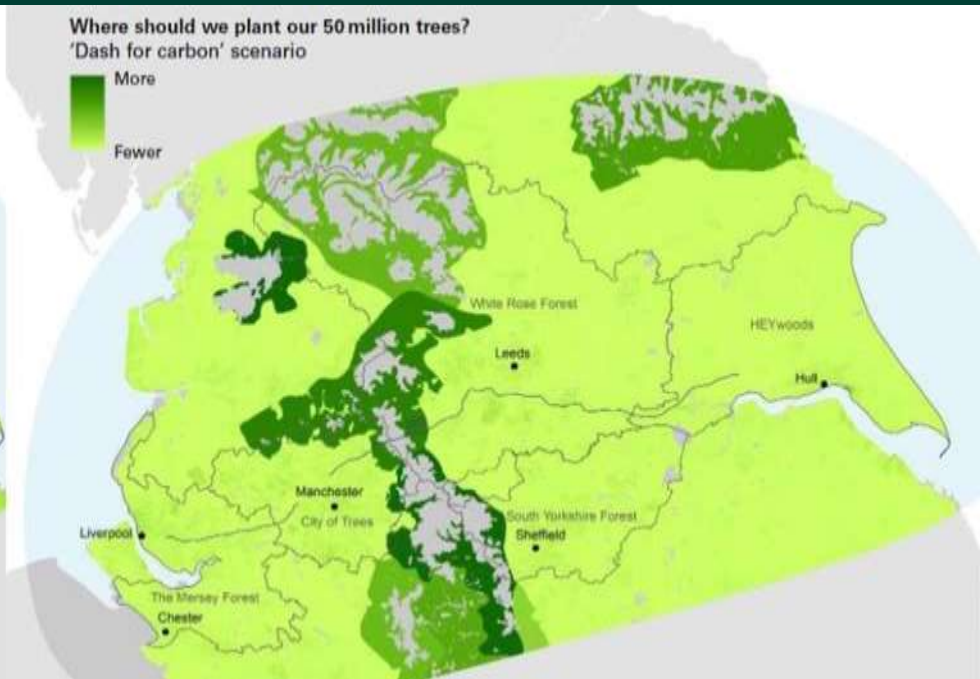
- How are wood owners responding to the climate and biodiversity crises? – British Woodland Survey…



Theme 4: Creation, management and restoration

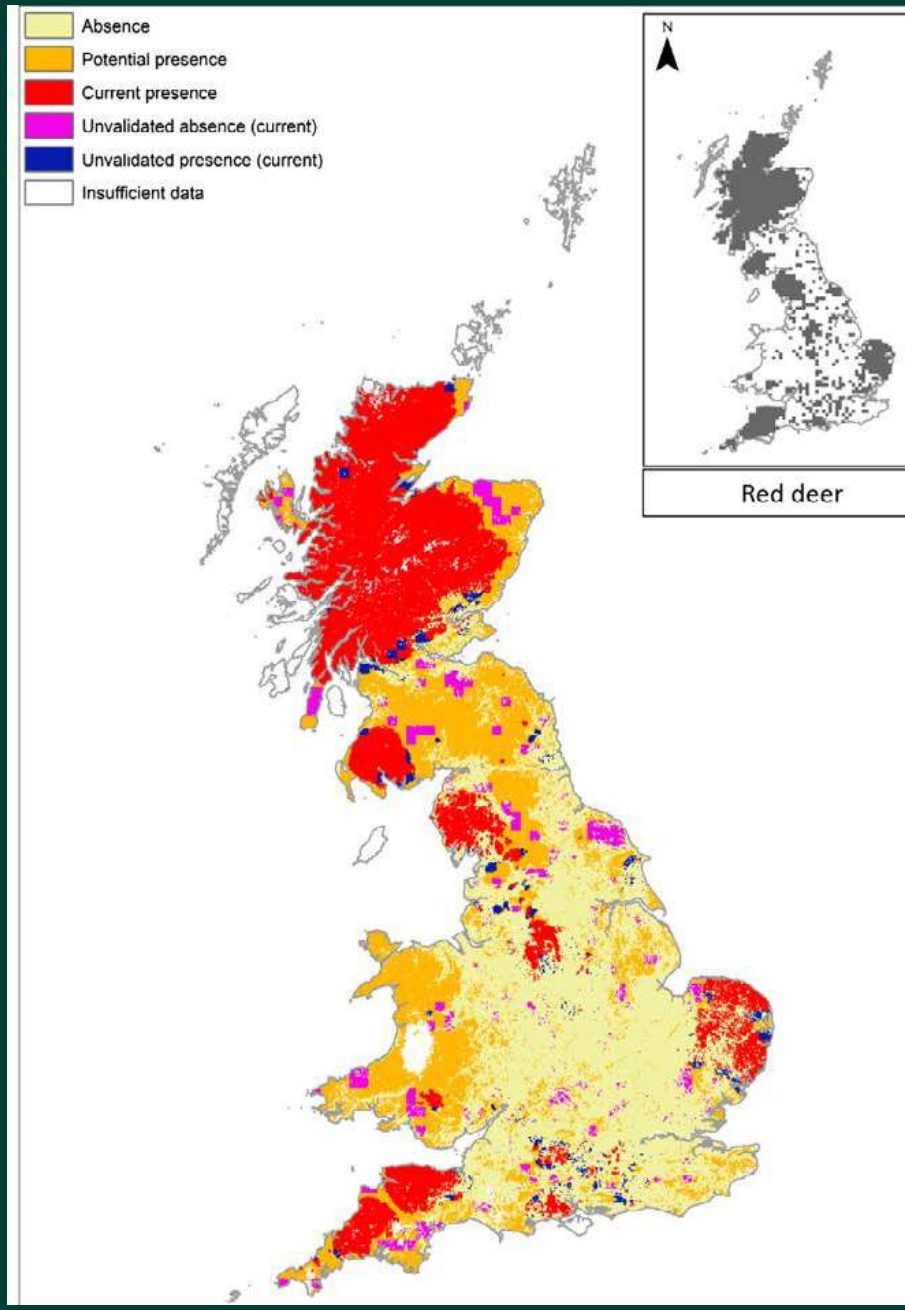
- Are habitats becoming bigger & better connected? What landscape configurations are most helpful? – best data to use?
- Is this helping wildlife? Is there a time-lag effect?





Key data gaps

- Tree Species diversity
  - Tree species identification from earth observation data – in woods, and for trees outside woods (Defra project underway for oak and ash)
  - Genetic diversity within tree species
- Pollution
  - Cannot accurately predict ammonia concentrations and likely impact on woodlands
- Ancient trees
  - Incomplete register of ancient trees
  - No trend data for losses
- Ancient woodland
  - Those smaller than 2ha are not identified
  - No comprehensive data on status and progress of ancient woodland restoration
  - BUT a revision of the ancient woodland inventory is underway in England
- Landscape connectivity - best measures/ metrics to use?
- Deer/ grey squirrel distribution maps & levels of natural regeneration



Thank-you!

Please get in touch with any comments and ideas

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