Forest (Woodland) Natural Capital Accounts

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Natural Capital

Dec 2025

Agenda

- Introduction to the UK Forest (Woodland) Accounts
- Forest Ecosystem extent
  - SEEA Guidelines and UK approach
  - Data
- Forest Ecosystem conditions
  - SEEA Guidelines and UK approach
  - Indicators typology
  - Data
- The UK experience of developing Forest Accounts' Extent and Conditions data: challenges and lessons learnt

Structure UK Woodland (Forest) Natural Capital Accounts

Extent

Condition

Physical

Monetary

Today looking at Extent and Condition

UNITED NATIONS

System of Environmental Economic Accounting (SEEA)

- Integrated spatial statistical framework for organising biophysical information about ecosystems
- Developed to make the contributions of nature to the economy and people more visible
- New methods on ecosystem accounting adopted by the United Nations Statistical Commission in March 2021

SEEA extent

- 3.54 It is recommended that existing national ecosystem classification schemes be used for ecosystem accounting wherever possible.

- 3.55 Where a national classification of ecosystems is not available, IUCN GET may be used to develop one through a scaling down to locally derived and locally relevant ecosystem types.

International Union for Conservation of Nature Global Ecosystem Typology

Realm	Biome	Ecosystem functional group
Terrestrial	T1 Tropical/subtropical forests	T1.1 Tropical-subtropical lowland rainforests
		T1.2 Tropical-subtropical dry forests and thickets
		T1.3 Tropical-subtropical montane rainforests
		T1.4 Tropical heath forests
	T2 Temperate-boreal forests and woodlands	T2.1 Boreal and temperate montane forests and woodlands
		T2.2 Deciduous temperate forests
		T2.3 Oceanic cool temperate rainforests
		T2.4 Warm temperate laurophyll forests
		T2.5 Temperate pyric humid forests
		T2.6 Temperate pyric sclerophyll forests and woodlands
	T3 Shrublands and shrubby woodlands	T3.1 Seasonally dry tropical shrublands
		T3.2 Seasonally dry temperate heaths and shrublands
		T3.3 Cool temperate heathlands
		T3.4 Young rocky pavements, lava flows and screes

Land cover classifications

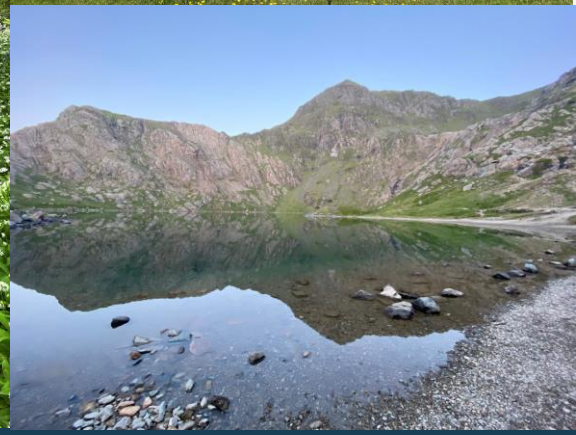
Broad habitat classifications from UK National Ecosystem Assessment 2011

- Woodland
- Urban
- Fresh water
- Enclosed farmland
- Mountain, moorland and heath
- Semi-natural grassland
- Marine
- Coastal margins







Woodland (Forest) in the UK

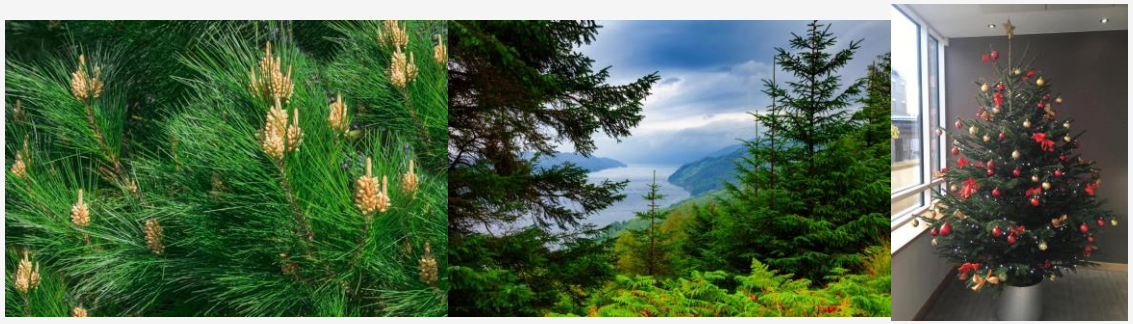
This habit type includes managed plantations as well as ancient, semi-natural woodlands.

Woodlands cover 13% of the UK's land area, making the country one of the least wooded in Europe.

Much of the woodland estate is managed as a source of timber, but woodlands are increasingly valued for their delivery of other ecosystem services, particularly recreation and carbon storage.

- Broadleaves - Trees that do not have needles or cones, such as oak, birch and beech. A few, such as alder, have cone-like structures for their seeds which are not true cones

- Coniferous - Trees with needles and cones, such as spruce, pine and larch.



Forest Ecosystem extent

- Where are the forests?
- Need reliable data source that covers whole of the country

Consider any limitations of the data

- Coverage – UK forest area over 0.5 hectares
- Does it cover the whole of the country?

UK Extent

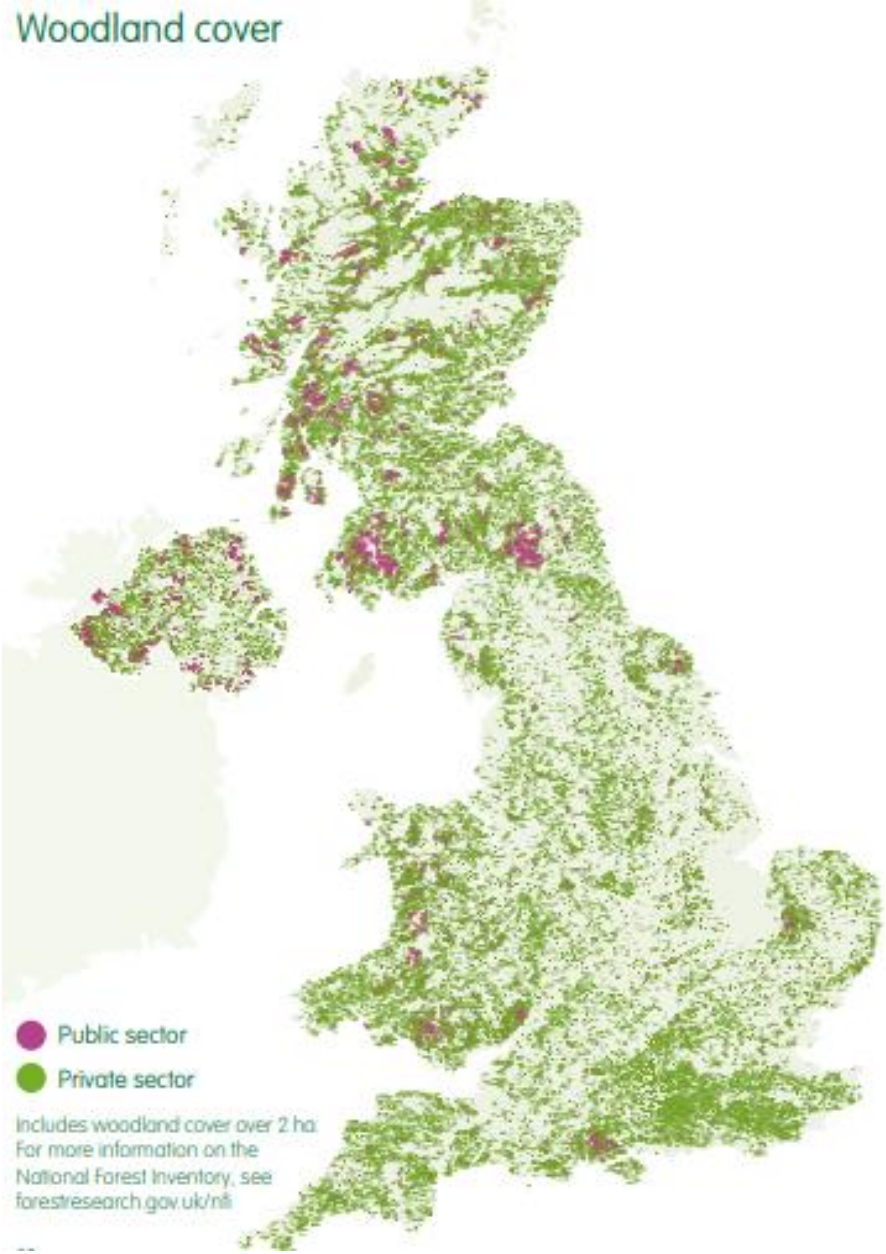
The National Forest Inventory (NFI)

- A rolling programme measurement to provide accurate information about the size, distribution, composition and condition of our UK forests and woodlands
- Show changes taking place in the woodlands through time

- The area of woodland in the UK in March 2025 is estimated to be 3.29 million hectares

- 14% of the total land area in the UK

UK additional data source from Land Cover Maps that cover 21 different types habitats, including broadleaf and coniferous woodland



What data does your country have on forest extent?

- Does it cover the whole of the country?
- Is it same data source?
- Any data gaps?

Habitat condition

Condition of an ecosystem service: The capacity of an ecosystem service to yield benefits to people, relative to its potential capacity

SEEA Ecosystem Condition

First step is to define and select ecosystem characteristics and associated variables.

Ecosystem Condition Typology (ECT) is a hierarchical typology for organising data on the condition characteristics.

	ECT groups	ECT classes
Ecosystem condition	Abiotic ecosystem characteristics	1. Physical state characteristics (including soil structure, water availability)
		2. Chemical state characteristics (including soil nutrient levels, water quality, air pollutant concentrations)
	Biotic ecosystem characteristics	3. Compositional state characteristics (including species-based indicators)
		4. Structural state characteristics (including vegetation, biomass, food chains)
		5. Functional state characteristics (including ecosystem processes, disturbance regimes)
	Landscape level characteristics	6. Landscape and seascape characteristics (including landscape diversity, connectivity, fragmentation, embedded semi-natural elements in farmland)

SEEA Ecosystem Condition

SEEA recommends creating an index

1. Create an ecosystem condition variable account
2. Rescale the ecosystem variables to ecosystem indicators, using reference levels
3. Calculate the Ecosystem Condition Index

In the UK we are currently only able to do the first step in this process

We do still calculate physical flows for ecosystem services

Physical and chemical state characteristics

Physical state characteristics: physical descriptors of the abiotic components of the ecosystem (e.g., soil structure, water availability)

Chemical state characteristics: chemical composition of abiotic ecosystem compartments (e.g., soil nutrient levels, water quality, air pollutant concentrations)

Table 2: Soil indicators for woodland, Great Britain, 1978, 1998 and 2007

Woodland	Indicator	1978	1998	2007
Broadleaf, mixed, and yew woodland	Soil acidity (pH)	5.1	5.5	5.8
Coniferous woodland		4.3	4.4	4.5
Broadleaf, mixed, and yew woodland	Carbon concentrate (g C kg-1)	62.4	102.2	88.7
Coniferous woodland		203.7	222.0	197.8
Broadleaf, mixed, and yew woodland	Loss on ignition (%)	11.4	18.6	16.1
Coniferous woodland		37.0	40.4	36.0
Broadleaf, mixed, and yew woodland	Soil bulk density (g cm-3)	0.8	[z]	[z]
Coniferous woodland		0.5	[z]	[z]

Source: UK Centre for Ecology and Hydrology and Countryside Survey

Does your country have any data on the forest soils?

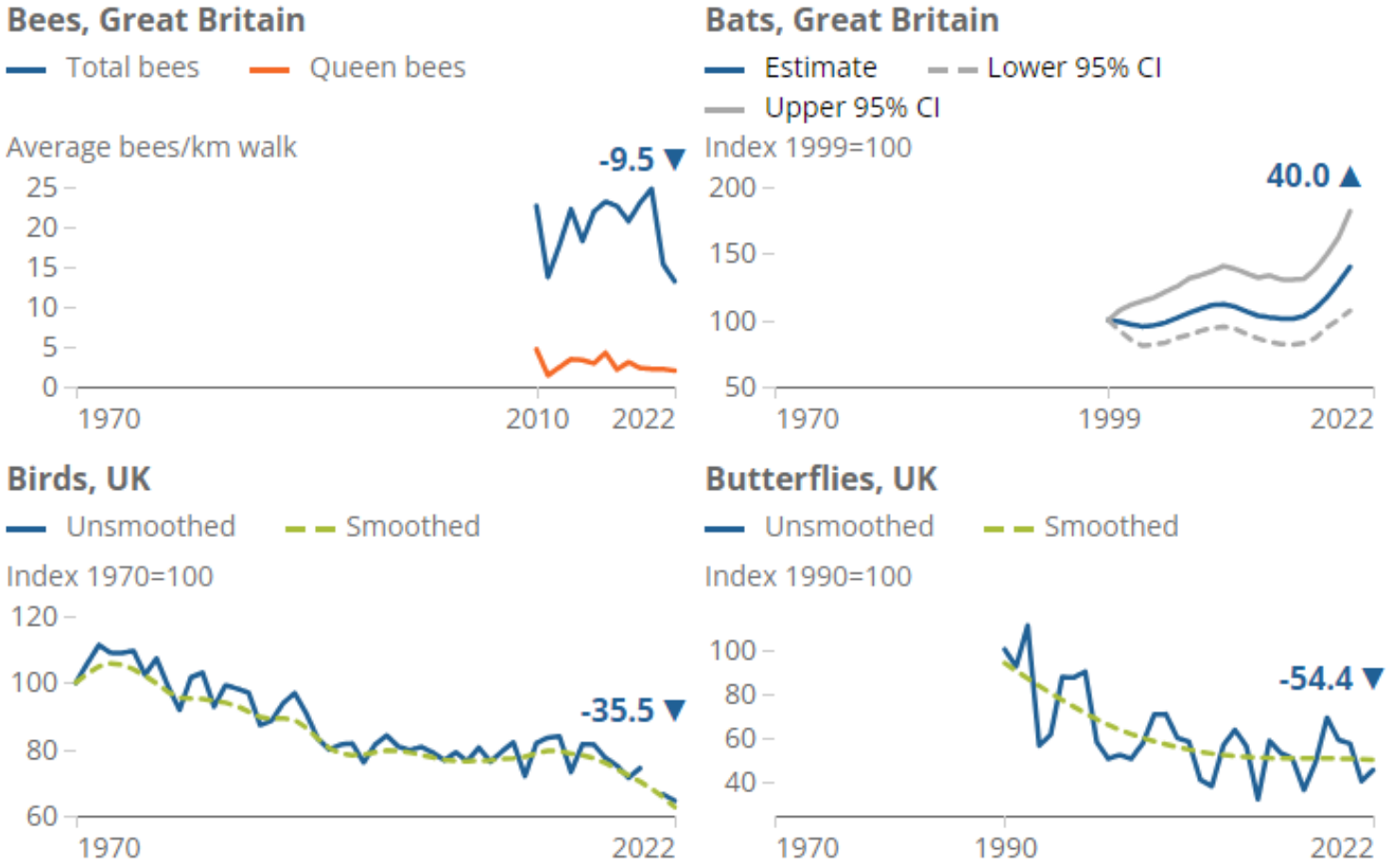
UK

- Difficult to get recent soil monitoring data in the UK
- New studies currently being done in the UK to get more timely data
- Aim is to add to the existing time series we have from 1978 to 2007

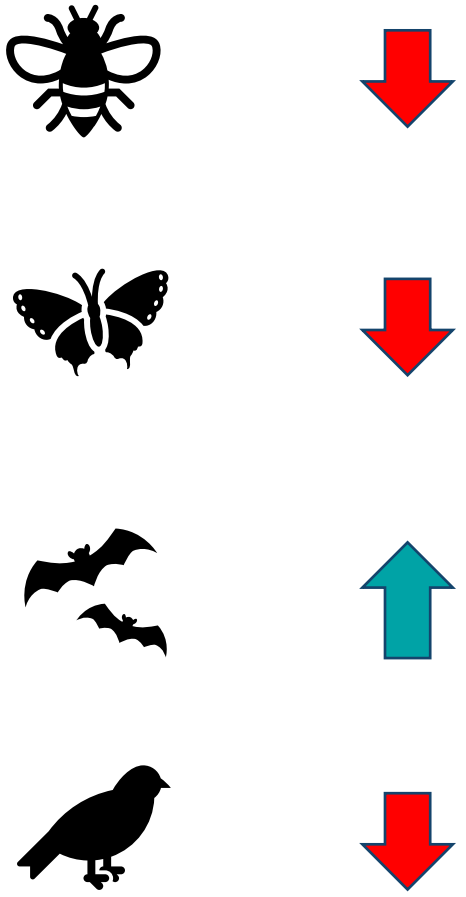
Compositional state indicators

Composition / diversity of ecological communities at a given location and time (e.g., presence / abundance of key species, diversity of relevant species groups)

Compositional state indicators



Woodland species



Source: Office for National Statistics, Bat Conservation Trust, BeeWalk, British Trust for Ornithology; Wider Countryside Butterfly Survey (WCBS); Royal Society for the Protection of Birds; Department for Environment, Food and Rural Affairs and UK Butterfly Monitoring Scheme (UKBMS)

What compositional state indicators does your country have?

- Birds
- Animals
- Insects
- Tree health

Structural state indicators

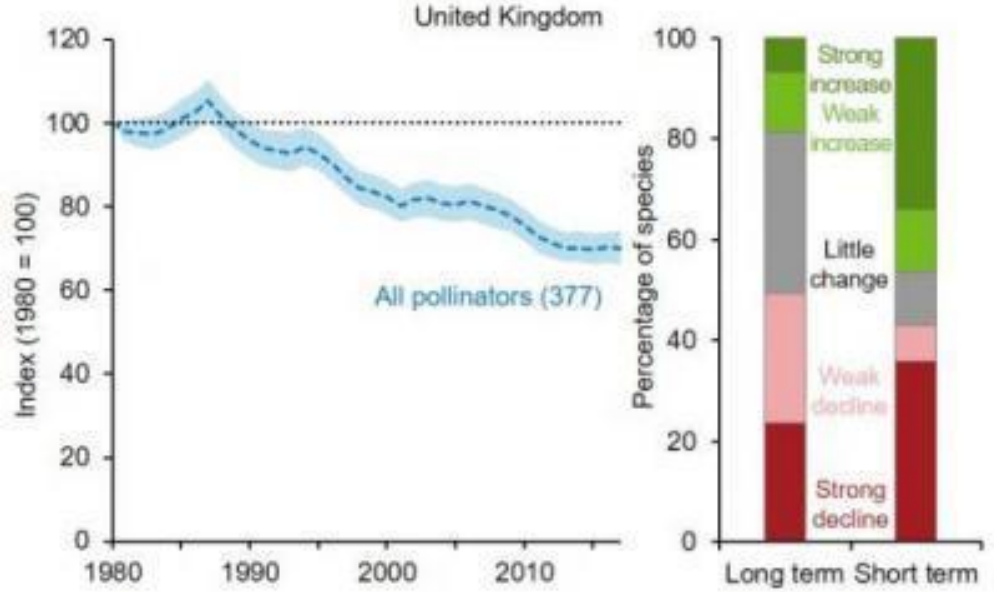
Aggregate properties (e.g., mass, density) of the whole ecosystem or its main biotic components (e.g., total biomass, canopy coverage)

Condition indicator	Unfavourable		Intermediate		Favourable	
	Area (hectares)	Percentage	Area (hectares)	Percentage	Area (hectares)	Percentage
Number of native tree and/or shrub species	1,402,259	48	585,098	20	960,477	33
Deadwood volume (m3 per ha)	2,250,883	76	515,164	17	181,787	6
Vertical structure	633,582	21	1,211,071	41	1,103,182	37
Veteran trees	2,928,501	99	5,645	0	13,688	0
Age distribution of tree species	1,189,376	40	1,421,369	48	337,089	11
Proportion of open space	2,419,080	82	525,399	18	3,354	0

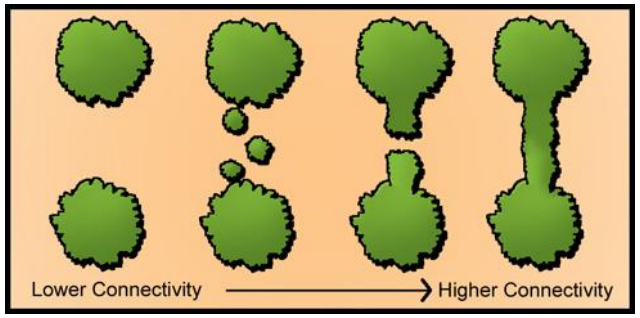
Functional state characteristics

- Characteristics specific functional groups – pollinators, predators, nitrogen fixers etc
- Ecosystem processes – frequency and intensity

Many of the characteristics that can be seen as ‘ecosystem functions’ can also be seen as a compositional (e.g., species abundances), structural (e.g., plant biomass)



Landscape level indicators



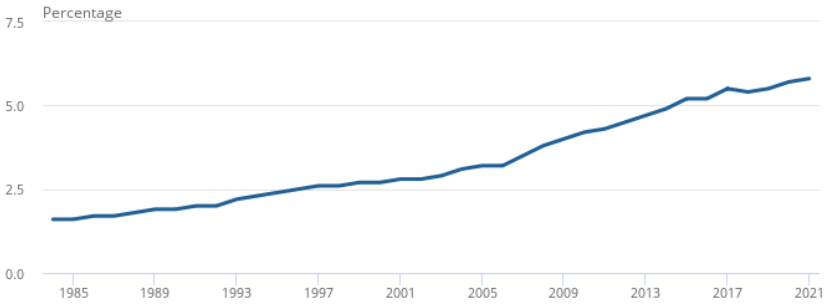
Habitat connectivity - is a measure of how well different species can move between habitats in the landscape

Hedgerows - provide food and shelter for many species. They often link small woods, they are essential corridors along which wildlife can travel

Woodland on farmland – reduces soil erosion, provides shelter farm animals, natural flood management and increases biodiversity

Figure 5: Woodland on UK farmland increased to 5.8% in 2021

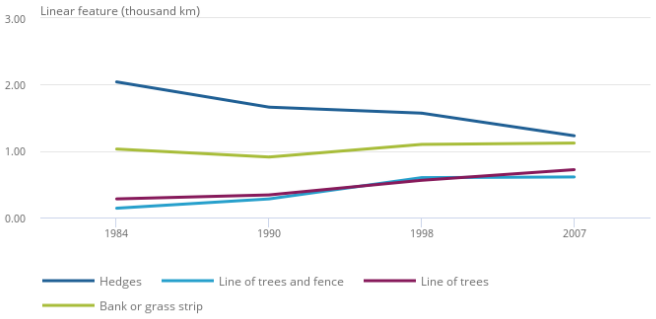
Proportion of woodland on farmland, UK, 1984 to 2021



Source: Department for Environment, Food and Rural Affairs

Figure 18: The average length of hedges in coastal habitats has decreased by 39% in Great Britain between 1984 and 2007

Linear coastal features, Great Britain, 1984, 1990, 1998 and 2007



Source: UK Centre for Ecology and Hydrology – Countryside Survey

Functional and Landscape indicators

UK

- Difficult to get data to match SEEA suggestions.
- Only available small areas, not cover the whole of the UK.

Any suggestions from your country?

Environmental pressure indicators

Outside of SEEA, but do provide information on how we use the environment

- Wildfires
- Protected sites: Condition data are collected for formal designations (favourable, recovering or unfavourable)
- Animal damage in woodlands
- Dumping of illegal waste

Challenges and lessons learnt

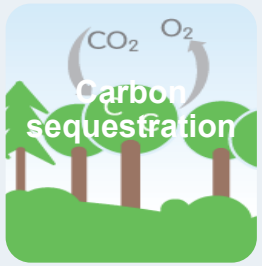
- Difficult to get condition data that covers the whole of the UK
- Not all data is available as a time series
- Some data is experimental and a one-off statistic
- Having the environment being devolved in the UK to the 4 countries – England, Scotland, Wales and Northern Ireland. They all do data collection differently.
- Important to work with the different environmental agencies and local governments
- Currently do not link the condition of the woodland to the calculation of ecosystem service values, but use conditions descriptively for Habitat Accounts

Future session - Ecosystem services from woodlands

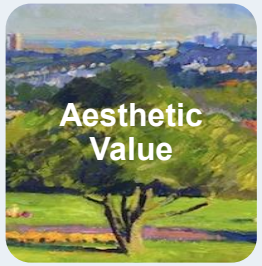
Woodland

Provisioning Services

Regulating Services



Cultural Services



Future workshops

- Thursday 22nd January 2026 – Deep dive into recreation and tourism services
- Thursday 29th January 2026 – Deep dive into provisioning services
- Thursday 5th February 2026 – Deep dive into greenhouse gas regulating services
- Thursday 12th February 2026 – Valuation of ecosystem services

Any questions?

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