

Natural Capital Indicators: Summary of key indicators

Natural England's Natural Capital Indicators Project aims to identify key attributes for measuring change in natural capital in England, at a range of scales. Key indicators have been identified for the quantity, quality, location of ecosystems, and for ecosystem services. We have not identified suitable repeated measures of value, which could be used as indicators.

Summary of key indicators:

- 1. Extent of habitat:** e.g. blanket bog and other upland habitats, coastal & marine habitats, woodland, heath, semi-natural grassland, freshwaters, wetlands, urban blue and green space. **Data sets for measuring extent of habitat include:** Priority Habitat Inventory; Land Cover Map; National Forest Inventory; National Tree Map; OS Master Map (specific applications); DASSH Archive for Marine Species & Habitat Data; JNCC Marine Protected Areas Monitoring; MEDIN - Marine Environmental Data and Information Network
- 2. Quality** (see table below for more details and related data sets)
 - **Hydrology & geomorphology:** Naturalness of water levels, flows, flooding, aquifer function, lake hydrological regime and extent of artificial drainage.
 - **Nutrient/chemical status** - of water bodies, soil/sediment, atmospheric deposition and marine pH.
 - **Soil/sediment:** carbon, biota, peat depth, coastal sediment supply.
 - **Species composition:** naturalness of biological assemblage, absence of invasive non-native species, plant species diversity, and marine net productivity, by species.
 - **Vegetation:** ratio of vegetation to bare soil, plant growth rate (biomass), surface vegetation roughness, proportion of peat mass actively forming peat, vegetation structure/structural diversity, extent and condition of linear features & pockets of semi-natural vegetation (in farmland), presence and frequency of pollinator larval & adult food plant a and vegetation next to water courses.
 - **Cultural:** nature, landscape, seascape and urban green space, culture and history, quietness, facilities, accessibility.
 - **Geodiversity:** active formative geological processes, condition of designated geosites.
- 3. Location of:**
 - Habitats, in relation to water quality: source-pathway-receptor.
 - Habitats & trees in relation to buildings & transport routes, to mitigate air quality, regulate noise and provide cooling.
 - Habitats and boundary features mitigating soil erosion and landslip risk.
 - Width/area/location of habitats providing flood protection in relation to settlements and infrastructure.
 - Proximity to other habitat patches, patch size and shape and naturalness of spatial configuration of habitats, for maintenance of habitats and species populations.
 - Proximity of boundary features and semi-natural habitats to insect pollinator crops.
 - Transition and connectivity of aquatic, terrestrial and marine habitats.
 - Area for dynamic movement and development of coastal habitats.
 - % population who can access a minimum of 2ha accessible green space / blue space within 2 miles of home.
- 4. Ecosystem service flows** (specific to individual services):

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- Measurement of the service: number of reared animals, production of crops, fodder & wood products, wood based fuel harvested, amount of clean water, amount of fish and other marine products, abundance of pollinators, carbon sequestered and greenhouse gases fixed, local urban cooling, maintenance of wildlife habitats and species, regulation of flooding, stabilisation of soil/sediment, noise abatement, air quality and water quality. Practices that relate to experiential and physical, scientific and educational use.

The project also identifies and reviews datasets for measuring the attributes. Data sets are only included if they are regularly updated. Gaps in data are also identified, where appropriate data sets have not been found. This note summarises the overall results of this project. Please also see the separate note on the method followed.

Provisioning and Regulating Services		Ecosystem services * relates to indicators for freshwater catchments														Data Source		
Indicator category	Indicator	Materials from plants, animals & algae	Wild animals, plants and algae and their outputs	Aquaculture	Cultivated crops	Plant -based energy	Water supply *	Reared animals & outputs	Water quality *	Air quality	Noise regulation	Mass stabilisation	Flood protection *	Pollination & seed dispersal	Maintenance of nursery pops & habs	Pest & disease control	Climate regulation	
Hydrology & geomorphology:	Extent of artificial drainage						X		X				X		X		X	None identified
Hydrology & geomorphology:	Natural aquifer function: recharge & discharge						X											WFD; EA Groundwater Management Units
Hydrology & geomorphology:	Naturalness of flooding regime												X		X		X	EA Flood Map for Planning
Hydrology & geomorphology:	Naturalness of flow regime						X						X		X			WFD; CEH Hydrological Summary; CEH River Flow Archive; CSM
Hydrology & geomorphology:	Naturalness of lake hydrological regime												X		X			WFD
Hydrology & geomorphology:	Naturalness of water level regime						X		X						X		X	None identified
Nutrient (& chemical) status:	Atmospheric deposition: exceedance of critical loads															X		APIS; Heavy Metals Monitoring Network; ICP Vegetation; ICP Forests
Nutrient (& chemical) status:	Biological/chemical status of water (including viral & bacterial)		X	X					X							X		WFD; Urban Waste Water Treatment Directive; Upland Water Monitoring Network; Countryside Survey; Water Quality Data Archive; Clean Seas Environmental Monitoring Programme; Coastal Bathing Water Standard; CEFAS Data hub; Blue Flag Beach Quality; National Oceanographic database
Nutrient (& chemical) status:	Marine pH of sea water		X													X		National Oceanographic database
Nutrient (& chemical) status:	Soil/sediment nutrient status		X		X			X	X							X	X	Countryside Survey; LANDIS; Representative Soil Sampling Scheme; Agricultural Land Classification; Clean Seas Environmental Monitoring; Geochemical Baseline Survey of the Environment (G-BASE) (BGS); LTMN
Soil/sediment processes:	Coastal sediment supply/availability (including type, grain size)											X	X		X			CSM (only for Sites of Special Scientific Interest)
Soil/sediment processes:	Peat depth								X								X	Long Term Monitoring Network (37 sites)
Soil/sediment processes:	Soil or sediment carbon/organic matter content								X			X			X		X	Countryside Survey; LANDIS; Geochemical Baseline Survey of the Environment; Clean Seas Environmental Monitoring; LTMN
Soil/sediment processes:	Soil/sediment biota		X													X	X	Countryside Survey; Clean Seas Environmental Monitoring; LTMN
Species Composition:	Invasive non-native species															X		WFD; JNCC; pressure from invasive species; EA Invasive Species Data; CSM (only for Sites of Special Scientific Interest)
Species composition:	Marine net productivity by species (kcal/ha/yr)		X														X	None identified
Species composition:	Naturalness of biological assemblage: number of trophic levels & community composition in each level		X												X			None identified
Species Composition:	Plant species diversity													X	X			Countryside Survey; CSM (only for Sites of Special Scientific Interest); LTMN
Vegetation	Farmland: extent & condition of linear vegetation features and pockets of semi natural vegetation											X		X	X	X		Countryside Survey
Vegetation	Plant growth rate	X			X	X		X									X	None identified
Vegetation	Presence & frequency of pollinator larval & adult food plants													X				Countryside Survey
Vegetation	Proportion of peat mass actively forming peat						X		X							X	X	None identified
Vegetation	Surface/vegetation roughness								X			X	X					CSM (only for Sites of Special Scientific Interest); LTMN
Vegetation	Vegetation cover/bare soil						X		X	X	X	X			X		X	CSM (only for Sites of Special Scientific Interest)
Vegetation	Vegetation next to water bodies								X				X		X			CSM (only for freshwater Sites of Special Scientific Interest)
Vegetation	Vegetation structure/structural diversity															X		CSM (only for Sites of Special Scientific Interest)

Cultural & Geodiversity: Quality		Ecosystem Services		Data Source
Indicator category	Indicator	Cultural Services	Geodiversity services	
Nature	Visibility of wildlife	X		None identified
Nature	Presence of flagship species	X		None identified
Nature	Presence of rare (red list) species	X		None identified
Nature	Species diversity	X		Countryside Survey
Nature	Naturalness of watercourses	X		Water Framework Directive
Nature	Favourable condition of SSSIs	X		CSM (only for Sites of Special Scientific Interest)
Nature	Favourable condition of designated geosites	X	X	CSM (only for Sites of Special Scientific Interest)
Landscape, seascape & urban green space	Size of environmental space (ha)	X		None identified
Landscape, seascape & urban green space	Boundary features – type, length & condition	X		Countryside Survey; OS Master Map
Culture & history	Designated Historic Environment Assets (World Heritage Sites, Scheduled monuments (% at risk), Historic Parks & Gardens, Listed Buildings, Conservation Area, registered battlefields)	X		Historic Environment Record
Quietness	Tranquility	X		CPRE Tranquility mapping; Defra Strategic Noise Mapping
Accessibility	Mean number of perimeter access points per km	X		None identified
Accessibility	Public Rights of Way / permissive paths; footpaths, bridleways, byway – length, density (km/ha)	X		OS master map; Public Rights of Way
Accessibility	Presence of paths accessible to all – e.g. wheelchairs, pushchairs - length, density (km/ha)	X		None identified
Facilities	Number of organised events	X		None identified
Facilities	Presence of clubs, schools, training centres	X		None identified
Formative geological processes	Active geomorphological processes; terrestrial, coastal & marine		X	None identified
Cultural & Geodiversity: Spatial Configuration				
Spatial Configuration	% population who can access 2ha of green space within 2 miles of home	X		None identified
Cultural: Ecosystem Service Flow				
Experiential & physical use	Number of visits	X		MENE: Monitor of Engagement with the Natural Environment
Experiential & physical use	Duration of visits	X		MENE: Monitor of Engagement with the Natural Environment
Experiential & physical use	Range of activities undertaken (number of people carrying out each activity, frequency, time spent)	X		MENE: Monitor of Engagement with the Natural Environment
Scientific/educational	Number of research projects; PhD / Masters projects	X		None identified
Scientific/educational	Number of school visits	X		None identified